

**INDIA
DEPARTMENT OF AGRICULTURE,
THE STATE GOVERNMENT OF
HIMACHAL PRADESH**

**INDIA
PHASE II PROJECT FOR CROP
DIVERSIFICATION
IN
HIMACHAL PRADESH
STAGE-2

PROJECT COMPLETION REPORT**

November 2022

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

NIPPON KOEI CO., LTD.

ID
JR
22-002



**Project Location Map for
Phase II Project for Crop Diversification in Himachal Pradesh**

Photograph Information

Output-1: Technical capacity of DOA/PMU staff to promote crop diversification practices is strengthened



Needs assessment workshops for selection of training programmes
 (Mandi, September 2019)



ADO visiting wheat crop fields infested with yellow rust
 (Una, February 2021)



Explanation on training purpose and output to extension officers
 (Hamirpur, March 2022)



Monitoring on extension activity (nursery) by extension officer
 (V. Bhutlar GP, April 2022)

Output-2: Through activities in pilot areas, packages of techniques to promote crop diversification are compiled



Demonstration on pruning of Tomato plants by extension officer
 (Una, March 2020)



Demonstration by extension officer on filling of plug trays
 with media prepared
 (Sathru, Una, July 2020)



Checking the status of nursery grown under walk-in poly-tunnel,
 (Dhamella, Sarkaghat, February 2021)



Rhododendron processing training
 (Gohar, March 2022)

Output-3: Effective marketing activities for farm produce are identified



Planning of cropping schedule with use of Poly house
 (Sarkaghat, December 2019)



Situation of cucumber in open field
 (Ukhala, Sarkaghat, July 2020)



Monitoring the results of cauliflower harvest
 (Domehar, Bilaspur, October 2020)



Setting underground drainage
 (Ragloo, Kangra, April 2022)

**Output-4: Sustainable plans of DOA to promote crop diversification
 in the respective 5 districts are formulated based on achievements of the Project**



Discussion on extension activity schedule and 5 years action plan
 (Una, April 2022)



Discussion on extension activity schedule and 5 years action plan
 (Hamirpur, April 2022)



Storing JICA TCP materials in SMS office
 (Mandi, June 2022)



Storing JICA TCP materials in ATMA office
 (Una, July 2022)

Food Diversification (Food and Nutrition / Livelihood Improvement / Gender / Social Inclusion)



Meeting on sales of beetroot powder with SHG
 (Dehri Kuhal, Nurpur, April 2021)



Discussion on promotion of food diversification with DDA Bilaspur,
 (Bilaspur, April 2021)



Introducing activities on food diversification and recipe booklet
 (BPMU Gohar, March 2022)

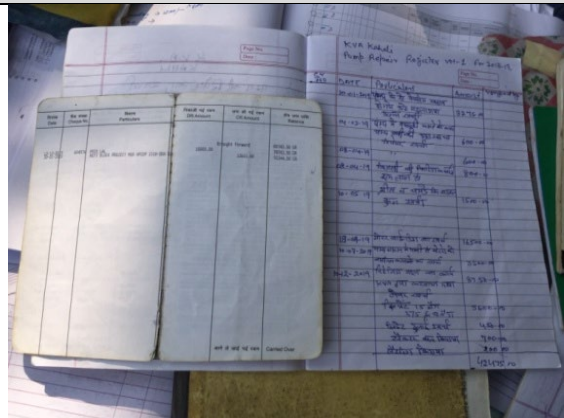


Recipe booklet
 (April 2022)

Water Management and O&M



Monitoring of training on operation of motor pump
 (Sarkaghat, September 2019)



Monitoring of maintenance record
 (Bilaspur, February 2020)



Explanation of operation and function of sluice valve by extension officers using checklist in Motor Pump Training
 (February 2021)



Extension officers explaining cleaning of Filter in MIS (O&M) Training
 (Chatrer, Nurpur, March 2021)

EXECUTIVE SUMMARY

I. Introduction

01. Expected Goals which will be attained after implementing the Proposed Plan are shown as follows:
- 1) Overall Goal: Crop diversification according to Agro-Ecological Situations is promoted in the 5 districts of Himachal Pradesh.
 - 2) Project Purpose: Organizational capacity of DOA to promote crop diversification in the 5 districts is strengthened.
02. Outputs of the Project are shown as follows:
- 1) Output 1: Technical capacity of DOA/PMU staff to promote crop diversification practices is strengthened.
 - 2) Output 2: Through activities in pilot areas, packages of techniques to promote crop diversification are compiled.
 - 3) Output 3: Effective marketing activities for farm produce are identified.
 - 4) Output 4: Sustainable plans of DOA to promote crop diversification in the respective 5 districts are formulated based on achievements of the Project.

II. Project Activities

Activities to Achieve Output 1: Technical Capacity of DOA/PMU Staff to Promote Crop Diversification Practices is Strengthened

03. Trainings conducted in Stage 1 and Stage 2 under Output-1 are shown as follows:

Training Subjects	Modules
Stage 1	
(1) Micro-irrigation system & Estimation of Crop water requirement.	Familiarization and potential of micro-irrigation in cereal and vegetable crops of Himachal Pradesh.
	How to estimate the crop water requirements and irrigation efficiency of major vegetable and food crops of Himachal Pradesh?
	How to design drip and sprinkler irrigation systems? Familiarization with different components, their specifications, laying etc. of drip and sprinkler irrigation systems.
	How to operate and maintain the micro-irrigation systems for their efficient operations? How to fix and collect water tariffs? (source for spare parts, service providers etc.), Focus on day to day problems which may come and how to solve/ precautions
(2) Nursery Raising and Vegetable Cultivation (Exotic).	How to cultivate Rabi season exotic vegetables -Asparagus, Broccoli, Lettuce, Leek, Red cabbage, Brussels sprouts, Celery and parsley in field.
	How to cultivate Kharif season exotic vegetables –Zucchini, Tree tomato, Cherry tomato, Swiss chard, Pak Choi, coloured Capsicum etc., in field
	How to use the Improved cultivation techniques of seed coating, priming etc. for obtaining higher productivity of exotic vegetable crops.
	Marketing strategies for higher profits from Exotic vegetables
	Awareness about cooking & use of exotic values
(3) Protected Cultivation of Vegetable Crops.	Improved methods of raising healthy nursery in open & under protected conditions.
	Important tips and techniques for protected cultivation of high value vegetable crops (tomato, capsicum, cucumber etc.)
	Year-round cultivation of vegetables under protected conditions.
	How to manage diseases in vegetable crops under protected poly house conditions
	How to manage insects and pests of vegetable crops under protected poly house conditions.

Training Subjects	Modules
(4) IPM for Vegetable Crops	IPM in major vegetable crops (summer& winter)
	IPM in major food crops (Kharif & Rabi)
	Use of bio agents & bio pesticides in IPM (preparation of bio pesticides & yellow, blue sticky traps, water traps, light traps etc.)
(5) Weed Management	How to manage Jangali Bans (<i>Brachaira</i> spp.), Chhura (<i>Commelina</i> spp.) and other weeds in Kharif crops and vegetables fields?
	How to manage Goongla (<i>Raphanus</i> spp.), Jangali javi (<i>Avena</i> spp.) and other weeds in Rabi crops and vegetables fields?
	How to manage Tipatia (<i>Oxalis</i> spp.) and Motha (<i>Cyperus</i> spp.) in Poly house and Neela Phulnu (<i>Ageratum</i> spp.), Tipatia (<i>Oxalis</i> spp.), Lamb (<i>Bidens</i> spp.), Lal Fulnu (<i>Lantana</i> spp) and Gajar ghass (<i>Parthenium</i> spp.) and other weeds in Crops & Grasslands?
	Chemical weed control and Health Hazards
	How to use organic and inorganic mulches for weed management? (Optional if not covered under 1-3 topics)
(6) Organic Farming and Certification Processes (Organic fertilization application).	Organic farming prospects in HP and processes under NPOP
	Guidelines for organic certification of field and vegetable crops.
	- Formulations and Use of organic manures and pesticides in agriculture.
	- List of organic manures and pesticides
	- Benefit and cost of major crops
- Constraints (merits/demerits)	
	Nutritional management / budgeting in vegetable crops under organic farming.
	How to manage marketing of organic produce and products.
(7) Post -harvest techniques	Pre and Post harvest management of vegetables for quality produces and high income
	Novel techniques for enhancing shelf life of vegetables
	Post-harvest values addition techniques of surplus vegetables for additional income generation
	Improved packaging and marketing strategies for important vegetable crops
(8) Marketing strategies to overcome marketing problems	Preparation of sales / Business plan
	Promotion of direct sales and other channels for enhancing farmers income
	Market oriented cultivation and farmers organization in marketing
	Experience sharing with progressive farmers doing marketing of vegetables
(9) Promotion, strengthening, and management of SHG / FGs and Working cluster	Importance and formation of groups
	Livelihood activities for SHGs /FGs
	Formation of clusters and Federation at Block/ distt level.
	Record keeping for group products
(10) Innovative techniques	Scope and importance of innovative techniques in enhancing vegetable production
	Training, pruning, staking and cutting techniques in open and protected cultivation of high value vegetable crops
	Use of different organic and inorganic mulching materials in enhancing crop production
	Grafting techniques and seedling raising through cuttings in important vegetable crops
(11) Training on planning, implementation, monitoring and evaluation	Scope and importance of planning, monitoring and evaluation in Agriculture
	Concept of crop diversification and procedure for promotion of crop diversification using PDCA cycle
	Preparation of crop diversification Plan (ADP and EATP)
	Monitoring and evaluation of crop diversification plan
(12) Farm mechanization	Lecture <ul style="list-style-type: none"> 1. Introduction and operation of small machinery for tillage & sowing. 2. Operation, maintenance and safety of agricultural machinery in different operations. 3. Economics of farm machinery
	Practice in field Using farm machinery and equipment subsidized by HPCDP, practices as well as maintenance work will be conducted.

Training Subjects	Modules
Stage 2	
(1) Water management and O&M	O&M of irrigation facilities, MIS
(2) Protected cultivation of vegetables	Protected cultivation / poly house / high value crops and exotic vegetables
	Soil less cultivation of vegetables
(3) Farming practices for common vegetables	Nursery raising & diseases management of vegetables
	Fertilizer management in vegetables
	Motivational techniques for adopting new agri. Techniques
	Crop management practices like line sowing, irrigation, weed management
	Hybrid/ good quality seeds & pesticides recommended for vegetable crops.
	Field preparation before planting of crops to avoid water stagnation
	Farming practices of vegetables
	Proper varieties
(4) Farming practices for exotic vegetables	Exotic vegetable production
(5) Nutrient management in vegetables and farming Practices for fodder crops	Identification of nutrient deficiency symptoms, management of soil health
(6) Post-harvest value addition, processing techniques and marketing of vegetables	Post-harvest and processing techniques such as Storage structures, skills, etc.
(7) Natural farming for vegetables	Organic farming / natural farming / SPNF techniques, including mixed / inter cropping
(8) Management of Crop Plan and Crop Calendar for Vegetables	Minimizing cost of production in vegetables potato, Cole crops, Onion, garlic, tomato, brinjal
	Crop diversification towards Vegetable crops
(9) Coordination & Management of FPO and SHEP Approach	Coordination & management of SHGs/ FGs and Record keeping for SHG, including formation of groups
(10) Farm Mechanization	O&M of farm machinery / Farm Mechanization
	New facilities, including Solar fencing, solar pump, grafting robot, etc.
(11) Training on PDCA & preparation of 5-year CD plan	PDCA and Time & stress management

04. Under Output-2 and Output-3 of JICA TCP, for the training of Extension officers of DOA and PMU, field activities were arranged on the farmers' fields. The main focus of these activities was capacity building of EOs and strengthening their knowledge and experience through regular visiting and practically working in these trials.
05. The mechanism for sharing of training materials and learning with other EOs of DOA & PMU was discussed with the DCs Committee members. It is expected that extension officers who participate in the trainings should transfer technical knowledge as well as skills to other extension officers. Further it is instructed that all training materials belong to the office, and space for keeping them should be arranged.
06. In terms of the above activities, it is strongly proposed that relevant extension officers should try to share their experience through regular meetings such as monthly or weekly meetings in their offices. JICA TCP monitored the situation of technical transfer and provided proper comments about the important points of extension techniques to be improved.

07. Monitoring visits for extension activities were conducted and the results are summarized as follows:

No.	Constraints	Countermeasures
1	Non preparation of Action Plan	Before arranging any extension activity, Action plan clarifying Purpose of the activity, outputs to be expected and activity (ies) to be done should be prepared.
2	Lack of interest by the farmers	Extension activity should be based on the needs of the farmers and suitable to the area. Interested / practicing farmers be given top priority.
3	Non supply of tips/ key points	Simple handouts in Hindi highlighting key points should be provided to the farmers for their use during crop season.
4	Emphasis on general points (POP)	Practices to be proposed should be highlighted in details for easy understanding of farmers.
5	No arrangement for practice session	Activity should be demonstrated in farmer's field, and they should be involved to do the practice for more clarity.
6	Dominance of part time farmers	Whole time Progressive farmer following good practices should be involved to share his experience and success points.
7	Lack of monitoring of progress of activity	Follow up visit schedule of Extension Officer should be shared to monitor the progress and support the farmers at critical stages
8	Non keeping of crop record	Farmers be requested to maintain simple record of main event/ outputs to compare the profit loss of the activity.
9	Support for input information / supply	Necessary support to farmers for arranging inputs, crop production practices and marketing of surplus should be provided.
10	Only Production oriented extension activities	Progressive farmers having marketable surplus should be supported to have linkages with Potential buyers and producing the crop as per buyer's demand,
11	Focus on skills development.	To have impact, General awareness extension activities should be delinked from focused activities. EV / interaction with advance farmers should be arranged periodically.
12	Less time to visit farmers' fields	EOs are mostly busy in supplying of farm inputs i.e. seeds, agro-chemicals, implements and machines all the 7 days as they are to keep the Sales Centre open everyday. At least 3 days in a week should be fixed for extension activities in the Fields
13	Lack of transportation	No local transport facility has been provided to the EOs and they are to visit the fields using public/ private bus facility which is time consuming and not convenient. Transport allowance to use their own vehicles (car/ motor bikes) should be provided.
14	Lack of technical, operational guidelines	EOs are provided only scheme implementation instructions Technical operational guidelines for different extension activities should be provided
15	Lack of technical material in the Sales Centres	As number of farmers are visiting Sales Centres so technical material like Charts, instructions, manuals, pamphlets, etc. should be kept in the Sales centres for discussion and reference of the farmers
16	On field extension activities through practice	Extension activities like trainings, demonstrations should be arranged on farmers' fields by arranging practice session instead of verbal discussion.

08. To monitor and evaluate progress and achievement of extension activities, JICA TCP arranged Questionnaire Survey by making use of smart phone application “WhatsApp”. This survey was based on questions with multiple choice answer given in the WhatsApp. The question was shared with 639 related extension staff of 5 target districts as well as PMU, and 229 extension officers replied. The results of the survey are shown in section 2.2.6 and 2.2.7 in Chapter 2.

Activities to Achieve Output 2: Through Activities in Pilot Areas, Packages of Techniques to Promote Crop Diversification Are Compiled

09. Pilot area and activities conducted in Stage 1 and Stage 2 are shown as follows:

No.	BPMU	Pilot Area (Sub-project)	Pilot Activity
Stage 1			
1.	Hamirpur	Chelleli	Off-season vegetable cultivation and nursery production
2.	Dehra	Gela Kuhl	Nursery production and off-season vegetable cultivation
3.	Baijnath	Gabli Kuhl	Off-season nursery production and high-value crop cultivation
4.	Sarkaghat	Sandral	Exotic vegetables cultivation and local specialty production
5.	Mandi	Jail Khad Dhangadhar	Off-season vegetable cultivation and local specialty production
6.	Nurpur	Johar Dariya	Improved nursery production
7.	Una	Badhera Lower	Exotic and high-value vegetable cultivation and nursery production
8.	Bilaspur	Balhseena	Off-season vegetable cultivation and nursery production
Stage 2			
1.1	DOA Hamirpur	Majhog Sultani	Off-season and exotic vegetable cultivation
1.2	DOA Hamirpur	Dudhana	Off-season vegetable cultivation
2.	Dehra	Dughiari	Exotic vegetables cultivation
3.	Baijnath	Hartara	Healthy/Commercial nursery production and local specialty production
4.	Sarkaghat	Dhamella	Off-season vegetable cultivation
5.	Mandi	Kataula	Exotic vegetable cultivation
6.	Nurpur	Minjh Gram	Off-season vegetable cultivation
7.	Una	Sathru	Off-season vegetable cultivation and nursery production
8.	Bilaspur	Jhamradiyan	Off-season vegetable cultivation

10. Based on pilot activities, 5 packages of techniques are prepared in picture story style so that extension officers easily use them their extension activity at site.

- Nursery Production
- Fertilizer Application
- Protected Cultivation
- Vegetative Propagation (cutting and grafting)
- Local Specialty Production

Activities to achieve Output 3: Effective marketing activities for farm produce are identified

11. Effective marketing activities to be operated by DOA are shown as follows:

Core Activity (Market-oriented production)

Target area: Sub-projects at mid hill area

A. Promotion of vegetable production aim to sell at time of higher-price

For Maize+ Wheat field with LIS

A-1: Promotion of Cucumber & Early cauliflower cultivation by use of mulching sheet & drip irrigation

For Paddy rice + Wheat field with FIS

A-2: Development of Cucumber & Early cauliflower cultivation method in paddy field

A-3: Promotion of Cucumber & Early cauliflower cultivation in paddy field

B. Promotion of market-oriented production planning by farmers

For farmers who newly participated in the Activity-A-1/A-3

B-1: Support on production planning by farmers who are newly-participated in Activity-A.

For poly-house owners

B-2: Support on production planning by farmers who own poly-house

B-3: Introduction of appropriate technique for Soil Disinfestation inside poly house

On-demand Activity (Changing a method of selling)

Target area: All sub-projects

C. Promotion of direct sales to local consumers/retailers

- Support the installation of collection point

- Fact-finding survey (project formulation) and Assistance on production to target a particular customer

D. Promotion of collective shipment to APMC market yards

Support for linkage building with buyers

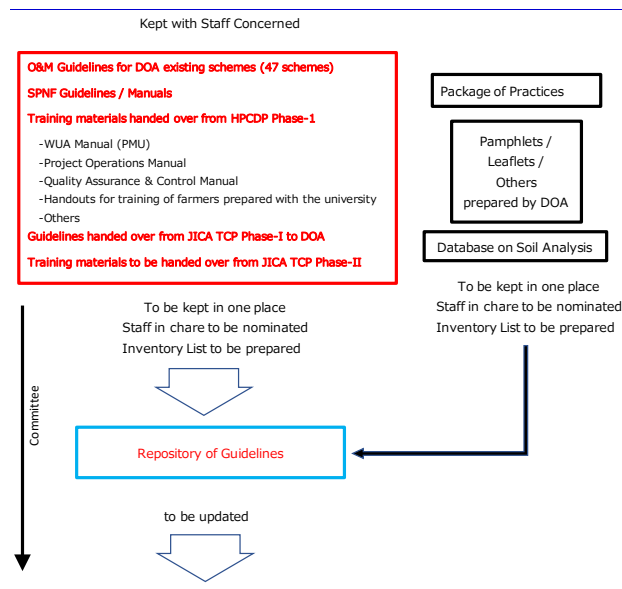
Activities to achieve Output-4: Sustainable plans of DOA to promote crop diversification in the respective 5 districts are formulated based on achievements of the Project

12. Annual crop diversification plan, which is consists of annual production plan (APP) and extension plan (AEP), is prepared based on priority area in each district so that both plans cover one area and extension activity for promotion of crop diversification is conducted more effectively in the area.

13. Through activities in Outputs-1, 2, 3, food diversification and water management/ O&M, JICA TCP prepared training and extension materials. These materials should be included for update of the Guidelines. The materials are as shown below:

- 1) Output-1: - PPTs and PDFs for training materials in TCP Phase-2
- 2) Output-2: - Picture story (5 categories) (Hindi)
- Booklet on Exotic vegetable cultivation
- Booklet on 8 Gems for Your Good Health- immunity boost and Chronic Diseases Prevention
- Booklet on Exotic vegetable cultivation
- Charts for insect pests and diseases
- 3) Output-3 - Brief explanation paper
- Materials for Guidelines
- 4) Food Diversification - Flipcharts (7 crops) (English and Hindi)
- Healthy! Tasty! Recipes for 70 recipes (English and Hindi)
- Audio visual aids (2 kinds)
- Step by step pictorial instructions for technical recipes (2 kinds)

- Standees (English and Hindi)
 - Handouts: Soya Delight (English)
 - PPTs for FD: 5min. / 10min. / 15min. (English)
- 5) Water Management
- Check List for MIS, motor pump, and solar pump system
 - Manual of MIS installation
 - Manual for calculation of water requirement
- 6) Others
- Field Notebook for EOs in 2019
 - Field Notebook for EOs in 2020
- 7) Training materials prepared by JICA/CSKHPKV
- Organic Certification
 - Weed Management
 - Micro Irrigation system
 - Exotic Vegetables
14. New committee for updating/preparing the standard guidelines keeping in view the existing different guidelines under different schemes was established. Based on the discussion in Committee meetings, it is expected that the Committee works for updating guidelines as following procedure:



15. The workshop to share the achievement of JICA TCP was held in October as follows:

Date	19th October 2022	
Place	SAMETI, Shimla	
Objective	To share information on TCP activities by TCP Experts Team for further replication.	
Participant	30 stakeholders of the Project	
Output	Awareness of participants about TCP Phase-II activities will be increased.	
Expected Outcomes	1) By sharing of learnings & training materials with other extension officers of DOA and PMU, the awareness will be increased. 2) Learnings and training materials will be applied in extension activities for farmers. 3) Adoption of practices / techniques by the farmers in their fields.	
Time Schedule		
Time	Subjects	Speaker
10:15 -10:20	Briefing about JICA-TCP phase -II	JICA-TCP
10:20 -10:50	Session 1- Activities and results under output-1	JICA-TCP
10:50 -11:20	Session 2- Activities and results under output-2	JICA-TCP (on-line)
11:20 -11:50	Session 3- Activities and results under output-3	JICA-TCP (on-line)

11:50 -12:00	Short Break	
12:00 - 12:20	Session 4- Activities and results under output-4	JICA-TCP
12:20 - 12:40	Session-5Crop diversification through Food diversification and Nutrition	JICA-TCP (on-line)
12:40 - 13:10	Session 6-Operation & management of irrigation systems	JICA-TCP (on-line)
13:10- 13:50	Session7-Dissemination of existing guidelines and training materials	JICA-TCP
13:50 -	Lunch	

16. 5-year plan is prepared based on RKVY since this is one of the limited DOA schemes related to vegetable cultivation. Preparation of 5-year Plan for Crop Diversification in Each District under RKVY is shown as follows:

PHASE II PROJECT FOR CROP DIVERSIFICATION
IN HIMACHAL PRADESH
PROJECT COMPLETION REPORT

District	Block	Rabi 2021/22						Kharif 2022					
		No. of Areas	Form 1	Form 2	Form 3	Form 4	Map	No. of Areas	Form 1	Form 2	Form 3	Form 4	Map
Bilaspur	1. Sadar	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
	2. Swarghat	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
	3. Jhandutta	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
	4. Ghumarwin	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
Hamirpur	1. Sujanpurr	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
	2. Hamirpur	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
	3. Bhoranj	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
	4. Bijhari	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
	5. Nadaun	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
	6. Bamsan	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
Kangra	1. Panchrukhi	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
	2. Dharamshala	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
	3. Baijnath	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
	4. Nagrota Bagwan	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
	5. Fatehpur	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
	6. Dehra	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
	7. Indora	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
	8. Nagrota Surian	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
	9. Nurpur	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
	10. Lambagaon	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
	11. Kangra	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
	12. Bhawarna	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
	13. Bhedumahadev	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
	14. Pragpur	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
	15. Rait	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
Mandi	1. Balh	2	OK	OK	OK	OK	OK	-	-	-	-	-	-
	2. Drang	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
	3. Chauntra	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
	4. Dharampur	2	OK	OK	OK	OK	OK	-	-	-	-	-	-
	5. Gohar	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
	6. Gopalpur	2	OK	OK	OK	OK	OK	-	-	-	-	-	-
	7. Karsog	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK

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District	Block	Rabi 2021/22						Kharif 2022					
		No. of Areas	Form 1	Form 2	Form 3	Form 4	Map	No. of Areas	Form 1	Form 2	Form 3	Form 4	Map
	8. Sadar	2	OK	OK	OK	OK	OK	-	-	-	-	-	-
	9. Seraj	2	OK	OK	OK	OK	OK	-	-	-	-	-	-
	10. Sunder Nagar	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
	11.	-	-	-	-	-	-	-	-	-	-	-	-
Una	1. Amb	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
	2. Bangana	2	OK	OK	OK	OK	OK	-	-	-	-	-	-
	3. Gagret	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
	4. Haroli	2	OK	OK	OK	OK	OK	-	-	-	-	-	-
	5. Una	2	OK	OK	OK	OK	OK	-	-	-	-	-	-

Activities for Food Diversification (Gender/Social Inclusion/ Livelihood Improvement)

17. The purpose of this activity is to diversify types of foods and ways of consuming foods through awareness raising related to food diversification, and eventually to help promotion of crop diversification in Himachal Pradesh.

18. Activities and types of training conducted under food diversification are shown as follows:

Types of training	Activities	
	1) Promotion of underutilized/unknown crops	Kitchen garden trials
Cultivation of Iron-rich Leafy Vegetables in Kitchen Gardens (practice)	-	Cultivation of green leafy vegetables with higher nutritional values (for example, leafy vegetables rich in iron such as amaranths leaves, Swiss chard and kale)
Healthy! Tasty! Cooking (practice)	Cooking of underutilized/unknown crops (beetroots, soybean, broccoli, etc.)	Cooking of the vegetables introduced in kitchen gardens
Healthy! Tasty! Processing (practice)	Soybean processing Preparation of dried vegetables/vegetable powders	-
Cooking competition	Competition for healthy tasty recipes suggested by target farmers	

19. Training materials used under food diversification are shown as follows:

- Flipchart (contents are nutrition values of vegetables, simple cultivation methods in kitchen gardens, purposes of processing and postharvest handling and consumption for higher nutrition intake)
- Healthy! Tasty! Recipes (to promote consumption of newly introduced vegetables by farmers themselves)
- Online recipe sharing service: “Cookpad” (for effective and sustainable extension of the recipes through smartphones)

20. Activities conducted under food diversification were compiled as extension guidelines after sorting out extendable practices. The extension guidelines for the food diversification activities have been then compiled separately, including the materials for extension officers such as flipcharts and Healthy! Tasty! Recipes.

Activities for Water Management and O&M

21. The purpose of this activity is to confirm current situation of water management and irrigation facility in HP and contribute to crop diversification through conducting proper O&M.

22. Procedure of this activity is shown as follows:

- Step 1: To Grasp Current Situations on WM
- Step 2: To Raise Issues
- Step 3: To Train Extension Officers including monitoring of EOs training
- Step 4: To Update the Guidelines for WM.
- Step 5: To Share the Guidelines with PMU, DOA, and SDSCO.

23. Training conducted to extension officer is shown as follows:

No.	Contents of Trainings to EOs	Programs
1	Micro Irrigation System	<ul style="list-style-type: none"> • Demonstration Training to EOs in some Subprojects • Support of EOs with joining of their training to KVAs and adding supplemental comments for their instruction • Preparation of support tool such as checklist, monitoring sheet
2	Motor Pump	<ul style="list-style-type: none"> • Demonstration Training in some Subprojects • Support of EOs with joining of their training to KVAs and adding supplemental comments for their instruction • Preparation of Support tool such as checklist, Monitoring Sheet
3	Solar Pump	<ul style="list-style-type: none"> • Preparation of Support tool such as checklist, Monitoring Sheet

III. Project Achievement

24. Achievement of Overall Goal, Purposes and Outputs are shown as follows:

Indicator	Status
Project Overall Goal	
1. 15% of area under vegetable cultivation and quantity produced in the 5 districts are increased (against baseline data)	Predicted to be achieved conditionally
2. 18% of quantity of farm produce marketed within and outside the state is increased (against baseline data)	Achieved
Project Purposes	
1. Extension programmes / activities for crop diversification implemented by DOA are improved in the sub-project area under the ODA loan project (8% of trainings to farmers targeted in the annual plans are conducted)	Substantially achieved
2. Number of farmers practicing vegetable cultivation in the sub-project area under the ODA loan project is increased by 20%	Achieved
Project Outputs	
1. Technical capacity of DOA/PMU staff to promote crop diversification practices is strengthened	
1.1 Number of techniques provided to farmers by core extension officers (CEOs) is increased	Achieved
1.2 Number of techniques provided to farmers by other DOA/PMU staff are increased	Achieved
1.3 Satisfaction degree of farmers on extension services provided by DOA/PMU is improved	Achieved
2. Through activities in pilot areas, packages of techniques to promote crop diversification are compiled	
2.1 5 packages of standardized techniques to promote crop diversification are prepared	Achieved
2.2 Indicators of crop diversification (i.e. area under vegetables production and income) are increased in the pilot areas	Achieved
3. Effective marketing activities for farm produce are identified	
3.1 Recommendation for effective activities to improve marketing of farm produce are made	Achieved
4. Sustainable plans of DOA to promote crop diversification in the respective 5 districts are formulated on achievement of the project	
4.1 Five-year-action plans in the respective 5 districts after completion of the project are formulated and approved by DOA	Achieved
4.2 Crop diversification guidelines and training materials are refined	Substantiall achieved

IV. Challenges, Ideas and Future Plan for Project Management

25. Challenges, Ideas and Future Plan for Project Management are shown as follows:

Challenges	Ideas
Challenges for Project Overall	
• Transfer of extension officers was frequently happened	• JICA TCP requested DOA to employ additional extension officers

Challenges	Ideas
<ul style="list-style-type: none"> • There has been vacant of extension officers 	<ul style="list-style-type: none"> • As of October 2022, no additional employment to be expected
<ul style="list-style-type: none"> • There was no description of marketing, food diversification and water management/O&M in job profile of extension officers 	<ul style="list-style-type: none"> • JICA TCP requested DOA to add the description to job profile • As of October 2022, the additional description was approved by HP state government
Output-1: Technical Capacity of DOA/PMU Staff to Promote Crop Diversification Practices is Strengthened	
<ul style="list-style-type: none"> • Information was not shared among extension officers frequently 	<ul style="list-style-type: none"> • JICA TCP proposed to share information at regular meetings like monthly or weekly meeting
<ul style="list-style-type: none"> • PDCA was not considered when extension plan was prepared 	<ul style="list-style-type: none"> • JICA TCP proposed to prepare action plan for extension officers that PDCA was clear
Output-2: Through activities in Pilot Areas, Package of Techniques to Promote Crop Diversification are Compiled	
<ul style="list-style-type: none"> • Pilot area was selected by C/P without consent with farmer's group in Stage 1 	<ul style="list-style-type: none"> • In Stage 2, site visiting was conducted for selection of pilot area and focused on close communication and opinion exchange
<ul style="list-style-type: none"> • There were lack of knowledge and experience of extension officers and farmers in terms of cultivation technique and site activity 	<ul style="list-style-type: none"> • Training in advance was conducted by using easily understandable materials and then demonstration at site was conducted
Output-3: Effective marketing activities for farm produce are identified	
<ul style="list-style-type: none"> • There was lack of knowledge of farmers in terms of pest and disease control 	<ul style="list-style-type: none"> • JICA TCP requested C/P to 1) give direction to farmers that they should conduct proper pest and disease control under recommended way, 2) assist farmers to obtain chemicals and 3) conduct basic training on how to use chemicals safely and JICA TCP conducted additional direction at sites if necessary
<ul style="list-style-type: none"> • There was difficulty in terms of technical trial in farmer's field 	<ul style="list-style-type: none"> • It may be better to request a cooperation to university or agricultural research institute to implement the field test in their research field
Output-4: Sustainable Plans of DOA to Promote Crop Diversification in the Respective 5 Districts are Formulated based on Achievements of the Projects	
<ul style="list-style-type: none"> • There were lack of resources to promote crop diversification 	<ul style="list-style-type: none"> • Budget to train extension officers and to conduct extension activity at site and securing transportation to visit site are required
<ul style="list-style-type: none"> • Guidelines and extension materials to improve technical capacity are not maintained well 	<ul style="list-style-type: none"> • New committee for updating guidelines plays important role in terms of maintenance those documents
Food Diversification (Food and Nutrition / Livelihood Improvement / Gender / Social Inclusion)	
<ul style="list-style-type: none"> • There was concern on adding nutrition improvement component to agricultural project 	<ul style="list-style-type: none"> • To make it blended in easily, this activity was conducted as enlightenment activity
<ul style="list-style-type: none"> • There was concern that self-consumption for nutrition improvement conflicted to income increase targeted by JICA TCP 	<ul style="list-style-type: none"> • Self-consumption promoted by JICA TCP is adding small amount of vegetable produced by farmers to their daily meals and it leads to food diversification, daily nutrition improvement and also leads to promotion of selling and buying various vegetable. Based on the concept above, JICA TCP continuously explained it is possible to coexist self-consumption and income increase
<ul style="list-style-type: none"> • Due to COVID-19 effect, demand for beets powder from shops was decreased and unsold beets powder was increased 	<ul style="list-style-type: none"> • To keep farmer's motivation, JICA TCP developed new recipe for those who live in city and assisted farmers for selling beets powder as individual consumption at HAVI shop
Water Management / O&M	
<ul style="list-style-type: none"> • In job profile of extension officers, there was description only for construction of irrigation facility and distribution of materials and no description for monitoring and training 	<ul style="list-style-type: none"> • JICA TCP requested DOA to add the description to job profile
<ul style="list-style-type: none"> • Due to lack of knowledge and experience, 	<ul style="list-style-type: none"> • JICA TCP prepared checklist that extension officers can easily

Challenges	Ideas
training for farmers were not conducted by extension officers frequently	and effectively conduct extension activity and finalized it based on trial for the checklist with them

V. Suggestion to Accomplishment of Overall Goal

26. Suggestion to Accomplishment of Overall Goal is shown as follows:

Suggestion in general	Suggestion from JICA TCP
<ul style="list-style-type: none"> • Conducting extension activity on vegetable cultivation at site by DOA extension officers 	<ul style="list-style-type: none"> • Conducting extension activity on vegetable cultivation at sales center by DOA extension officers by using training materials prepared by JICA TCP when they distribute seeds under RKVY
<ul style="list-style-type: none"> • Implementing DOA new scheme on vegetable cultivation and its improvement 	<ul style="list-style-type: none"> • Considering implementation of the scheme as project for promotion of crop diversification and preparing 5-year plan based on extension activity after the second year • Based on the 5-year plan, monitoring the continuation of vegetable cultivation in the farmer's clusters that have already completed support after the second year of implementation of this scheme
<ul style="list-style-type: none"> • Strengthening cooperation between DOA and HPCDP-2 	<ul style="list-style-type: none"> • DOA should strongly recognize that sub-projects in HPCDP-2 are also DOA's extension target sites • Sharing extension schedule at sites by PMU extension officer with DOA and accompanied with DOA extension officer • Holding regular meetings between DOA and PMU to report and discuss their progress and share opinion and needs from farmers
<ul style="list-style-type: none"> • Sharing information on agricultural marketing with farmers and conducting necessary technical training 	<ul style="list-style-type: none"> • Establishment of new department in DOA that is in charge of offering information related to marketing • Developing cropping pattern based on marketing information like market price and proposing technical solution to extension officers by DOA
<ul style="list-style-type: none"> • Improvement in O&M for irrigation facility 	<ul style="list-style-type: none"> • Regarding to O&M for irrigation facility after handing over, conducting monitoring and necessary direction to KVA by using checklist prepared by JICA TCP by DOA and SDSCO extension officers

**PHASE II PROJECT
FOR
CROP DIVERSIFICATION IN HIMACHAL PRADESH**

STAGE-2

PROJECT COMPLETION REPORT

Project Location Map
Photograph Information
Executive Summary
Table of Contents
Abbreviations and Local Words

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Abbreviations

ACS	Additional Chief Secretary
ADA	Additional Director Agricultural
ADO	Agricultural Development Officer
ADP	Agriculture Development Plan
AE	Assistant Engineer
AEO	Agricultural Extension Officer
AEZ	Agro-ecological Zone or Zoning
A/P	Action Plan
APMC	Agricultural Produce Market Committee
ASCO	Assistant Soil Conservation Officer
ATM	Assistant Technology Manager
ATMA	Agriculture Technology Management Agency
BDO	Block Development Officer
BPM	Block Project Manager
BPMU	Block Project Management Unit
BTM	Block Technology Manager
CA	Commission Agent
CCA	Cultivable/Cultivable Command Area
CDP	Crop Diversification Plan
CEO	Core Extension Officers
CSKHPKV	Chaudhary Sarwan Kumar Himachal Pradesh Krishi Vishya Vidyalaya
DA	Director of Agriculture
DAO	District Agriculture Officer
DAP	District Agriculture Plan
DC	District Coordinator
DDA, DD	Deputy Director of Agriculture
DE	Divisional Engineer
DOA	Department of Agriculture of Himachal Pradesh State
DPM	District Project Manager
DPMU	District Project Management Unit
FIS	Flow Irrigation Scheme
FTC	Farmers Training Centre
GDP	Gross Domestic Production
GIS	Geographic Information System
GOHP	Government of Himachal Pradesh
GOI	Government of India
GOJ	Government of Japan
GSDP	Gross State Domestic Product
Himfed	Himachal Pradesh State Cooperative Marketing and Consumer's Federation
HP	State of Himachal Pradesh
HPCDP	Himachal Pradesh Crop Diversification Promotion Project, the ODA Loan Project
HPMC	Himachal Pradesh Marketing Committee
HPSAMB	Himachal Pradesh State Agriculture Marketing Board
IPH	Irrigation and Public Health Department of Himachal Pradesh State
IPM	Integrated Pest Management
ICAR	India Council of Agricultural Research
JCC	Joint Coordinating Committee

JE	Junior Engineer
JDA	Joint Director of Agriculture
JICA	Japan International Cooperation Agency
LIS	Lift Irrigation Scheme
MIS	Micro Irrigation System/Market Information System
M/M, MM	Man Month or Minutes of Meeting
MOA	Ministry of Agriculture of Government of India
NABARD	National Bank for Agriculture and Rural Development
NGO	Non-Governmental Organization
O&M	Operation and Maintenance
OBC	Other Backward Caste
ODA	Official Development Assistance by Government
PD	Project Director
PDCA	Plan – Do – Check – Act
PDM	Project Design Matrix
PMU	Project Management Unit
PO	Plan of Operations
POP	Package of Practices
PR	Public Relationship
R/D	Record of Discussions
RIDF	Rural Infrastructure Development Fund
RMY	Regulated Market Yard
SAMETI	State Agricultural Management and Extension Training Institute
SAP	State Agricultural Plan
SC / ST	Scheduled Caste / Scheduled Tribe
SDSCO	Sub-Divisional Soil Conservation Officer
SHG	Self-help Group
SMS	Subject Matter Specialist
SMY	Sub-Market Yard
SPMU	State Project Management Unit
SPNF	Subash Palekar Natural Farming
SWC	Soil and Water Conservation
TCP	Technical Cooperation Project
TOT	Training of Trainers
WUA	Water Users' Association
ZBNF	Zero Budget Natural Farming

Local Words

Crore	10 Million (10,000,000)
Kanal	Unit of Area, Approximately 400 m ²
Zaid	Inter cropping season between Kharif and Rabi
Kharif	Southwest monsoon cropping season (June to September)
KVK	Krishi Vigyan Kendras (Agriculture Science Centers)
KVA	Krishak Vikaas Association (Water Users' Association / Farmers' Group)
Lakh, Lac	100 Thousand (100,000)
Quintal, Qt	100 kg
Rabi	Winter cropping season (October to May)
RKVY	Rashtriya Krishi Vikas Yojana

*PHASE II PROJECT FOR CROP DIVERSIFICATION
IN HIMACHAL PRADESH
PROJECT COMPLETION REPORT*

CHAPTER 1 INTRODUCTION

1.1 Authority

This is the Project Completion Report in Phase II Project for Crop Diversification in Himachal Pradesh, based on the Record of Discussion (refer to Attachment-1.1.1) concluded between the Japan International Cooperation Agency (JICA) and the authorities concerned of the Government of India (GoI) through the State Government of Himachal Pradesh (GoHP) on July 22, 2016.

1.2 Background of the Project

The State of Himachal Pradesh (hereinafter referred to as HP) is located at the foothills of the Western Himalayas, with an area of 56,000 km², and a population of approximately 6.8 million. Nearly 60% of working population in the HP is engaged in agriculture sector. Due to geographical background HP belongs to the hilly terrain area and more than 80% of the farmers are marginal and small landholders with an average area of less than 2.0 ha. Also, around 15% of the cultivable area has irrigation facilities, and the rest of the area has to depend on rain-fed cultivation. Therefore, the majority of the farmers in the state remain engaged in traditional cultivation of food grains such as rice, wheat, maize etc., and their production is only marginally enough for home consumption.

The state has a considerable potential for vegetable production during the period of off season, with an advantage of cool climate compared to other parts of the county, as well as the geographical proximity to the large cities such as Delhi, Chandigarh, Ludhiana etc. This would enable the farmers to produce off-season vegetables and fruits, which have a large market in the urban cities with better prices. In order to boost the agricultural development and to enhance the farm income in the rural areas, it is important to increase the productivity of the existing cultivated area, through shifting from self-subsistence food grain cultivation to diversified agriculture, by adopting cash crops such as vegetables which are suitable to hilly and highland areas.

Official Development Assistance (ODA) Loan Project titled “Himachal Pradesh Crop Diversification Promotion Project Phase I (hereinafter referred to as HPCDP-1)” is under implementation by GoHP with financial assistance of JICA in the 5 potential districts (Hamirpur, Mandi, Kangra, Una, and Bilaspur) of the state from 2011. Technical Cooperation Project for Crop Diversification in Himachal Pradesh (hereinafter referred to as “JICA TCP Phase I”) focusing on 1) development of the Crop Diversification Model in the pilot area, and 2) capacity development of the extension officers has been implemented under technical assistance of JICA from 2011 to 2015 for supporting smooth implementation of HPCDP-1.

In order to boost agricultural income due to crop diversification, taking advantage of features and potential of the HP, (i) improvement of productivity due to introduction of new skill and differentiation of the HP vegetables from other states vegetables and (ii) adding high value of the HP vegetables by means of support of marketing and sales are definitely required. After the successful completion of JICA TCP Phase I, GoHP through the GOI requested the GOJ for further technical assistance as Phase II Project for Crop Diversification in Himachal Pradesh (hereinafter referred to as “the Project or JICA TCP”) for expansion of crop diversification in the 5 districts of the state along with the HPCDP-1. The Project mainly focuses

on 1) enhancement of crop diversification model developed under Phase I, and II) organizational capacity development of DOA. The project was implemented in two stages, with Stage-1 running from February 2017 to July 2019 and Stage-2 from August 2019 to November 2022. Stage-2 was supposed to be ended in February 2022, however, due to the impact of COVID-19, Japanese experts were unable to travel to India and conduct technology transfer at site in HP. Thus, a revised contract was signed with JICA and the second stage was extended to November 2022.

HPCDP-1, which was started in February 2011, was completed in June 2021, achieving its original objective. Himachal Pradesh Crop Diversification Promotion Project Phase II (HPCDP-2) was started in July 2021, and activities related to crop diversification in all 12 districts of HP State, including areas not covered by HPCDP-1, have been conducting. Although HPCDP-2 is not a direct C/P of the project, both projects are cooperating by participating in each other's activities under the same objective as promoting crop diversification in HP.

1.3 Outline of the Project

The overall goal, project purpose, outputs and activities are shown as follows (refer to Attachments-1.1.1 and Attachment-1.3.1):

Overall Goal:			
Crop diversification according to Agro-Ecological Situations is promoted in the 5 districts of Himachal Pradesh.			
↑			
Project Purpose:			
Organizational capacity of DOA to promote crop diversification in the 5 districts is strengthened.			
↑			
Output:			
1: Technical capacity of DOA/PMU staff to promote crop diversification practices is strengthened.	2: Through activities in pilot areas, packages of techniques to promote crop diversification are compiled.	3: Effective marketing activities for farm produce are identified.	4: Sustainable plans of DOA to promote crop diversification in the respective 5 districts are formulated based on achievements of the Project.
↑	↑	↑	↑
Activity:			
1.1 Collect information and analyze technical capacity of DOA/PMU staff at Block level to support crop diversification practices. 1.2 Conduct training needs assessment based on examination of the contents of existing trainings. 1.3 Based on the results of activity 1.1 and 1.2, make training plans on respective aspects of crop diversification practice. 1.4 Conduct trainings for DOA/PMU staff at Block level (CEOs) according to the annual	2.1 Select pilot site one in each Block Project Management Unit (BPMU) every two years based on farmers' proposals and criteria developed by PMU/DOA (state, district). 2.2 Support BPMU/DOA staff (Block) and farming communities in preparing plans of pilot activities for crop diversification based on the market demand. 2.3 Support BPMU/DOA (Block) and farming communities in implementing selected pilot activities at the respective sites.	3.1 Collect information and analyze the current situation and issues regarding marketing of farm produce in the target areas and make plans for promotion. 3.2 List up candidate activities to promote marketing of farm produce through seminars and meetings with various stakeholders including private companies and farmers (groups). 3.3 Select higher priority activities to be supported by	4.1 Make annual plans to promote crop diversification in the 5 districts. 4.2 Conduct monitoring and evaluation of progress and achievement of Crop Diversification Plans at the respective sub-projects. 4.3 Compile evaluation results on activities carried out for Output 1, 2 and 3 at the end of each activity. 4.4 Based on the results of the evaluation, revise Crop Diversification Guidelines and training materials (prepared in Phase I) where necessary.

plans. 1.5 Support CEOs in conducting extension activities for farming communities. 1.6 Monitor transferring technologies to other DOA/PMU staff by CEOs. 1.7 Conduct monitoring and evaluation of progress and achievement of extension activities.	2.4 Conduct monitoring and evaluation of progress and achievement of pilot activities.	the Project from the list prepared. 3.4 Implement selected activities in collaboration with Agricultural Producers' Market Committee (hereinafter referred to as "APMC"). 3.5 Conduct monitoring and evaluation of progress and achievement of activities undertaken.	4.5 Hold workshops with stakeholders to share the achievement of the Project and discuss the way forward. 4.6 Make five-year action plans after the completion of the Project to promote crop diversification in the 5 districts
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Source: Record of Discussions (Attachments-1.1.1) and Project Design Matrix (Attachment-1.3.1)

Figure 1.3.1 Flow of Project Implementation

1.4 Project Sites and Targets

Project sites and beneficiary of JICA TCP are described as follows:

Project sites : 5 Target Districts (Bilaspur, Hamirpur, Kangra, Mandi and Una)

Beneficiaries : Direct target: Extension Officers in DOA/PMU

Indirect target: Farming communities (Member of Krishak Vikas Association, Self Help Group etc.) under ODA Loan Project

In addition to this, trainings for DOA extension officers was also carried out in the remaining seven Districts of HP that is Chamba, Kinaur, Kullu, Lahaul & Spiti, Shimla, Sirmour, and Solan, considering their needs and requirement.

1.5 Project Implementation Structure

1.5.1 Implementers of the Project

Responsible persons, implementers, supporters, target for activities of each output, and actors for monitoring and evaluation are shown in the R/D. Therefore, key persons are clarified, and ownership of DOA/PMU would be established. Implementers of the Project actions in the Project are elaborated in the R/D and summarized as follows:

Table 1.5.1 Output-Wise Casting for the Project Implementation

Output	Responsibility	Target	Major Implementers
1. Strengthening of technical capacity of DOA/PMU staff to promote crop diversification practices	<ul style="list-style-type: none"> ▪ DCs 	<ul style="list-style-type: none"> ▪ CEOs ▪ Other extension officers 	<ul style="list-style-type: none"> ▪ DCs ▪ CEOs ▪ JICA TCP experts
2. Compilation of packages of techniques to promote crop diversification, through activities in pilot areas,	<ul style="list-style-type: none"> ▪ DCs 	<ul style="list-style-type: none"> ▪ Farmers ▪ CEOs ▪ Other extension officers 	<ul style="list-style-type: none"> ▪ DCs ▪ Other extension officers
3. Identification of effective marketing activities for farm produce	<ul style="list-style-type: none"> ▪ APMC ▪ DCs ▪ CEOs 	<ul style="list-style-type: none"> ▪ APMC ▪ DOA ▪ CEO ▪ Other extension officers 	<ul style="list-style-type: none"> ▪ APMC ▪ DCs ▪ CEOs
4. Formulation of sustainable plans of DOA to promote crop diversification in the respective 5 districts, based on achievements of the Project.	<ul style="list-style-type: none"> ▪ DOA ▪ DCs 	<ul style="list-style-type: none"> ▪ DOA ▪ DCs 	<ul style="list-style-type: none"> ▪ DOA ▪ DCs

Note: DC= District Coordinator CEO=Core Extension Officer APMC=Agricultural Produce Marketing Committee
DOA=Department of Agriculture

Source: Arranged by JICA TCP, based on R/D

In line with implementation of activities for each output in the Project, related staff in DOA and PMUs are shown in the following tables.

Table 1.5.2 Extension Staff in DOA Offices of Target 5 Districts

Target District	Number of Blocks	DOA	PD ATMA	Extension Officers in Block Offices							Total
				SMS	ADO		AADO	AEO	BTM	ATM	
				District Coordinators		Core Extension Officers		Other Extension Officers			
Hamirpur	6	1	1	6	4	-	4	19	6	12	51
Mandi	11	1	1	10	11	-	10	62	10	22	125
Kangra	15	1	1	15	15	2	8	55	15	30	140
Bilaspur	4	1	1	3	4	1	3	21	4	8	44
Una	5	1	1	5	3	-	3	12	5	10	38
Total	41	5	5	39	37	3	28	169	40	82	408

Remark 1: DDA: Deputy Director of Agriculture, SMS : Subject Matter Specialist, ADO : Agricultural Development Officer, AADO: Assistant ADO, AEO : Agricultural Extension Officer, BTM: Block Technical Manager, ATM: Assistant Technical Manager

Remark 2: DCs (District Coordinators), CEOs (Core Extension Officers)

Source: DOA and PD ATMA offices, Hamirpur, Mandi, Kangra, Bilaspur, and Una, April 2021 (refer Attachment-1.5.1)

Table 1.5.3 Extension Staff in DPMUs and BPMUs of PMU (HPCDP)

Target District	DPMU						BPMU						Total
	DPM	SMS	ADO	AE	AO	Sub-total	BPM	ADO	AE	AEO	AO	Sub-total	
	DC	CEO					DC	CEO					
Hamirpur	1	2	-	1	-	4	1	-	1	1	2	5	9
Mandi	1	1	1	1	1	5	2	-	1	-	2	5	10
Kangra	1	2	-	1	1	5	3	1	2	-	2	8	13
Bilaspur	-	-	-	-	-	-	1	-	1	1	1	4	4
Una	-	-	-	-	-	-	1	-	1	-	1	3	3
Total	3	5	1	3	2	14	8	1	6	2	8	25	39

Remark1: DPD: Deputy Project Director, AAE: Assistant Agriculture Expert, DPM : District Project Manager, BPM : Block Project Manager, SMS : Subject Matter Specialist, ADO : Agricultural Development Officer, AE : Agricultural Expert, AEO : Agricultural Extension Officer, AO : Agricultural Officer

Remark 2: DCs (District Coordinators), CEOs (Core Extension Officers)

Source: PMU, April 2021 (refer Attachment-1.5.2)

The Project should be implemented under close cooperation with the Department of Agriculture (DOA), PMU and the TCP Team. Especially DCs (District Coordinator) are key persons for implementation of all activities of the Project and hold the success or failure of the key. For effective implementation of the Project the project organization was established as shown in the Figure1.5.1.

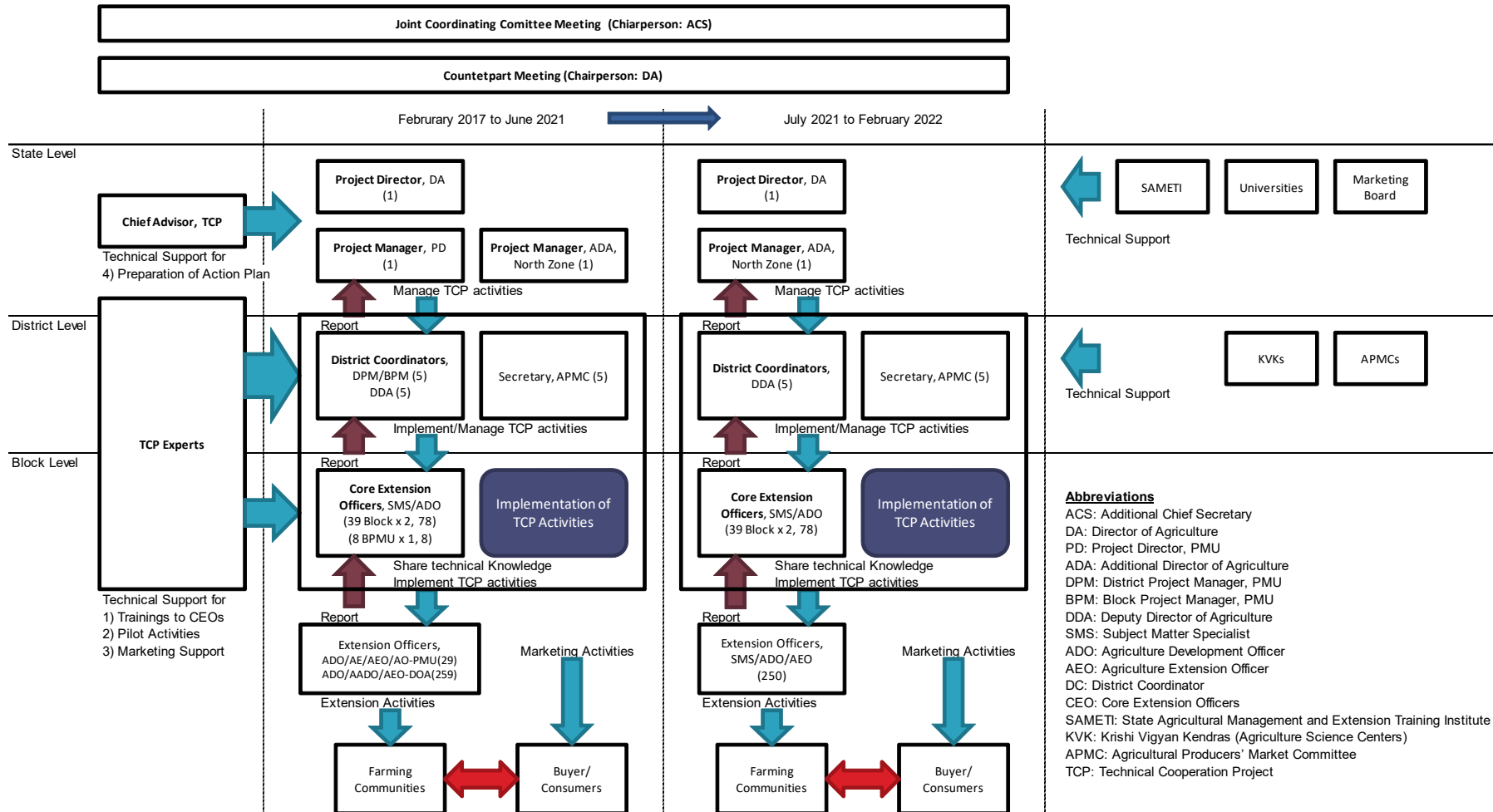


Figure 1.5.1 Implementation Structure

Source: Record of Discussion (Attachment-1.1.1)

1.5.2 Joint Coordinating Committee (JCC)

For the smooth implementation of the TCP, a Joint Coordinating Committee (JCC) is organized in accordance with the Record of Discussion of the Project. The functions of the Committee are to evaluate and decide measures on i) periodical review of the Project progress, and ii) related issues of the TCP. The JCC was organized under the chairmanship of the Secretary of Agriculture with the members from the representatives of DOA, Ministry of Agriculture (MOA), JICA, the Project Team and the other concerned agencies. The list of the members proposed for JCC is shown in the following table:

Table 1.5.4 Members of Joint Coordinating Committee

No.	Designation	Position
Indian Side		
1.	Additional Chief Secretary/Secretary (Agriculture), Govt. of HP	Chairman
2.	Director of Agriculture, HP (Project Director, TCP), Govt. of HP	Vice-Chairman
3.	Additional Director of Agriculture	Convener
4.	Project Director of ODA Loan Project cum Project Manager TCP	Convener
5.	Chief Project Advisor, PMU	Member
6.	Joint Director of Agriculture	Member
7.	Director of State Agricultural Management and Extension Training Institute (SAMETI), HP	Member
8.	Representative of Dept. of Agriculture & Cooperation, Ministry of Agriculture, GOI	Member
9.	Director Extension Education, CSK HPKV, Palampur	Member
10.	Managing Director, HP State Agricultural Marketing Board, Shimla	Observer
11.	Representative of Project Management Consultant for JICA ODA Loan Project	Observer
Japanese Side		
12.	Representative, JICA India Office	Member
13.	Chief Advisor / Team Leader of Japanese Expert Team	Co-convener

Source: RD (refer Attachment-1.1.1)

1.5.3 Counterparts of the Project (C/P)

For the smooth implementation of the Project and expansion of knowledge of execution for HPCDP-1, the counterparts were assigned as shown below:

Table 1.5.5 Counterparts Personnel

No.	Designation	Position
Indian Side		
1.	Director of Agriculture, HP (Project Director), Govt. of HP	Chairman
2.	Additional Director / Joint Director of Agriculture	Convener
3.	Project Director of ODA Loan Project cum Project Manager TCP	Convener
4.	Deputy Directors of Agriculture (5 Districts)	Member
5.	Deputy Project Directors (2), PMU	Member
6.	District Project Managers (3), PMU	Member
7.	Divisional Engineer, DOA	Member
8.	SMS, DOA	Member
9.	Project Directors, ATMA (5 Districts)	Member
Japanese Side		
10.	Chief Advisor / Team Leader of Japanese Expert Team	Co-Convener

Source: RD (refer Attachment-1.1.1)

CHAPTER 2 PROJECT ACTIVITIES

2.1 General Activities

2.1.1 Counterpart Meeting

C/P meetings were held as follows:

Table 2.1.1 Counterpart Meetings

No.	Season	Subjects to be Discussed
1	March 2017	<ul style="list-style-type: none"> - Outline of the Project - Outline of Work Procedure - Assignment of District Coordinators (DCs) and Core Extension Officers (CEO) - Explanation of the outline of R/D, PDM and PO (especially about traveling expense, daily allowance and accommodation fee for implementers)
2	June 2017	<ul style="list-style-type: none"> - Outline of Work Schedule - Work Progress during the period from March 2017 to June 2017
3	February 2018	<ul style="list-style-type: none"> - Discussion about Project progress Report No. 1 (progress of activities on Outputs)
4	May 2018	<ul style="list-style-type: none"> - Discussion about Project progress Report No. 1 - Criteria on selection of candidates for overseas training in Japan - Identification of PDM indicators
5	June 2018	<ul style="list-style-type: none"> - Discussion about Project progress Report No. 2 (progress of activities, identification of PDM indicators)
6	December 2018	<ul style="list-style-type: none"> - Discussion about Project progress Report No. 3 (progress of activities)
7	June 2019	<ul style="list-style-type: none"> - Discussion about Project progress Report No. 4 (Output of Stage-1, discussion of draft Work Plan of Stage-2)
8	October 2019	<ul style="list-style-type: none"> - Discussion about Draft Work Plan for Stage-2
9	January 2020	<ul style="list-style-type: none"> - Discussion about Work Plan for Stage-2
10	July 2020	<ul style="list-style-type: none"> - Discussion about Project progress Report No. 5
11	Postponed from December 2020 to February 2021	<ul style="list-style-type: none"> - Discussion about Project progress Report No. 6
12	Postpone from June 2021 to July 2021	<ul style="list-style-type: none"> - Discussion about Project progress Report No. 7
13	December 2021 (Cancelled)	<ul style="list-style-type: none"> - TCP Phase-2 was approved to be extended up to October 2022 in the JCC Meeting in November 2021)
14	June 2022	<ul style="list-style-type: none"> - Discussion about Project progress Report No. 8
15	October 2022	<ul style="list-style-type: none"> - Discussion about Project Completion Report

Source: JICA TCP Experts Team

2.1.2 JCC Meeting

The JCC meetings were held as follows:

Table 2.1.2 Schedule of JCC Meetings

No.	Season	Subjects to be Discussed
1	March 7, 2017	<ul style="list-style-type: none"> - Outline of the Project - Outline of Work Procedure - Assignment of District Coordinators (DCs) and Core Extension Officers (CEO) - Explanation of the outline of R/D, PDM and PO (especially about traveling expense, daily allowance and accommodation fee for C/P) - Minutes of meeting is shown in Attachment-2.1.1
2	July 17, 2017	<ul style="list-style-type: none"> - Outline of Work Schedule - Work Progress during the period from March 2017 to June 2017 - Approval of the plan. - Minutes of meeting is shown in Attachment-2.1.2.
3	May 7, 2018	<ul style="list-style-type: none"> - Discussion about Project progress Report No. 1 - Criteria on selection of candidates for overseas training in Japan - Minutes of meeting is shown in Attachment-2.1.3.

No.	Season	Subjects to be Discussed
4	December 12, 2018	- Discussion about Project Progress Reports No. 3 - Discussion about blank indicators - Minutes of meeting is shown in Attachment-2.1.4.
5	June 29, 2019	- Discussion about Project progress Report No. 4 (Output of Stage-1, discussion of draft Work Plan of Stage-2) - Minutes of meeting is shown in Attachment-2.1.5.
6	January 10, 2019	- Discussion about Work Plan for Stage-2 - Minutes of meeting is shown in Attachment-2.1.6.
7	June 2020 (postponed)	- Discussion about Project progress Report No.5 - (Due to COVID-19 pandemic, the JCC meeting was banned)
8	December 2020 (postponed)	- Discussion about Project progress Report No.6 - (Due to COVID-19 pandemic, the JCC meeting was banned)
9	July 12, 2021	- Discussion about Project progress Report No.7 - Minutes of meeting is shown in Attachment-2.1.7.
10	November 16, 2021	- Discussion about project extension of JICA TCP - Minutes of meeting is shown in Attachment-2.1.8.
11	June 2022	- Discussion about Progress Report No.8 (replace of Project Completion Report) - Minutes of meeting is shown in Attachment-2.1.9.
12	October 2022	- Discussion about Project Completion Report - Minutes of meeting is shown in Attachment-2.1.10.

Source: JICA TCP Experts Team, December

2.2 Activities to Achieve Output-1: Technical Capacity of DOA/PMU Staff to Promote Crop Diversification Practices is Strengthened

2.2.1 Collect Information and Analyze Technical Capacity of DOA/PMU Staff at Block Level to Support Crop Diversification Practices [1.1]

(1) Staff Deployment of DOA Staff by Blocks

Deployed staff of project 5 districts as well as PMU is shown as follows:

- (i) Number of DOA extension officers in block¹ offices
(Refer to Table 1.5.2 and Attachment-1.5.1)
- (ii) Names and positions of PMU extension officers in block² offices
(Refer to Table 1.5.3 and Attachment-1.5.2)

(2) Current Situation on Capacity Building of Extension Officers

It is intimated that DOA has annual training programme on enhancement for extension capacity of extension officers. However, major fields of those training are limited to general information as well as management of extension activities as shown in the following table. It is expected that more practical subjects for strengthening skills as well as experiences of extension officers should be arranged.

Table 2.2.1 Training Programmes for Extension Officers Arranged by DOA

Training Programme	2018-19	2019-20	2020-21	2021-22
1. IPM / Bio Control	●			
2. Digital Transfer of Subsidies	●	●		
3. SPNF	●	●		
4. Workshop of PPKKS	●			
5. Fertilizer Quality Control	●			
6. Promoting FPO Issues and Challenges		●		●

¹ Block for extension activities: 41 blocks in the target 5 Districts

² Block for 210 sub-projects in Himachal Pradesh Crop Diversification Project (HPCDP) funded by JICA: 8 blocks in the target 5 Districts

Training Programme	2018-19	2019-20	2020-21	2021-22
7. Soil Sampling and Soil Testing		●	●	
8. Water Conservation / Ground Water Recharge		●		
9. INM / Best Nutrient Management Practices		●		
10. Sustainable Agriculture and Crop Diversification		●	●	
11. Product Branding		●		
12. Shaping the Future of Extension with ICT and Digital Media		●		
13. Financial Management of Farmers		●		
14. Market-led Extension and Digital Marketing		●	●	
15. Gender Sensitization		●		●
16. Documentation of Success Stories		●		●
17. Time management				●
18. Stress management				●
19. Group mobilization				●
20. Climate change & doubling of farmers income				●

Source) SAMETI and FTC, DOA

(3) Extension Activities in the Existing Schemes Executed by DOA

In the target 5 districts, the following schemes are currently operated in order to improve the current agricultural situation of farmers' level. Demonstration as well as training are included as parts of extension activities.

Table 2.2.2 Major Existing Schemes with Extension Activities

Scheme	Objectives	Commodities	Activities
National Food Security Mission (NFSM)	1. Increasing production of Rice, Wheat, Pulses and coarse cereals. 2. Restoring soil fertility and productivity. 3. To increase Farm level Income.	Rice, Wheat, Maize, Pulses, Nutri-Cereal	Cluster demonstration Seed distribution, INM / IPM Flexi intervention Training Construction of RCC tanks
RKVY (Improved livelihood from diversified agriculture through vegetable cultivation)	To increase area, production and productivity of vegetables.	Major vegetables.	Supply/ Distribution of open and hybrid vegetable seeds at subsidized rates.
National Mission on Sustainable Agriculture –(NMSA)- RAD	1. To make agriculture productive, sustainable and climate resilient. 2. To conserve natural resources	Integrated Farming System	- Subsidy on agri. Inputs on farming system based - Training on farming system
SCSP (Scheduled Castes Sub-Plan)	To assist schedule cast farmers. (State Plan)	All crops including vegetables.	- Training Camps. - Subsidy on seeds including vegetables.
BASP (Backward Area Sub plan) for backward panchayats areas	To assist the farmers of backward area/ panchayats.	Major crops including vegetables.	- Training Camps. - Subsidy on seeds including vegetables.
TSP (Tribal sub plan)	To assist tribal area farmers.	Mainly pulses & vegetables.	- Training Camps. - Subsidy on seeds including vegetables.
SCA to SCSP	To assist scheduled caste farmers (SCA).	All crops including vegetables.	- Training Camps. - Subsidy on seeds including vegetables.
SPNF (Subash Palekar Natural Farming)	Promotion of natural farming	Major crops including vegetables.	-Training of farmers -Demonstration fields -EV

Source : DOA, August 2022

However, it is observed that field activities of extension officers except SPNF are barely conducted due to the following reasons which are faced by extension officers:

- i) Sales Centers, which are located in some AEO (Agriculture Extension Officer) circles, are preferentially managed by AEOs. Therefore, AEOs are busy for management of sales centers, so that

they have limited time to conduct field activities as well as any other activities.

- ii) No budget for transportation to fields (except SPNF which is conducted under ATMA)
- iii) Less number of EOs deployed in each block

Accordingly, major extension activities are conducted in limited opportunities such as sales centers, SMS offices, awareness campaign, etc.

2.2.2 Conduct Training Needs Assessment Based on Examination of the Contents of Existing Trainings [1.2]

(1) Stage 1

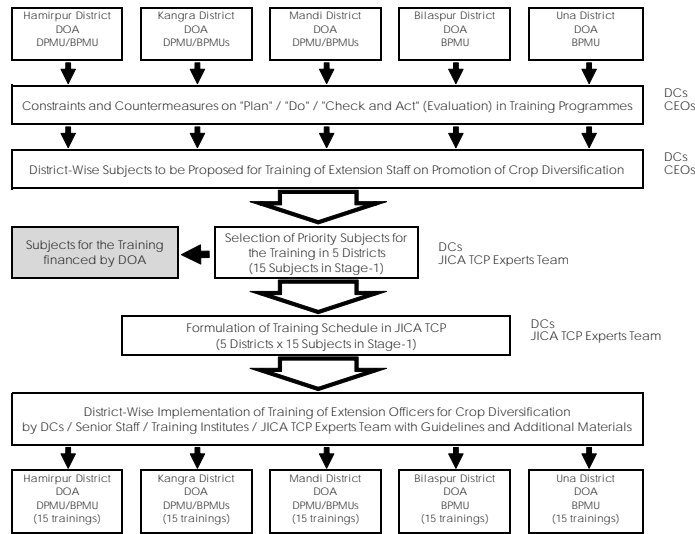
Workshop in each target district was conducted as shown in the following table, in order to clarify constraints for extension activities as well as needs / requirement for extension programmes for extension staff.

Table 2.2.3 District-Wise Workshop for Training Needs Assessment in Stage-1

District	Date	Participants
Una	22 April 2017	DCs (DDA, PD ATMA, DPM, and BPMs) CEOs of DOA and PMU offices
Bilaspur	24 April 2017	
Hamirpur	3 May 2017	
Mandi	5 May 5, 2017	
Kangra	6 May 6, 2017	

Source: JICA TCP Experts Team

As shown in the following procedure, the priority subjects were selected for 5 districts, considering training programmes arranged by DOA so as to avoid duplicity of training subjects.



Source: JICA TCP Experts Team

Figure 2.2.1 Procedure from Needs Assessment to Implementation of Training Activities

Further, considering their training experience as well as current situation of promotion of crop diversification, 15 subjects were selected for training programmes for extension staff during the period of Stage 1 of JICA TCP out of their needs and requirements.

Table 2.2.4 Priority Subjects for Training of CEOs in Stage 1

Category	Priority Subjects
Water management	(1) Micro irrigation systems
	(2) Crop water requirement
Farming & Post-	(3) Nursery raising

Category	Priority Subjects
harvesting	(4) Protected cultivation (including fertigation)
	(5) Vegetable cultivation (exotic)
	(6) IPM (including bio-chemicals) 2days
	(7) Weed management (including mulching)
	(8) Organic farming and certification process (organic fertilizer application)
	(9) Post-harvest techniques
	(10) Innovative techniques (training, pruning, staking, seedling raising, etc.)
Marketing	(11) Marketing strategies (with consumers' preference) to overcome marketing problems
Gender	(12)-Promotion, strengthening, and management of SHG / farmers' groups
	(13)-Working cluster (group farming)
Extension	(14) Training on planning, implementation, monitoring and evaluation (CDP, ETP)
Others	(15) Farm mechanization

Source: JICA TCP Experts Team

(2) Stage 2

During September 2019, Training Needs workshops were arranged in all the 5 project districts in which EOs were requested to prepare the list of subjects on which they require capacity building trainings keeping in view the constraints they have experienced while arranging extension activities for farmers. Further countermeasures as well as training subjects were required. District-wise workshops are shown as follows:

Table 2.2.5 District-Wise Workshop for Training Needs Assessment in Stage 2

District	Date	Participants
Hamirpur	17 September 2019	DCs (DDA, PD ATMA, DPM, and BPMs) CEOs of DOA and PMU offices
Bilaspur	21 September 2019	
Kangra	24 September 2019	
Mandi	26 September 2019	
Una	27 September 2019	

Source) JICA TCP Experts Team

Additionally, we proposed to conduct some training programmes on two categories such as food diversification and water management, based on experiences obtained through activities in Stage 1.

Food diversification is one approach for promotion of crop diversification as shown in Section 2.6 in this Project Completion Report. It is expected that standard of living as well as crop diversification in village level should be improved. Currently, any activities for improvement of quality of life in village level is not included as component of extension activities.

Meanwhile, water management is also absolutely essential component for promotion of vegetable cultivation. This activity should be included as one of components of extension activities.

Further it is emphasized that practical training programmes such as package of techniques of Output-2 and marketing activities of Output-3 should be considered for training programmes in Stage 2.

Major subjects for training programmes in Stage 2 are shown as follows:

Table 2.2.6 Priority Subjects for Training of CEOs in Stage 2

Category	Priority Subjects
Water Management	(1) Water Management and O&M
Protected Cultivation	(2) Protected Cultivation of vegetables
Farming Practices	(3) Crop diversification and Cost/Benefit
	(4) Farming practices for common vegetables
	(5) Farming practices for exotic vegetables

Category	Priority Subjects
	(6) Pinching, pruning, thinning, training, cutting, grafting
Insects and Diseases	(7) Management and Control of Insects and Diseases in vegetables
Crop Nutrient	(8) Crop nutrient management in vegetables
Post-harvest and processing	(9) Post-harvest and processing techniques
Marketing	(10) Marketing of vegetables
Organic Farming	(11) Organic farming and natural farming
Group mobilization and formation	(12) Coordination & management of SHGs/ FGs and Record keeping for SHG
Farm Machinery	(13) O&M of farm machinery
HRD	(14) PDCA

Source) JICA TCP Experts Team

2.2.3 Based on the Results of Activity **[1.1]** and **[1.2]** , Make Training Plans on Aspects of Crop Diversification Practice **[1.3]**

(1) Stage 1

1) Confirmation of Training Subjects and Modules

Priority subjects were checked by DCs. Further, the results have been discussed with Directorate of Extension and Education of Palampur Agricultural University. As a result, 15 priority subjects were formulated into 12 training subjects, merging some priority subjects. The training subjects with modules are described as follows:

Table 2.2.7 Training Programmes in Stage 1

Training Subjects	Modules
(1) Micro-irrigation system & Estimation of Crop water requirement. [(1), (2)]	Familiarization and potential of micro-irrigation in cereal and vegetable crops of Himachal Pradesh.
	How to estimate the crop water requirements and irrigation efficiency of major vegetable and food crops of Himachal Pradesh?
	How to design drip and sprinkler irrigation systems? Familiarization with different components, their specifications, laying etc. of drip and sprinkler irrigation systems.
	How to operate and maintain the micro-irrigation systems for their efficient operations? How to fix and collect water tariffs? (source for spare parts, service providers etc.), Focus on day to day problems which may come and how to solve/ precautions
(2) Nursery Raising and Vegetable Cultivation (Exotic). [(3), (5),(10)]	How to cultivate Rabi season exotic vegetables -Asparagus, Broccoli, Lettuce, Leek, Red cabbage, Brussels sprouts, Celery and parsley in field.
	How to cultivate Kharif season exotic vegetables -Zucchini, Tree tomato, Cherry tomato, Swiss chard, Pak Choi, coloured Capsicum etc., in field
	How to use the Improved cultivation techniques of seed coating, priming etc. for obtaining higher productivity of exotic vegetable crops.
	Marketing strategies for higher profits from Exotic vegetables
	Awareness about cooking & use of exotic values
(3) Protected Cultivation of Vegetable Crops. [(4)]	Improved methods of raising healthy nursery in open & under protected conditions.
	Important tips and techniques for protected cultivation of high value vegetable crops (tomato, capsicum, cucumber etc.)
	Year-round cultivation of vegetables under protected conditions.
	How to manage diseases in vegetable crops under protected poly house conditions
	How to manage insects and pests of vegetable crops under protected poly house conditions.
(4) IPM for Vegetable Crops [(6)]	IPM in major vegetable crops (summer& winter)
	IPM in major food crops (Kharif & Rabi)
	Use of bio agents & bio pesticides in IPM (preparation of bio pesticides & yellow, blue sticky traps, water traps, light traps etc.)

Training Subjects	Modules
(5) Weed Management 【(7)】	How to manage Jangali Bans (Brachira spp.), Chhura (Commelina spp.) and other weeds in Kharif crops and vegetables fields?
	How to manage Goongla (Raphanus spp.), Jangali javi (Avena spp.) and other weeds in Rabi crops and vegetables fields?
	How to manage Tipatia (Oxalis spp.) and Motha (Cyperus spp.) in Poly house and Neela Phulnu (Ageratum spp.), Tipatia (Oxalis spp.), Lamb (Bidens spp.), Lal Fulnu (Lantana spp) and Gajar ghass (Parthenium spp.) and other weeds in Crops & Grasslands?
	Chemical weed control and Health Hazards
	How to use organic and inorganic mulches for weed management? (Optional if not covered under 1-3 topics)
(6) Organic Farming and Certification Processes (Organic fertilization application). 【(8)】	Organic farming prospects in HP and processes under NPOP
	Guidelines for organic certification of field and vegetable crops.
	- Formulations and Use of organic manures and pesticides in agriculture. - List of organic manures and pesticides - Benefit and cost of major crops - Constraints (merits/demerits)
	Nutritional management / budgeting in vegetable crops under organic farming.
	How to manage marketing of organic produce and products.
(7) Post -harvest techniques 【(9)】	Pre and Post harvest management of vegetables for quality produces and high income
	Novel techniques for enhancing shelf life of vegetables
	Post-harvest values addition techniques of surplus vegetables for additional income generation
	Improved packaging and marketing strategies for important vegetable crops
(8) Marketing strategies to overcome marketing problems 【(11)】	Preparation of sales / Business plan
	Promotion of direct sales and other channels for enhancing farmers income
	Market oriented cultivation and farmers organization in marketing
	Experience sharing with progressive farmers doing marketing of vegetables
(9) Promotion, strengthening, and management of SHG / FGs and Working cluster 【(12), (13)】	Importance and formation of groups
	Livelihood activities for SHGs /FGs
	Formation of clusters and Federation at Block/ distt level.
	Record keeping for group products
(10) Innovative techniques 【(10)】	Scope and importance of innovative techniques in enhancing vegetable production
	Training, pruning, staking and cutting techniques in open and protected cultivation of high value vegetable crops
	Use of different organic and inorganic mulching materials in enhancing crop production
	Grafting techniques and seedling raising through cuttings in important vegetable crops
(11) Training on planning, implementation, monitoring and evaluation 【(14)】	Scope and importance of planning, monitoring and evaluation in Agriculture
	Concept of crop diversification and procedure for promotion of crop diversification using PDCA cycle
	Preparation of crop diversification Plan (ADP and EATP)
	Monitoring and evaluation of crop diversification plan
(12) Farm mechanization 【(15)】	Lecture 1. Introduction and operation of small machinery for tillage & sowing. 2. Operation, maintenance and safety of agricultural machinery in different operations. 3. Economics of farm machinery
	Practice in field Using farm machinery and equipment subsidized by HPCDP, practices as well as maintenance work will be conducted.

Remark) 【(9)】 : Serial number of priority subjects shown in Table 2.2.4

Source) Palampur Agriculture University, JICA TCP Experts Team

2) Preparation of Training Schedule

Relevant data on resource persons, recommendable venues, etc. were supplied from DCs. Further implementation schedule was prepared, through the discussion with Directorate of Extension Education of Palampur Agricultural University. Further implementation schedule in Stage 1 is shown in Attachment- 2.2.1.

(2) Stage 2

1) Confirmation of Training Subjects and Modules

In the Stage 2 also, priority subjects were checked by DCs. Further, the results have been discussed with Directorate of Extension and Education of Palampur Agricultural University.

As a result, 14 priority subjects were formulated into 11 training subjects, merging some priority subjects. 11 training subjects with modules are shown as follows:

Table 2.2.8 Training Programmes in Stage 2

Training Subjects	Modules
(1) Water management and O&M 【(1)】	O&M of irrigation facilities, MIS
(2) Protected cultivation of vegetables 【(2)】	Protected cultivation / poly house / high value crops and exotic vegetables Soil less cultivation of vegetables
(3) Farming practices for common vegetables 【(4), (6)】	Nursery raising & diseases management of vegetables Fertilizer management in vegetables Motivational techniques for adopting new agri. Techniques Crop management practices like line sowing, irrigation, weed management Hybrid/ good quality seeds & pesticides recommended for vegetable crops. Field preparation before planting of crops to avoid water stagnation Farming practices of vegetables Proper varieties
(4) Farming practices for exotic vegetables 【(5), (6)】	Exotic vegetable production
(5) Nutrient management in vegetables and farming Practices for fodder crops 【(8)】	Identification of nutrient deficiency symptoms, management of soil health
(6) Post-harvest value addition, processing techniques and marketing of vegetables 【(9), (10)】	Post-harvest and processing techniques such as Storage structures, skills, etc.
(7) Natural farming for vegetables 【(11)】	Organic farming / natural farming / SPNF techniques, including mixed / inter cropping
(8) Management of Crop Plan and Crop Calendar for Vegetables 【(3)】	Minimizing cost of production in vegetables potato, Cole crops, Onion, garlic, tomato, brinjal Crop diversification towards Vegetable crops
(9) Coordination & Management of FPO and SHEP Approach 【(12)】	Coordination & management of SHGs/ FGs and Record keeping for SHG, including formation of groups
(10) Farm Mechanization 【(13)】	O&M of farm machinery / Farm Mechanization New facilities, including Solar fencing, solar pump, grafting robot, etc.
(11) Training on PDCA & preparation of 5-year CD plan 【(14)】	PDCA and Time & stress management

Remark) 【(9)】 : Serial number of priority subjects shown in Table 2.2.6

Source) JICA TCP Experts Tea

2) Preparation of Training Schedule

Relevant data on resource persons, recommendable venues, etc. were supplied from DCs. Further implementation schedule was prepared, through the discussion with Directorate of Extension Education of Palampur Agricultural University. Further implementation schedule in Stage 2 is shown in Attachment- 2.2.2.

2.2.4 Conduct Trainings for DOA/PMU Staff at Block Level (CEOs) According to the Annual Plans [1.4]

(1) Stage 1

Training programmes, which were conducted during the Stage 1, are summarized as follows:

Table 2.2.9 Implementation of Training Programmes in Stage 1

No.	Training Subject	Bilaspur	Hamirpur	Kangra	Mandi	Una
1	Organic Farming & Certification	15 Jan.18	18 Dec.17	26 Dec.17	28 Dec.17	9 Jan.18
2	Weed Management	5 Feb.18	30 Dec.17	2 Jan.18	18 Jan.18	15 Feb.18
3	Nursery Raising and Exotic Vegetable cultivation	26 Feb.18	9 Feb.18	16 Feb.18	19 Feb. 18	23 Feb.18
4	Micro Irrigation Systems	18 May 18	27 Mar. 18	24 Mar. 18	10 May 18	23Mar.18
5	Protected cultivation of vegetable crops	06 Sept,18-	13 July,18	26 June, 18	20 Sept. 18	30 July,18
6	IPM for Vegetable Crops	28July,2018	3 July,18	13July,18	4August,18	24August,18
7	Promotion, strengthening, and management of SHG / farmers' groups	1 June 19	12 Oct. 18	17 Nov.18	6 Dec. 18	29 Oct. 18
8	Post -harvest techniques	2 Feb. 19	15 Dec. 18	26 Oct. 18	18 Dec.18	19 Jan. 19
9	Innovative techniques in vegetables	20 Dec. 18	22 Jan. 19	8 Feb. 19	10 Jan. 19	17 Dec. 18
10	Marketing strategies to overcome marketing problems	16April,19	12 April 19	17April 19-	10 April.19	29 Mar. 19
11	Planning, implementation, monitoring and evaluation	2 July19	20 June 19	21 June 19	29 June 19	28 June 19
12	Farm mechanization	26 April 19	24 April 19	25 April 19	22 April 19	23 April 19

Source: JICA TCP Experts Team

The university arranged the same Resource Person (s) in all the districts and they took care of the situations and requirements of CEOs of each district while preparing PPT and making the presentations. The Training Manuals were prepared by the Resource Persons and provided to each participant for sharing the information with other EOs and for their future use.

It is expected that the trainees after back to office, shall share the training learnings and materials with the remaining EOs working in their offices. In addition, it is expected that CEOs would transfer their learning to the farmers by arranging different extension activities like trainings/ demonstration etc. and analyze the impact of the extension activities in the following crop seasons.

The Action Plan (refer sample format of Attachment-2.2.3) before arranging the Training of CEOs and the Training Report (refer sample format of Attachment-2.2.4) after arranging the Training were prepared by the concerned District Coordinator and were circulated to all DCs for their information & use. Preparation of Action Plan & Training Report is shown as follows:

Table 2.2.10 Preparation of Action Plan and Training Report in Stage 1

Training Subject	Bilaspur	Hamirpur	Kangra	Mandi	Una
(1) Organic Farming & certification	AT	AT	AT	AT	AT
(2) Weed Management	AT	AT	AT	AT	A

Training Subject	Bilaspur	Hamirpur	Kangra	Mandi	Una
(3) Exotic vegetable & Nursery raising	AT	AT	AT	AT	AT
(4) Micro Irrigation Systems	AT	AT	AT	AT	AT
(5) Protected cultivation of vegetable crops	A	AT	AT	AT	AT
(6) IPM in vegetable crops	AT	AT	AT	AT	AT
(7) Promotion of SHGs/ FGs	-	AT	AT	-	AT
(8) Post -harvest techniques	AT	AT	AT	AT	AT
(9) Innovative techniques in vegetables	AT	AT	AT	AT	AT
(10) Marketing of vegetables	A	AT	A	A	A
(11) Planning, implementation, monitoring and evaluation	-	-	-	-	-
(12) Farm Machinery	A	A	A	A	A

Note: AT: Action Plan and Training Report, A: only Action Plan, T: only Training Report, -: No plan and report

Source: JICA TCP Experts Team

Furthermore, it is expected that DCs should be involved in planning and execution of implementation of training programmes, through preparation of Action Plan and Training Report for each training activity, and thus extension activities be conducted effectively and smoothly.

Meanwhile, the information regarding constraints for extension activities as well as needs / requirements for training programmes for extension staff of 7 Districts such as Shimla, Solan, Kinnaur, Chamba, Lahaul and Spiti, Kullu, Sirmaur, which are not targeted by the HPCDP, were collected by DOA, in order to prepare some training programmes for extension officers in 7 Districts. The schedule of the training in April 2017 was prepared in consultation with DOA and conducted at SAMETI, Shimla as follows.

Table 2.2.11 Training of EOs Working in 7 Districts (Stage 1)

Date	Topic	Training Subjects to be covered	Resource person
25 th Jun. 2017	Exotic vegetables cultivation	i. Nursery raising for healthy seedlings ii. Tips for cultivation of important exotic vegetables techniques	Dr Desh Raj Chaudhary, Prof. Vegetables , DEE, HPKV, Palampur
	Post-harvest techniques in vegetables	i. Pre & post-harvest handling of vegetables ii. Value addition including improved packaging of vegetables	Dr Radhna Gupta, Associate Prof. CSK, HPKV, Palampur
26 th Jun. 2017	Marketing of vegetables	i. Direct sales and different channels of marketing for higher returns ii Preparation of sales & business plans	Dr Rajesh Thakur, Prof. Agri, Economics, CSK, HPKV, Palampur
	Planning, implementation monitoring and evaluation	i. PDCA cycle for planning & monitoring ii Action Plan (purpose, output / outcome) iii. Preparation of Crop Diversification Plan	Dr Devesh Thakur, Asstt. Prof. Veterinary College, CSK, HPKV, Palampur

Source: JICA TCP Experts Team

Further requests from participants of training programmes of each subject were confirmed as shown in Attachment-2.2.5. These feedbacks should be considered for implementation of the future training programmes.

(2) Stage 2

In Stage 2, after discussion with the Resource Persons and DCs on requirement and needs of extension officers mentioned above, trainings subjects were revised by adding the following 8 training subjects that are food diversification, water management and additional trainings on tips in vegetable cultivation the subjects of importance.

- i. Exotic Vegetables in Output-2
- ii. Nursery raising of vegetables (Output-2)
- iii. Vegetative propagation of vegetable crops and methods of fertilizers application. (Output-2)
- iv. Protected cultivation of vegetables (Output-2)

- v. Market oriented production (Output-3)
- vi. Food Diversification
- vii. Water Management and O/M- Calculation of water requirement
- viii. Orientation Training for handing-over from PMU to 5 DDA offices (1st and 2nd)

Training programmes, which were conducted during the Stage 2, are summarized as follows:

Table 2.2.12 Implementation of Training Programme in Stage 2

Training Subject	Bilaspur	Hamirpur	Kangra	Mandi	Una
(1)Water management and O&M	19July,2021	29April,21	17 April, 21	23 April,21	27April,21
(2)Protected cultivation of Vegetables	20 Feb.20	30 Oct. 2020	22 Dec.2020	23 Oct. 2020	1 Feb.20
(3)Farming practices for common vegetables	30 Jan.2021	29 Jan.2021	22 Jan. 2021	28 Dec.2020	6 Jan.2021
(4)Farming practices for exotic vegetable	8 Apr. 2021	23 Mar. 2021	25 Mar. 2021	19 Feb.2021	18 Mar.2021
(5)Nutrient management in vegetables and farming	27 March,21	23 Feb 2021	16 Feb,2021	21 Dec.2020	28 Jan.2021
(6)Post-harvest value addition, processing techniques and marketing of vegetables	21June 2021	28June 2021	11June 2021	9June 2021	16 June 2021
(7)Natural farming for vegetables	02 Sep. 2021	27Aug. 2021	26Aug. 2021	12Aug. 2021	18Aug. 2021
(8)Management of Crop Plan and Crop Calendar for Vegetables	29 Jul. 2021	30 Jul. 2021	24 Jul. 2021	14 Jul. 2021	17 Jul. 2021
(9)Coordination & Management of FPO and SHEP Approach	9 Dec. 2021	26 Oct. 2021	24 Dec. 2021	17 Dec. 2021	28 Oct. 2021
(10)Farm Mechanization	25 Feb. 2022	23 Feb.2022	22 Feb.2022	24 Feb.2022	21 Feb.2022
(11)PDCA & preparation of 5-year CD plan	29Sep.2021	27 Sep. 2021	17 Sep. 2021	5 Oct. 2021	25Sep.2021
(12)Exotic Vegetables in Output-2 (Venues: only 3 DPMUs)	-	5 Oct. 2021	12 Oct. 2021	22 Nov.2021	-
(13)Nursery raising of vegetables (Output-2)	11 Mar. 2022	5 Mar. 2022	8 Mar. 2022	10 Mar.2022	3 Mar. 2022
(14)Vegetative propagation of vegetable crops and methods of fertilizers application. (Output-2)	29 Jul. 2022	27 Jul. 2022	26 Jul. 2022	28 Jul. 2022	25 Jul. 2022
(15) Protected cultivation of vegetables (Output-2)	14Sep.2022	12 Sep.2022	16 Sep. 2022	18 Sep. 2022	20 Sep.2022
(16)Market oriented production (Output-3)	21June 2021	28June 2021	11June 2021	9June 2021	16 June 2021
(17)Food Diversification	11 Aug. 2021 27 Sep. 2021	27 Aug. 2021	26Aug. 2021	5 Oct. 2021	18 Aug. 2021
(18)Water Management and O/M- Calculation of water requirement	20 Nov.2021	15 Nov. 2021	24 Nov.2021	25 Nov.2021	27 Nov.2021
(19)Orientation Training					
1st	5 Oct. 2020	2 Nov. 2020	16 Oct. 2020	13 Oct. 2020	14 Oct. 2020
2nd	11 Nov. 2020	19 Nov. 2020	18 Nov.2020	12 Nov.2020	10 Nov. 2020

Source: JICA TCP Experts Team

Summary of participation/ attendance of EOs in the trainings during Stage 2 is given as under:

Table 2.2.13 Summary of Attendance in Trainings of EOs Arranged by JICA TCP in Stage 2

SN	Training Programme	Number of EOs participated in the training					
		Kangra	Mandi	Hamirpur	Bilaspur	Una	Total
1	Protected cultivation of vegetables	23	20	25	21	25	114
2	Farming practices for common vegetables	36	21	23	30	22	132
3	Farming practices for Exotic vegetables	30	29	20	18	25	122

SN	Training Programme	Number of EOs participated in the training					
		Kangra	Mandi	Hamirpur	Bilaspur	Una	Total
4	Nutrients management in vegetable crops & practices for fodder crops	31	24	19	19	25	118
5	Post harvest value addition & marketing of vegetable crops	45	50	19	16	21	151
6	Natural farming practices for vegetables	50	45	24	18	29	166
7	Management of Crop plan & calendar for vegetables	48	38	43	15	29	173
8	Coordination & management of FPOs and SHEP approach	18	30	11	27	15	101
9	Farm mechanization	42	26	18	21	25	132
10	PDCA and preparation of 5 Years plan	23	24	12	16	18	93
11	1st Orientation about TCP activities	3	5	4	11	4	27
12	2nd Orientation about TCP activities	22	11	16	9	8	66
13	Water management & Operation and Management	39	32	27	20	27	145
14	Calculation of Water requirements	51	32	9	11	10	113
15	Nursery raising in vegetables - Output -2	22	13	20	16	32	103
16	Vegetative propagation of vegetables & method of ferti. applications-Output 2	25	13	13	20	22	93
17	Protected cultivation of vegetables (Output-2)	38	18	15	16	13	100
18	Exotic vegetable cultivation in 3 DPMUs (Output-2)	na	na	na	na	na	na

Remark) na: not available

Source: JICA TCP Experts Team

Preparation of Action Plan & Training Report is shown as follows:

Table 2.2.14 Preparation of Action Plan and Training Report in Stage 2

Training Subject	Bilaspur	Hamirpur	Kangra	Mandi	Una
(1) Water Management and O&M	A	-	A	A	A
(2) Protected Cultivation of Vegetables	AT	AT	AT	AT	AT
(3) Farming Practices for Common Vegetables	AT	AT	AT	AT	AT
(4) Farming Practices for Exotic Vegetable	A	A	AT	AT	AT
(5) Nutrient Management in Vegetables and Farming Practices for Fodder Crops	A	A	AT	AT	A
(6) Post-harvest Value Addition, Processing Techniques and Marketing of Vegetables	A	A	A	AT	AT
(7) Natural Farming for Vegetables	A	AT	A	A	A
(8) Management of Crop Plan and Crop Calendar for Vegetables	A	A	A	AT	AT
(9) Training on PDCA & preparation of 5-year CD plan	A	T*	A	A	T*
(10) Coordination & Management of FPO and SHEP Approach	AT	A	-	-	A
(11) Farm Mechanization	-	-	-	-	-

Note: AT: Action Plan and Training Report, A: only Action Plan, T: only Training Report, -: No plan and report, T*: only discussion points

Source: JICA TCP Experts Team

It is stated that JICA TCP fixed the Online training of EOs working in 7 districts namely Shimla, Solan, Sirmaur, Chamba, Kinnaur, Kullu and Lahaul & Spiti, and DPMUs/BPMUs of HPCDP-2 that is Rampur, Kullu, Nahan, Chamba, Solan, Gohar, which were not included in the HPCDP-1. This Online training was convened in October 2022. Objectives, expected outputs, outcomes and training subjects are shown as follow:

Table 2.2.15 Training of EOs Working in 7 Districts (Stage 2)

Objectives:	(1) To share information on JICA TCP activities by JICA TCP for further replication. (2) Dissemination of existing Guidelines and training materials. (3) Training on market oriented (SHEP approach)
Expected Outputs	1) Awareness of key implementers (CEOs) of DOA & PMU about JICA TCP is increased.
Expected Outcomes	1) Awareness of other implementers (EOs) of DOA and PMU is increased by sharing of learnings & training material in their weekly/monthly meeting. 2) Training and sharing of learnings by the EOs with famers in the office/ field. 3) Adoption of practices / techniques by the farmers in their fields.
Training Subjects	Session 1- PDCA cycle for Planning and monitoring of extension activities and 5-year preparation of Crop diversification plans (Output1 & 4)
	Session 2- Farming Techniques / practices for production and enhancing farm income (Output-2)
	Session 3- Market oriented farm practices for increasing farm income (Output-3)
	Session 4-Crop diversification through Food diversification and Nutrition
	Session 5-Operation & management of irrigation systems
	Session 6- Market-oriented agriculture (SHEP approach)
	Session 7-Dissemination of existing guidelines and training materials

Source: JICA TCP Experts Team

(3) Other Trainings Conducted under JICA TCP

Under Output-2 and Output-3 of JICA TCP, for the training of Extension officers of DOA and PMU, field activities were arranged on the farmers' fields. The main focus of these activities was capacity building of EOs and strengthening their knowledge and experience through regular visiting and practically working in these trials.

Before HPCDP-1 was ended, EOs in PMU mainly joined activity under Output-2 and Output-3. After HPCDP-1 was ended, EOs in DOA were supposed to join it since activities conducted in the target 210 sub-projects were handed over to DOA and EOs in DOA became being in charge of them. In addition, EOs in HPCDP-2 were also invited to join activity under Output-2 and Output-3 so that they could get useful technology and experience to promote crop diversification in all 12 districts in HP.

To ensure full participation of the EOs, JICA TCP shared Monthly visit schedule in advance and also contacted EOs 1-2 days prior to the date of visit. The summary of participation of EOs is given in the tables as below:

Table 2.2.16 Monitoring of Participation of EOs in JICA TCP Activities under Output-2

SN	Month	Total sub projects visited	Participation of EOs from PMU		Participation of EOs from DOA	
			Sub projects	No of EO participated	Sub projects	No. of EO participated
1	Apr. 2021	7	5	6	2	3
2	Jun. 2021	8	7	7	2	3
3	Jul. 2021	4	3	4	0	0
4	Aug. 2021	7	5	9	1	2
5	Sep. 2021	8	6	11	3	5
6	Oct. 2021	5	3	4	1	2
7	Nov. 2021	6	4	5	2	4
8	Dec. 2021	10	2	2	5	7
9	Jan.2022	5	1	1	4	5
10	Feb. 2022	8	7	9	4	6
11	Mar. 2022	4	2	2	1	1
12	Apr. 2022	8	4	5	2	2
13	May 2022	7	6	7	4	5

SN	Month	Total sub projects visited	Participation of EOs from PMU		Participation of EOs from DOA	
			Sub projects	No of EO participated	Sub projects	No. of EO participated
14	Jun. 2022	8	5	6	2	2
15	Jul. 2022	6	4	5	3	3
16	Aug. 2022	5	0	0	2	2
Total		101	64	83	38	52

Source: JICA TCP Experts Team

Table 2.2.17 Monitoring of Participation of EOs in JICA TCP Activities under Output-3

SN	Month	Total sub projects visited	Participation of EOs from PMU		Participation of EOs from DOA	
			Sub projects	No of EO participated	Sub projects	No. of EO participated
1	Apr. 2021	4	4	7	3	3
2	Jun. 2021	7	5	4	1	1
3	Jul. 2021	6	5	7	2	1
4	Aug. 2021	5	3	6	2	2
5	Sep. 2021	2	0	0	1	1
6	Oct. 2021	6	5	4	5	4
7	Nov. 2021	2	0	0	2	1
8	Dec. 2021	10	9	6	10	9
9	Jan. 2022	9	0	0	9	6
10	Feb. 2022	6	1	1	6	4
11	Mar. 2022	8	0	0	6	6
12	April,2022	8	1	1	8	9
13	May,2022	5	0	0	2	2
14	June,2022	8	0	0	7	5
15	July,2022	6	0	0	2	3
16	August,22	8	0	0	5	2
Total		92	33	36	71	59

Source: JICA TCP Experts Team

2.2.5 Support CEOs in Conducting Extension Activities for Farming Communities [1.5]

(1) Supporting CEOs for Their Extension Activity at Field

DDAs and PD ATMAs were requested to provide the dates fixed for extension activities for farmers in their areas so that JICA TCP could participate and support the CEOs, depending on situation. Meanwhile, SPMU prepared the fortnight schedule of extension activities for farmers in all BPMUs, and the same was shared with the members.

The monitoring visits to sub-projects in BPMUs as well as DOA's blocks were conducted. During the visits, JICA TCP gave necessary support and direction to extension officers at field. The summary of the monitoring visits is as shown in the following table:

Table 2.2.18 Monitoring Visit of Extension Activities for Farmers in DOA and HPCDP-1

Year	Date	District	BPMU (PMU) / Block (DOA)	Site	Activity
2020	Jan. 15	Bilaspur	Ghumarwin (DOA)	Nanawan	Demonstration arranged under SPNF
	Feb. 17	Una	Una (PMU)	Pekhuvella	Training on Tomato cultivation
	Feb. 23	Una	Bangana (DOA)	Bangana	Farmers Fair
	Feb. 26	Kangra	Baijnath (PMU)	Matruhan	Video display on use of chemicals & success story of vegetable cultivation
	Mar. 9	Hamirpur	Hamirpur (DOA)	Bharmoti	Farmers fair
	Mar. 16	Hamirpur	Sujanpur (DOA)	SMS	To understand current situation regarding

Year	Date	District	BPMU (PMU) / Block (DOA)	Site	Activity
				office	extension activities for promotion of vegetables in SMS block area.
	July 14,	Bilaspur	BPMU	Noa, Parohi	Training on nursery raising of Early cauliflower
	July, 15	Una	BPMU	Basoli	Healthy nursery raising of Early cauliflower
	July, 18	Hamirpur	BPMU	Chaleli	Orientation & need assessment of KVA.
	August 18	Mandi	BPMU	Batheri	Nursery raising of Early cauliflower
	August, 27	Kangra	BPMU(Baijnath)	Solu	Nursery raising of Early cauliflower
	Sept. 2020	Kangra	BPMU,	Minj Gran	Monitoring of CDP implementation
2021	February, 17	Bilaspur	DOA, Ghumarwin	GP Bharari	Training on soil health & ferti. Management
	February, 20	Una	DOA, Haroli	Lower Badhera	Training on management of diseases in Wheat
	March, 05	Hamirpur	DOA, Hamirpur	Changar	Training on soil health management.
	March, 10	Bilaspur	PMU	Balh Sena	Training on bed preparation & use of mulching sheet for Cucumber- cauliflower
	Sept. 14	Bilaspur	DOA, Ghumarwin	Dadhol Kalan	Training on soil health management.
	Oct., 08	Una	DOA	Basoli	Yield estimation of Black gram crop
	Oct., 28	Bilaspur	ATMA, Bilaspur	NEUN	Training on Natural farming practices
	Dec., 29	Una	ATMA, Una	Tiar	Natural farming practices in wheat crop.
2022	Jan. 01	Bilaspur	ATMA,	Chandpur	Natural farming practices in Rabi crops.
	Jan. 08	Hamirpur	DOA, Hamirpur	Ropa	Training on top dressing of ferti. In wheat crop.
	April 13	Hamirpur	DOA, Bijhari	Pathliar GP	Training on early cucumber-cauliflower

Source) JICA TCP Experts Team

(2) Supporting Official Handing-Over of Sub-Projects from PMU to DOA.

Since HPCDP-1 was completed in June 2021, JICA TCP activities conducted in the target 210 sub-projects with PMU had to be continued by DOA from July 2021. It is expected that extension officers in DOA should get useful skills and experiences before the official handing-over of sub-projects from PMU to DOA. Furthermore, they can share with other EOs of DOA for further replication on other areas of block/ district.

To let the EOs working in DOA know about the JICA TCP activities undertaken in PMU sub-projects under Output-2, Output-3, WM and FD, 1-day orientation training in respective districts was arranged as follows:

Table 2.2.19 1st Orientation Training

Date	District	Venue	Content
5th October 2020	Bilaspur	Kisan Bhavan	To share information about:
13th October 2020	Mandi	Collection center, Sarkaghat	i. Purpose and outputs of JICA TCP
14th October 2020	Una	DOA meeting hall	ii. Activities, progress and field work schedule of Outputs-1 & 4
16th October 2020	Kangra	Collection center, Birta at Kangra	iii. Activities, progress and field work schedule of Output-2.
2nd November 2020	Hamirpur	SPMU, Conference room, Hamirpur	iv. Activities, progress and field work schedule of Output-3
			v. Activities, progress and field work schedule of Food Diversification. (FD)
			vi. Activities, progress and field work schedule of Water Management and O&M (WM)

Source: JICA TCP Experts Team

Attendances for 1st orientation training are shown as follows:

Table 2.2.20 Attendances for 1st Orientation Training for EOs Working in DOA

District	SMS Offices			SDSCO Offices				Total
	ADO	AEO	AADO	AEO	ADO	Surveyor	JE	
Bilaspur	4	5	1	2	-	-	2	14
Hamirpur	-	3	-	2	-	-	2	7
Kangra	1	2	-	1	2	-	1	7
Mandi	-	4	-	4	-	2	1	11
Una	3	2	1	-	1	1	-	8

Source: JICA TCP Experts Team

To apprise the remaining EOs working in DOA about the JICA TCP activities undertaken in PMU sub-projects under Output-2, Output-3, WM and FD, 2nd 1-day orientation training in respective districts was arranged as under:

Table 2.2.21 2nd Orientation Training for EOs Working in DOA

Date	District	Venue	Content
10th November 2020	Una	Meeting Hall, DOA Una	To share information about: i. Purpose and outputs of JICA TCP ii. Activities, progress and field work schedule of Outputs-1 & 4 iii. Activities, progress and field work schedule of Output-2. iv. Activities, progress and field work schedule of Output-3 v. Activities, progress and field work schedule of Food Diversification. (FD) vi. Activities, progress and field work schedule of Water Management and O&M (WM)
11th November 2020	Bilaspur	Kisan Bhavan, Bilaspur	
12th November 2020	Mandi	DOA meeting hall	
18th November 2020	Kangra	Meeting hall DOA at Palampur.	
19th November 2020	Hamirpur	SPMU Conference room, Hamirpur	

Source: JICA TCP Experts Team

Attendances for 2nd orientation training are shown as follows:

Table 2.2.22 Attendances for 2nd Orientation Training

SR	Distt	EOs from DOA	EOs from SDSCO	EOs from PMUs	Total
1	Una	17	4	3	24
2	Bilaspur	18	2	3	23
3	Mandi	11	10	6	27
4	Kangra	24	6	3	33
5	Hamirpur	19	3	2	24

Source: JICA TCP Experts Team

2.2.6 Monitor Transferring Technologies to Other DOA/PMU Staff by CEOs [1.6]

(1) Review Conducted by JICA TCP

The mechanism for sharing of training materials and learning with other EOs of DOA & PMU was discussed with the DCs Committee members. It is expected that extension officers who participate in the trainings should transfer technical knowledge as well as skills to other extension officers. Further it is instructed that all training materials belong to the office, and space for keeping them should be arranged.

In terms of the above activities, it is strongly proposed that relevant extension officers should try to share their experience through regular meetings such as monthly or weekly meetings in their offices. JICA TCP monitored the situation of technical transfer and provided proper comments about the important

points of extension techniques to be improved. The summary of safe keeping of training material and holding of staff meetings in DOA & PMU is shown as follows:

Table 2.2.23 Regular Meetings and Sharing Material in DOA and PMU (1/2)

District / PMU	Office	Regular Monthly Meeting			Weekly	Sharing Material
		Regular (District level)	BFAC	Staff (Block level)		
Bilaspur	DOA	04th	-	-	-	Yes
	ATMA	1st	-	-	-	Yes
	Sadar		8th	15th	-	Yes
	Swarghat		5th	15th	-	Yes
	Jhandutta		6th	2nd	-	Yes
	Ghumarwin		7th	20th	-	Yes
Hamirpur	DOA	3rd	-	-	-	Yes
	ATMA	1st	-	-	-	Yes
	Sujanpurr		6th	3rd	-	Yes
	Hamirpur		4th	5th	-	Yes
	Bhoranj		10th	2nd	-	Yes
	Bijhari		11th	7th	-	Yes
	Nadaun		14th	4th	-	Yes
	Bamsan		9th	3rd	-	Yes
Kangra	DOA	1 st week		-	-	
	ATMA	1 st week		-	-	Yes
	Panchrukhi		After 3 months	5th	-	Yes
	Dharamshala		After 3 months	3rd	-	Yes
	Baijnath		After 3 months	7th	-	Yes
	Nagrota		After 3 months	3 rd	-	Yes
	Fatehpur		After 3 months	5th	-	Yes
	Dehra		After 3 months	5th	-	Yes
	Indora		After 3 months	9th	-	Yes
	Nagrota Surian		After 3 months	20th	-	Yes
	Nurpur		After 3 months	4th	-	Yes
	Lambagaon		After 3 months	5th	-	Yes
	Kangra		After 3 months	3rd	-	Yes
	Bhavarna		After 3 months	5th	-	Yes
	Bhedumahadev		After 3 months	3rd	-	Yes
	Pragpur		After 3 months	5th	-	Yes
Rait		After 3 months	3rd	-	Yes	
Mandi	DOA	5 th	-	-	-	
	ATMA	1st Monday	-	-	-	Yes
	Balh		3rd	4 th & 23 rd	-	Yes
	Chauntra		11th	2 nd	-	Yes
	Dharampur		18th	6th	-	Yes
	Gohar		10th	3rd	-	Yes
	Gopalpur		16th	4th	-	Yes
	Karsog		5th	6 th & 28 th	-	Yes
	Sadar		9th	2nd	-	Yes
	Seraj		10th	4th	-	Yes
Sunder Nagar		6th	4 th & 25 th	-	Yes	
Drang		1st	2nd	-	Yes	

Note) BFAC: Block Farm Advisory Committee, staff: Staff of SMS office
Source) DDA and PMU, March 2021 July 2022

Table 2.2.24 Regular Meetings and Sharing Material in DOA and PMU (2/2)

District / PMU	Office	Regular Monthly Meeting			Weekly	Sharing Material
		Regular (District level)	BFAC	Staff (Block level)		
Una	DDA	28th	-	-	-	Yes
	ATMA	5th	-	-	-	Yes
	Amb		15th	20th	-	Yes
	Bangana		9th	22nd	-	Yes
	Gagret		2nd	18th	-	Yes
	Haroli		15th	20th	-	Yes
	Una		10th	29th	-	Yes
PMU	State PMU	8th	-	-	-	Yes
	DPMU Hamirpur	5th	-	-	-	Yes
	BPMU Hamirpur	9 th	-	-	every Saturday	Yes
	BPMU Bilaspur	1st	-	-	every Saturday	Yes
	BPMU Una	3rd	-	-	every Saturday	Yes
	DPMU Mandi	9th	-	-	-	Yes
	BPMU Mandi	2nd	-	-	every Saturday	Yes
	BPMU Sarkaghat	5th	-	-	every Saturday	Yes
	BPMU Kullu	10th				Yes
	BPMU Gohar	6th				Yes
	DPMU Palampur	9th	-	-	-	Yes
	BPMU Palampur	2nd	-	-	every Saturday	Yes
	BPMU Dharamshala	6th	-	-	every Saturday	Yes
	BPMU Chamba	22nd				Yes
	BPMU Dehra	12th	-	-	every Saturday	Yes
	DPMU Solan	3rd				Yes
	BPMU Solan	2nd				Yes
BPMU Rampur	10th				Yes	
BPMU Nahan	12th				Yes	

Note) BFAC: Block Farm Advisory Committee, staff: Staff of SMS office
Source) DDA and PMU, August 2022

(2) Results Obtained from Questionnaire Survey through WhatsApp

To know situation of transferring technologies to other DOA and PMU staff by CEOs, JICA TCP arranged Questionnaire Survey by making use of smart phone application WhatsApp. This survey was based on questions with multiple choice answer given in the WhatsApp as shown in Attachment-2.2.6. Total extension officers in the target 5 District for 5 years are 849 persons. The question was shared with 639 related extension staff of 5 target districts as well as PMU except retired persons (72 persons) as well as 138 persons who has no WhatsApp number, and 229 extension officers replied.

As shown in the below table, knowledge / experience obtained from the training programmes of JICA TCP were shared with other extension officers through regular meeting and office circulation.

Table 2.2.25 Result of WhatsApp Survey-1

Position	Total No,	Q-12 After participating in training programme of JICA TCP, did you share your experience with other extension officers in your office?		Q-13 If "Yes" in Q-12, how did you share?			
		Yes	No	In monthly meeting	In weekly meeting	Circulation	Others
SMS	25	25	0	25	19	5	8
DAO	1	1	0	1	1	0	0

Position	Total No,	Q-12 After participating in training programme of JICA TCP, did you share your experience with other extension officers in your office?		Q-13 If “Yes” in Q-12, how did you share?			
		Yes	No	In monthly meeting	In weekly meeting	Circulation	Others
ADO	33	31	2	33	17	3	6
AEO	65	56	9	65	23	6	16
AADO	8	7	1	8	2	0	3
AE	9	9	0	9	2	1	7
AO	9	9	0	9	2	2	5
BTM	15	14	1	15	6	3	4
ATM	34	30	3	33	9	2	6
Others	30	24	6	30	11	4	9
Total	229	206	22	228	92	26	64

Source) Q12 and Q13 of WhatsApp survey, JICA Experts Team

2.2.7 Conduct Monitoring and Evaluation of Progress and Achievement of Extension Activities [1.7]

(1) Review Conducted by JICA TCP

Monitoring visits were conducted as shown in the table 2.1.18. Results on the monitoring of extension activities are summarized as follows:

Table 2.2.26 Monitoring Results on Extension Activities for Farmers

No.	Constraints	Countermeasures
1	Non preparation of Action Plan	Before arranging any extension activity, Action plan clarifying Purpose of the activity, outputs to be expected and activity (ies) to be done should be prepared.
2	Lack of interest by the farmers	Extension activity should be based on the needs of the farmers and suitable to the area. Interested / practicing farmers be given top priority.
3	Non supply of tips/ key points	Simple handouts in Hindi highlighting key points should be provided to the farmers for their use during crop season.
4	Emphasis on general points (POP)	Practices to be proposed should be highlighted in details for easy understanding of farmers.
5	No arrangement for practice session	Activity should be demonstrated in farmer’s field, and they should be involved to do the practice for more clarity.
6	Dominance of part time farmers	Whole time Progressive farmer following good practices should be involved to share his experience and success points.
7	Lack of monitoring of progress of activity	Follow up visit schedule of Extension Officer should be shared to monitor the progress and support the farmers at critical stages
8	Non keeping of crop record	Farmers be requested to maintain simple record of main event/ outputs to compare the profit loss of the activity.
9	Support for input information / supply	Necessary support to farmers for arranging inputs, crop production practices and marketing of surplus should be provided.
10	Only Production oriented extension activities	Progressive farmers having marketable surplus should be supported to have linkages with Potential buyers and producing the crop as per buyer’s demand,
11	Focus on skills development.	To have impact, General awareness extension activities should be delinked from focused activities. EV / interaction with advance farmers should be arranged periodically.

No.	Constraints	Countermeasures
12	Less time to visit farmers' fields	EOs are mostly busy in supplying of farm inputs i.e. seeds, agro-chemicals, implements and machines all the 7 days as they are to keep the Sales Centre open everyday. At least 3 days in a week should be fixed for extension activities in the Fields
13	Lack of transportation	No local transport facility has been provided to the EOs and they are to visit the fields using public/ private bus facility which is time consuming and not convenient. Transport allowance to use their own vehicles (car/ motor bikes) should be provided.
14	Lack of technical, operational guidelines	EOs are provided only scheme implementation instructions Technical operational guidelines for different extension activities should be provided
15	Lack of technical material in the Sales Centres	As number of farmers are visiting Sales Centres so technical material like Charts, instructions, manuals, pamphlets, etc. should be kept in the Sales centres for discussion and reference of the farmers
16	On field extension activities through practice	Extension activities like trainings, demonstrations should be arranged on farmers' fields by arranging practice session instead of verbal discussion.

Source: JICA TCP Experts Team

During the lockdown period COVID-19 starting from 24th of March 2020 the EO couldn't undertake any extension activities for farmers in the fields. However, keeping in view harvesting and sowing of field crops the Govt of HP assigned the EO of DOA to support farmers for providing necessary inputs (implements, machinery, seeds, agro-chemicals, labour, etc.) so that farmers don't suffer losses. The EOs after getting permit from the Distt Administration also visited farmers' fields on limited scale in departmental / hired vehicle. They mostly guided the farmers and took feedback through smart phones by forming WhatsApp groups. The DDAs/ PD ATMAs /PD, HPCDP /DPM have also formed groups to give directions to the EOs and receive feedback from them.

Meanwhile, PMUs arranged some extension activities in small groups of farmers following instruction of MOH, GOI during the period of COVID-19 pandemic. The number of participants following covid appropriate behaviors was restricted below 20 and the participants were asked to avoid contact and bear mask.

In HPCDP-1, it is stated that monitoring on production and cultivated area was conducted as part of extension activities. Each BPMU checked production and area of each cropping season, in order to review progress of crop diversification. It is understandable that improvement of productivity and increment of cultivated area are indicated as achievement of crop diversification. This monitoring was continued by extension officers of HPCDP-1 until April 2021. As of April 2021, progress of achievements of crop diversification is shown as follows:

**Table 2.2.27 Achievement of Crop diversification Plans at Sub-Projects of PMU
(up to April 2021)**

DPMU	CCA (ha)	Area under diversification (Vege.) before the Project (ha.)	Diversified Area in Kharif 2020				Area diversified to Vegetables (%)
			Vegetable	Pulses, oilseeds, fodder etc.	Other commercial crops	Total area diversified (ha)	
Hamirpur	969	8	243	130	3	376	25
Mandi	1,261	60	738	127	1	866	59
Kangra	2,441	87	823	352	7	1,182	34

DPMU	CCA (ha)	Area under diversification (Vege.) before the Project (ha.)	Diversified Area in Kharif 2020				Area diversified to Vegetables (%)
			Vegetable	Pulses, oilseeds, fodder etc.	Other commercial crops	Total area diversified (ha)	
Total	4,671	155	1,804	609	11	2,424	39

Source : Result of final monitoring conducted by PMU, April 2021

(2) Results Obtained from Questionnaire Survey through WhatsApp

To monitor and evaluate progress and achievement of extension activities, JICA TCP arranged Questionnaire Survey that was described in Section 2.2.6 (2).

Response on getting knowledge and experience about techniques for farmers from training programmes is summarized as follows:

Table 2.2.28 Result of WhatsApp Survey-2

Position	Total No,	Q-8 Did you get useful knowledge and experience about techniques to be provided to farmers from training programme of JICA TCP?		
		Yes, I got.	No, it's not new for me.	No comments
SMS	25	21	3	1
DAO	1	1	0	0
ADO	33	31	1	1
AEO	65	54	3	7
AADO	8	7	0	1
AE	9	9	0	0
AO	9	9	0	0
BTM	15	14	0	1
ATM	34	31	0	3
Others	30	22	2	6
Total	229	199	9	20

Source: Q8 of WhatsApp survey, JICA Experts Team

As shown in the above table, around 90% out of total respondents received useful knowledge and experience for farmers. Out of 179 responses, 146 (82%) replied that they have applied learnings/ experienced of JICA TCP. Further, 125 respondents replied that they shared their learnings / experiences in farmers' fields.

Table 2.2.29 Result of WhatsApp Survey-3

Position	Total No,	Q-17 Have you applied the learnings/experience from training programme of JICA TCP in your extension activities?		Q-18 If "Yes" in Q-17, where have you applied the learnings?				
		Yes	No	Farmers' field	Sales Centre	My office	Through phone	Others
SMS	25	24	1	22	2	5	6	1
DAO	1	1	0	1	0	1	0	0
ADO	33	29	3	25	4	9	9	3
AEO	65	50	12	36	13	16	17	8
AADO	8	4	3	3	1	2	0	1
AE	9	9	0	8	0	1	3	1
AO	9	9	0	9	0	3	5	1
BTM	15	14	1	13	0	1	3	1
ATM	34	21	12	18	1	3	4	5
Others	30	20	10	17	5	5	9	3

Position	Total No,	Q-17 Have you applied the learnings/experience from training programme of JICA TCP in your extension activities?		Q-18 If “Yes” in Q-17, where have you applied the learnings?				
		Yes	No	Farmers’ field	Sales Centre	My office	Through phone	Others
Total	229	181	42	152	26	46	56	24

Source: Q17 and Q18 of WhatsApp survey, JICA Experts Team

Extension officers were instructed to share all data / knowledge / experience with colleagues in the respective offices. Therefore, it is strongly requested to arrange library in the office. As shown in the following table, thorough management of extension materials in the respective offices is required.

Table 2.2.30 Result of WhatsApp Survey-4

Position	Total No.	Q-15 Where do you keep materials which you received in training programmes?			Q-16 In your office, do you have a staff who is in charge of managing training materials and other references for extension activities?		
		with me	Library in the office	Others	Yes, we have.	No, we don’t have.	No comments
SMS	25	7	16	2	15	7	3
DAO	1	0	0	1	0	0	1
ADO	33	12	12	7	9	15	7
AEO	65	31	16	13	25	28	10
AADO	8	2	2	1	2	4	2
AE	9	3	5	1	3	5	1
AO	9	2	6	1	1	7	1
BTM	15	6	7	1	4	7	4
ATM	34	16	4	12	12	12	8
Others	30	6	13	11	19	3	8
Total	229	85	81	50	90	88	45

Source: Q15 and Q16 of WhatsApp survey, JICA Experts Team

Regarding extension activities in the sub-projects handed over from HPCDP-1, two-third of extension officers replied any activities of the existing schemes have been conducted in those sub-projects, however those activities have been done at not only farmers’ fields but also other opportunities such as AEO office, through phone or sales centers.

Table 2.2.31 Result of WhatsApp Survey-5

Position	Total No,	Q-21 Whether are there any sub-projects handed over from HPCDP-1 in your block?		Q-22 If “Yes” in Q-21, have you conducted any activities of the existing schemes in sub-projects which were handed over from PMU?		Q-23 If “Yes” in Q-22, where have you applied it?				
		Yes	No	Yes	No	Farmer’s field	Sales Centre	My office	Through phone	Others
SMS	25	15	10	13	5	13	2	3	2	0
DAO	1	0	1	0	1	0	0	0	0	0
ADO	33	15	18	11	11	11	1	1	3	3
AEO	65	32	33	27	21	28	8	12	9	3
AADO	8	5	3	5	2	4	0	1	0	0
AE	9	5	4	3	1	3	0	1	2	0
AO	9	3	5	2	1	5	0	2	2	1
BTM	15	7	5	6	2	5	0	2	1	0
ATM	34	7	21	8	6	10	1	1	1	3
Others	30	9	21	7	15	9	2	3	3	2

Position	Total No,	Q-21 Whether are there any sub-projects handed over from HPCDP-1 in your block?		Q-22 If “Yes” in Q-21, have you conducted any activities of the existing schemes in sub-projects which were handed over from PMU?		Q-23 If “Yes” in Q-22, where have you applied it?				
		Yes	No	Yes	No	Farmer’s field	Sales Centre	My office	Through phone	Others
Total	229	98	121	82	65	88	14	26	23	12

Source: Q21, Q22, and Q23 of WhatsApp survey, JICA Experts Team

Meanwhile, it is stated that preparation of action plan might not be so popular in DOA side. Extension officers are required to be thorough with preparation of action plan for each extension activity.

Table 2.2.32 Result of WhatsApp Survey-6

Position	Total No.	Q-24 Have you prepared action plan, which specify purpose, activities, and outputs, before undertaking your extension activities in the existing schemes?		
		Always	Sometimes	Never
SMS	25	13	12	0
DAO	1	1	0	0
ADO	33	11	16	6
AEO	65	20	31	14
AADO	8	2	3	3
AE	9	5	4	0
AO	9	2	7	0
BTM	15	7	6	1
ATM	34	16	10	5
Others	30	14	8	8
Total	229	91	97	37

Source: Q24 of WhatsApp survey, JICA Experts Team

Further, regarding reasons / constraints to restrict field extension activities, it is specified that the most important reason is shortage of transportation (traveling means).

Table 2.2.33 Result of WhatsApp Survey-7

Position	Total No,	Q-26 Which reasons / constraints restrict your field extension activities?								
		1	2	3	4	5	6	7	8	9
SMS	25	6	4	3	14	10	5	13	10	1
DAO	1	0	0	0	0	0	0	0	0	1
ADO	33	6	9	6	21	7	1	12	11	9
AEO	65	9	27	13	33	23	11	17	22	14
AADO	8	1	2	0	5	4	3	3	1	0
AE	9	7	0	0	0	0	0	1	0	2
AO	9	3	1	0	4	1	3	2	3	0
BTM	15	7	2	2	3	4	3	4	3	2
ATM	34	11	2	2	5	2	1	2	6	11
Others	30	10	4	4	7	6	6	6	3	3
Total	229	60	51	30	92	57	33	60	59	43

Remarks: 1 No restriction /disturbance 4 No transportation /travelling means 7 Less Extension Officers
2 Management of Sales Centre 5 No fuel allowance 8 Less availability of computers
3 Sales norm of farm inputs 6 Less TA/DA 9 Others

Source: Q26 in WhatsApp survey, JICA Experts Team

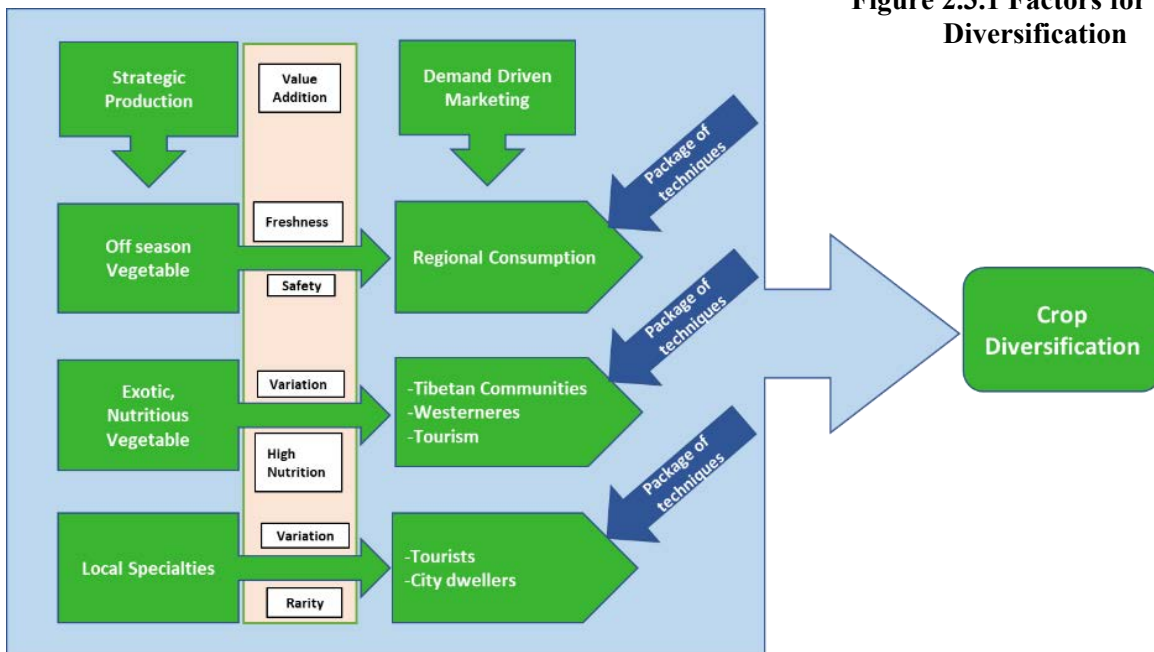
2.3 Activities to Achieve Output-2: Through Activities in Pilot Areas, Packages of Techniques to Promote Crop Diversification are Compiled

The objective of Output 2 is to promote crop diversification by adding high value, differentiation from other vegetables in other states and improvement of productivity by introduction of new techniques. In these activities, 4 concepts (Variation, Rarity, Safety and Freshness) were introduced to analyze the factors of this objective as shown in Figure 2.3.1. To achieve the objective, approaches and strategies including 3 components (off season vegetable, exotic and nutritious vegetable and local specialties) were chosen to make output 2 activities more practical and effective as shown in Figure 2.3.2.



Source: JICA TCP Experts Team

Figure 2.3.1 Factors for Crop Diversification



Source: JICA TCP Experts Team

Figure 2.3.2 Approaches and Strategies for Crop Diversification

2.3.1 Select Pilot Area One in Each Block Project Management Unit (BPMU) for Every Two Years Based on Farmers' Proposals and Criteria Developed by PMU/DOA [2.1]

(1) Stage 1

During stage 1, selection of pilot area and activity were conducted as follows:

- 1) Proposal format (Attachment-2.3.1) was prepared by JICA TCP in consultation with BPMU
- 2) Based on the proposal, BPMU made a list of candidate pilot areas
- 3) Selection criteria (Attachment-2.3.2) was prepared by JICA TCP in collaboration with BPMUs in consultation with District Coordinators Committee for Output 2.
- 4) Based on the selection criteria, each BPMU in consultation with JICA TCP selected pilot activities and pilot area. And DC Committee and PMU approved those activities and area for pilot activities.

Pilot area and activity in Stage 1 are shown as follows:

Table 2.3.1 Pilot Area and Activity for Stage 1

No.	BPMU	Pilot Area (Sub-project)	Pilot Activity
1.	Hamirpur	Chelleli	Off-season vegetable cultivation and nursery production
2.	Dehra	Gela Kuhl	Nursery production and off-season vegetable cultivation
3.	Bajjnath	Gabli Kuhl	Off-season nursery production and high-value crop cultivation
4.	Sarkaghat	Sandral	Exotic vegetables cultivation and local specialty production
5.	Mandi	Jail Khad Dhangadhar	Off-season vegetable cultivation and local specialty production
6.	Nurpur	Johar Dariya	Improved nursery production
7.	Una	Badhera Lower	Exotic and high-value vegetable cultivation and nursery production
8.	Bilaspur	Balhseena	Off-season vegetable cultivation and nursery production

Source: JICA TCP Experts Team

(2) Stage 2

Based on the learning, which was taking so much time to select and no agreement with farmers, from Stage 1, following steps were implemented to select pilot area and activity in Stage 2.

- 1) Based on recommendation from BPMU and DOA, JICA TCP investigated PMU and DOA sites
- 2) JICA TCP visited the sites with BPMU and DOA and had discussion with farmers on pilot activity
- 3) During and after visits, pilot area and activities were selected, and plans were made
- 4) Pilot activity and area were approved by DC committee

Pilot area and activity in Stage 2 are shown as follows:

Table 2.3.2 Pilot Area and Activity for Stage 2

No.	BPMU	Pilot Area (Sub-project)	Pilot Activity
1.1	DOA Hamirpur	Majhog Sultani	Off-season and exotic vegetable cultivation
1.2	DOA Hamirpur	Dudhana	Off-season vegetable cultivation
2.	Dehra	Dughiari	Exotic vegetables cultivation
3.	Bajjnath	Hartara	Healthy/Commercial nursery production and local specialty production
4.	Sarkaghat	Dhamella	Off-season vegetable cultivation
5.	Mandi	Kataula	Exotic vegetable cultivation
6.	Nurpur	Minjh Gram	Off-season vegetable cultivation
7.	Una	Sathru	Off-season vegetable cultivation and nursery production
8.	Bilaspur	Jhamradiyan	Off-season vegetable cultivation

Source: JICA TCP Experts Team

2.3.2 Support BPMU/DOA Staff (Block) and Farming Communities in Preparing Plans of Pilot Activities for Crop Diversification Based on the Market Demand [2.2]

(1) Stage 1

To support BPMU/DOA staff as well as farming communities for preparation of plans of pilot activities, orientation workshops were organized in each BPMU for extension staff to provide practical cropping plan. While preparation of cropping plan, farmers view, and indigenous knowledge were also kept in consideration like existing suitable or popular varieties, timing of sowing or transplanting etc. to make it more locally customized one. The format of cropping plan is shown in Attachment-2.3.3.

Some improved or new techniques like introduction of walk-in tunnels, low poly tunnels, anti-hail nets, healthy nursery raising, seedlings preparation through cuttings and grafting, use of non-woven sheet (floating row covers), mulching sheets etc., were also introduced in the cropping plans so that farmers

can get good returns through improvement of their existing techniques.

(2) Stage 2

Based on learning from Stage 1, sufficient discussion among BPMU/DOA staff, farmers and JICA TCP were organized to support them for preparation of plans of pilot activities to make it practical. While preparation of cropping plan, farmers' experiences, views and their indigenous knowledge were also kept in consideration like the same as Stage 1.

2.3.3 Support BPMU/DOA (Block) and Farming Communities in Implementing Selected Pilot Activities at the Respective Sites [2.3]

Output 2's approach is to provide demonstrations and trainings of every activity at farmer's sites before the starting of implementation by using of support material in the form of PowerPoints (PPTs) and other methods such as guideline including cultivation manuals. During demonstration, involvement of PMU and DOA extension staff is always ensured.

(1) Agricultural Techniques Introduced through Stage 1 and 2

1) Cropping Schedule

After the selection of pilot sites under BPMUs, first step was to introduce seed selection and its cropping schedules to the farmers. Three important timing (sowing transplanting and harvest) were included in the cropping schedule. An example of tomato schedule is shown as follows:

Table 2.3.3 Cropping Schedule (Tomato)

Area	Cropping schedule	First Year												Second Year											
		Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
High-Hills	Sowing			Poly-tunnel																					
	Transplanting																								
	Harvesting																								
Mid-Hills	Sowing			Poly-tunnel																					
	Transplanting																								
	Harvesting																								
Plains	Sowing			Poly-tunnel																					
	Transplanting																								
	Harvesting																								

Source: JICA TCP Expert team

2) Growth Stage-Wise Techniques

Growth stage-wise techniques introduced are shown as follow:

Table 2.3.4 Growth Stage-Wise Techniques

Stages	Techniques	Purposes
Nursery raising	Raised bed nursery production	Inside and outside of polyhouse or poly-tunnel, raised bed nursery with line sowing was applied for sure germination and good growth
	Pot nursery production	In the case of big seeds such as Regimes and Cucurbits, pot sowing was introduced for sure germination and good growth
	Plug tray nursery production	For assured nursery production, plug tray nursery of Tomato, Capsicum, Brinjal and Cole crops with use of cocopeat, FYM, sand and gravels as medias was done in pilot areas
	Thinning out	Thinning out of weak seedlings or dense sowing was done to reduce competing and promote healthy growth.
	Portable low poly tunnel	It is used to promote germination and growth of nursery in winter. It is also protection from rain to grow seedlings for early crop cultivation.
	Multi-layered poly tunnel	In addition to the low poly-tunnel, multi-layered poly-tunnels were also introduced. This is very effective to protect from frost injury and for early nursery production. By multi-layered poly tunnel, increase of inner air and soil temperature is expected. It

Stages	Techniques	Purposes
		would contribute to produce summer crop seedling even under severe cold conditions.
	Non-woven sheet	For early nursery production and protection from insect such as whitefly, this material is very effective. Therefore, it would contribute to safe vegetable production. At the most, it is very effective to protect from the frost injury. On the contrary, it is effective to reduce the temperature in summer if the large mesh and light weight sheet is used.
Transplanting	Field preparation	To improve soil texture and cleanliness, application of fertilizer and precautional fungicide in some cases were done after enough tilling
	Basal fertilizer application	To promote rooting and good growth, thorough mixing of basal dose of fertilizer was done. Direct contact of fertilizer with the crop roots was avoided not to damage the roots for healthy growth.
	Root spreading and soil covering	To raise the survival rate of transplanting, the stage of seedling was confirmed, and the roots of crops was spread on the centre mound in the planting holes. Cover the roots with soil up to cotyledon to avoid rotting.
	Timing selection	To be saved from high temperature, strong sunshine and transpiration of raised bed nursery, it is recommended to transplant in the evening.
	Poly-mulch	Originally it was introduced for protection from drought during Zaid season. Black and silver poly mulch was applied to retain soil moisture, reduction in leaching of fertilizers, improved crop quality, reduction to root damage and most importantly weed management from the crop.
	Drip irrigation	To assure the water application and reduce the labour, drip irrigation was introduced with poly-mulch.
Training	Coiling down of vines	To reduce the height of crop and promote nutrition supply, guiding the vines of the plant to grow in desired way (coiling down) was done on Tomato and Cucumber.
	Laying down the main stem	Two poles of 2.5m length should be vertically buried deep, at least 30cm, in the soil at each corner of the crop bed. Place one pole horizontally over the vertical poles. Then tying a rope near each seedling and guide them to the rope in order to let the vine laid down.
	Single or double stems training	Vines should be trained on single or double stem for better crop growth and yield.
Staking	Staking net	Staking net is the input provided by TCP to be used for training of the vines in the case of Cucumber.
Prevention from hailstones	Anti-hail net	As a protection from the hailstone damage, it was introduced. Moreover, farmers utilized the net for protection from animal damages caused by rabbits or wild boars as a fence. In addition, the net was effective to soften the leaves of leafy vegetables.
Pruning	Selection of stems and reduction of extra buds or branches	In pruning, removal of side buds up to fifth node and process of remove all extra branches from the vine were demonstrated in the field. Erect two stems for fruiting. After erecting two stems, remove all extra branches except flower buds.
Cutting	Propagation through cutting	Multiplication of Tomato crop through cuttings were demonstrated during TCP's activity in the field for increasing the yield of Tomato and decreasing or escaping the time spent in nursery raising. It is also effective to retain the genetic character of the original crop.
Grafting	Grafting to wild or strong variety	Grafting of Cucumber to Ash gourd was introduced to make disease tolerant seedlings.
Plant growth promotion	Additional fertilizer application	To promote plant growth, application of additional fertilizer was recommended before flowering or fruiting stage. If the harvesting period is long, another additional fertilizer was applied.
	Weeding and inter-tillage	To reduce the competence with weeds, weeding was done and to improve aeration by inter-tillage was recommended. Applying these management, crop growth is promoted.

Stages	Techniques	Purposes
	Earthing up	After the application of additional fertilizer, piling up around the base of a plant is known as earthing up. It promotes desired growth.
Quality improvement	Lawn tunnel	Protection from insect attack and reduction of inner air temperature for quality improvement
	Shade net (Blanching)	Young shoots of plants are covered to exclude light to prevent photosynthesis. Blanched vegetables generally tend to have a more delicate flavour and texture compared to those that are not blanched. Such crops are traded at high prices. Mostly in Cauliflower, and Treviso and Celery this technique was introduced.
Harvesting	Harvesting (Tomato)	Depending upon the market, farmers were guided to harvest their produce. If market is near then fully ripe Tomato should be harvested and if market is at some distance, then little hard and light-yellow coloured fruits should be harvested. This is because it ripens in the process of transportation.
Rejuvenation	Training and pruning	To continue harvesting for a longer duration from the day of its beginning, remove the lower leaves and branches and pull down the naked main stem to the ground while other branches bearing fruits should be on staking net.

Source: JICA TCP Expert team

3) IPM Techniques

IPM techniques introduced are shown as follow:

Table 2.3.5 IPM (Integrated Pest Management) Techniques

Categories	Techniques	Purposes
Disease control	1) Using disease tolerant varieties, 2) Introduction of grafting with disease tolerant rootstocks for Cucurbits such as local varieties of Ash gourd, Cucumber, Pumpkin, 3) Precaution (application of fungicide to the nursery beds in advance), 4) Crop rotation, 5) Proper application of fertilizer, 6) Early nursery sowing to avoid disease rampant season, 7) Soil moisture control by high bed, preparation of drainages in the field and surrounding of polyhouse or tunnels, 8) Proper aeration in polyhouse to reduce occurrence of powdery mildew, 9) Application of mulch sheet to control soil moisture and reduce possibility of disease occurrence, 10) Use of Trichoderma (a fungus called ascomycetes) to soil-borne diseases, 11) Seed treatment as a precaution to diseases	Reduction of diseases occurrences
Insect control	1) Pheromone trap to attract insects and catch them inside of traps, 2) Sticky trap to catch small insects such as aphids, whitefly inside of polyhouse, 3) Inter-cropping insect repelling plants such as Marigold	Reduction of insect-prevalence
Physical control	1) Saltwater seed selection to reduce contaminated seed, 2) Soil solarization to kill diseases and insects in polyhouse as well as the field with transparent poly-sheet, 3) Use of poly-sheet for rain protection cultivation to reduce fungus problems, 4) Application of mulching sheet to avoid water splash and it can reduce the risks of soil-borne diseases	Reduction of disease occurrence

Source: JICA TCP Expert team

4) Organic Farming

Organic farming techniques introduced are shown as follows:

Table 2.3.6 Organic Farming Techniques

Categories	Techniques	Purposes
Organic fertilizer	Organic manure	From the ecological point of view, the backyard-manure (Cow dung and agricultural residue) are utilized as an organic fertilizer after fermented.
	Organic liquid fertilizer	To promote growth of crops, sometimes organic liquid fertilizer is made from cow dung, legume plants and water. It can be produced in short time and works instantly.
Organic insect repellent	Organic insect repellent	To reduce the occurrence of insects, cow-urine is used after fermented and diluted. For root crops, mix-planting of Marigold is recommended to reduce the occurrence of nematodes.

Source: JICA TCP Expert team

5) Post-Harvest Techniques

Post-harvest techniques introduced are shown as follow:

Table 2.3.7 Post-Harvest Techniques

Categories	Techniques	Purposes
Post-harvest treatment	Sorting and grading	For getting good price of the produce, farmers were guided for removal of rotten, damaged or diseased fruits from healthy clean ones. And grading the fruits in each common parameter which enables easy handling of produce and fetched into good price.
	Packaging	After sorting and grading of fruits, farmers were guided to carefully place the fruits in soft plastic or padded containers to avoid transportation shocks. The simplest way is to wrap the crop with newspaper to keep freshness.
Seed multiplication	Seed harvesting	In case of open pollinated seed or heirloom variety, farmers can collect seed for next season.
Processing	Sun-drying	Dried cherry tomato to preserve perishable fresh Cherry tomatoes and herbal tea production of Rhododendron, Himalayan violet, Mulberry leaf tea, Pine leaf tea were introduced.
	Jam and compote	Rhododendron jam and compote, Sour apple jam, apricot jam were introduced.
	Paste	Chili and Garlic paste, Ginger and Garlic paste, Chili and lime paste were introduced
	Pickling	Salted apricot, Radish with Perilla leaves were introduced.

Source: JICA TCP Expert team

6) Introduced Inputs and Materials for Off-Season and Exotic Vegetable Cultivation

Introduced inputs and materials for off-season and exotic vegetable cultivation are shown as follow:

Table 2.3.8 Introduced Inputs and Materials for Off-Season and Exotic Vegetable Cultivation

Categories	Inputs and materials	Purposes
Protected cultivation	Walk-in poly-tunnel	It was introduced for early nursery raising and off-season vegetable production. It is lower in height and has less weight compared to DOA recommended polyhouses. Therefore, it is easy for farmers to maintain it by themselves. Cost is only INR 47,000. Even farmer can purchase without governmental subsidy. The walk-in poly-tunnel is movable since it is light. It means effective for preventing damage from repeated cultivation (soil borne diseases and nematodes) in the same plot. New portable polytunnel from Japan was brought to demonstrate its use in nursery raising at DOA Hamirpur.
	Low poly-tunnel	It was introduced for early nursery raising and off-season vegetable cultivation. The size was more compact compared with DOA recommended one. So, it is easy to maintain even for female farmers.
	Multi-layered tunnels	It was very effective to protect from frost injury and to produce earlier nursery even in cold winter by increasing soil and air temperature within the tunnels.
	Hot water bottle	Water inside of the PET bottle absorbed the heat from the sun and released the heat at night in multi-layered tunnels. It can increase the temperature inside the tunnels at night and promoted the growth of summer crop seedlings.
	Non-woven sheet	It is effective to produce early nursery and to suppress white fly attacks in some crops such as Zucchini or Squash. It is effective as a frost prevention material and to produce high quality vegetables.
	Poly-mulch	It was introduced for anticipation of drought in Zaid season (from March to June). The growth and production of crops under poly-mulch with drip irrigation was better than normal field. It is also effective to increase the air and soil temperature for off-season vegetable production to harvest earlier. In addition, weeds are suppressed, therefore weeding is not necessary and reduce the cost of labour.
	Insect net tunnel	It is effective to prevent insect attack in summer and to improve quality of vegetables
	Shade net	It was introduced for blanching (whitening) of exotic vegetables such as Celery and Treviso (heading type red lettuce). By blanching, taste, texture and colour of these exotic vegetables were improved, and the improved vegetables were sold for a better price.

Categories	Inputs and materials	Purposes
	Anti-hail net	It was introduced for prevention from hailstorm damage. Farmers were also using it as boundary wall to resist the entry of wild animals such as rabbits and wild bores. It was also effective to make leafy vegetables softer.
Support	Staking net	It was introduced over the ropes used by the farmers for training of the vines of the crops. It covers a large area, and its installation is also very easy.

Source: JICA TCP Expert team

(2) Stage 1

Number and area of facilities introduced to each pilot area in Stage 1 are shown as follows.

Table 2.3.9 Facilities and Inputs Provided in Stage 1

No.	BPMU (Pilot Area)	Facilities and Inputs					
		Walk-in polytunnel (35 m ² , 300kg)	Low polytunnel (3.6 m ² , 25kg)	Anti-hail net (400m ² /farmer)	Non-woven sheet (100 m ²)	Poly-mulch (150 m ²)	Staking net (200m ²)
1	Hamirpur (Chelleli)	3	4	-	-	-	-
2	Dhera (Gela Kuhal)	2	-	-	-	-	-
3	Bajjnath (Gabli Kuhl)	-	10	12	-	-	-
4	Sarkaghat (Sandral)	-	1	-	1	-	-
5	Mandi (Jail Khad Dhangadhar)	5	-	-	-	-	-
6	Nurpur (Johar Dariya)	-	5	-	-	-	-
7	Una (Badhera Lower)	-	3	-	-	1	-
8	Bilaspur (Bahseena)	3	4	-	-	-	-

Source: JICA TCP Expert team

Using those facilities and inputs, activities as shown below table were implemented for improved nursery production, early nursery raising, off-season and exotic vegetable cultivation in each pilot area along with BPMU, PMU and DOA staff.

Table 2.3.10 Season-Wise Activities in Each Pilot Area for Stage 1

No.	BPMU (Pilot Area)	Type	2017 Rabi	2018 Kharif	2018 Rabi	2019 Kharif	2019 Rabi
1.1	Hamirpur (Chelleli)	Crops	Early Cauliflower, Cauliflower	Bottle Gourd, Cucumber, Bitter Gourd, <i>Butternut</i> , <i>Orange Pumpkin</i>	Early Cauliflower , Cauliflower, Onion , <i>Broccoli</i>	Zucchini, Bottle Gourd, Cucumber, Bitter Gourd, Tomato, Capsicum <i>Butternut</i> , <i>Orange Pumpkin</i>	Early Cauliflower , Cauliflower, Garlic
		Nursery	-	-	Onion	-	Onion
1.2	Hamirpur (Majhog)	Crops	-	<i>Red and Yellow Cherry tomato</i> , <i>Yellow Zucchini</i> , <i>Butternut</i>	Cauliflower, <i>Broccoli</i>	<i>Red and Yellow Cherry tomato</i> , <i>Yellow Zucchini</i> , <i>Butternut</i>	-
2	Dhera (Gela Kuhal)	Crops	<i>Pak-choy</i> , Cauliflower, <i>Pak-choy</i> , <i>Broccoli</i>	-	<i>Pak-choy</i> , Cauliflower, <i>Pak-choy</i> , <i>Broccoli</i>	-	<i>Pak-choy</i> , Cauliflower, <i>Pak-choy</i> , <i>Broccoli</i>
		Nursery	Capsicum, Chilli, Tomato,	Cucumber, Bottle gourd, Bitter gourd, Tomato,	Capsicum, Chilli, Tomato,	Cucumber, Bottle gourd, Bitter gourd, Tomato,	Capsicum, Chilli, Tomato, Knolkhol (Kohlrabi),

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No.	BPMU (Pilot Area)	Type	2017 Rabi	2018 Kharif	2018 Rabi	2019 Kharif	2019 Rabi
			Knolkhol (Kohlrabi), Pak-choy, Broccoli	Capsicum, Long yard bean, Chilli, Brinjals	Knolkhol (Kohlrabi), Pak-choy, Broccoli	Capsicum, Long yard bean, Chilli, Brinjals	Pak-choy, Broccoli
3	Bajnath (Gabli Kuhl)	Crops	Cauliflower	Cucumber	Cauliflower, Lettuce, Kale, Broccoli, Green cauliflower, Pink radish	Cucumber	Cauliflower, Lettuce, Kale, Broccoli, Green cauliflower, Pink radish
4.1	Sarkaghat (Sandal)	Crops	Onion, Cauliflower, Garlic, Broccoli, Pak-choy, Chinese cabbage, Lettuce,	Cucumber, Tomato, Broccoli	Onion, Cauliflower, Garlic, Broccoli, Pak-choy, Chinese cabbage, Lettuce	Cucumber, Tomato, Broccoli	Onion, Cauliflower, Garlic, Broccoli, Pak-choy, Chinese cabbage, Lettuce
		Nursery	Broccoli, Pak-choy, Chinese cabbage, Lettuce, Onion, Cauliflower	-	Broccoli, Pak-choy, Chinese cabbage, Lettuce, Onion, Cauliflower	-	Broccoli, Pak-choy, Chinese cabbage, Lettuce, Onion, Cauliflower
4.2	Sarkaghat (Dhamella)	Crops	Cauliflower, Onion, Broccoli	Tomato, Capsicum, Chilli, Bottle gourd, Bitter gourd, Brinjal	Cauliflower, Onion, Broccoli	Tomato, Capsicum, Chilli, Bottle gourd, Bitter gourd, Brinjal, Butternut	Cauliflower, Onion, Broccoli
		Nursery	Green onion (Off-set seedling)	-	Green onion (Off-set seedling)	-	Green onion (Off-set seedling)
5	Mandi (Jail Khad Dhangadhar)	Crops	Coriander, Peas	Cucumber, Tomato, French beans, Bottle gourd	Coriander, Peas	Cucumber, Tomato, French beans, Bottle gourd	Coriander, Peas
		Nursery	Cauliflower, Cabbage	Cauliflower	Cauliflower, Cabbage	Cauliflower	Cauliflower, Cabbage
6.1	Nurpur (JoharDariya)	Crops	Cauliflower	Cucumber, Bottle gourd, Bitter gourd, Tomato, Brinjal, Chilli, etc.	Cauliflower	Cucumber, Bottle gourd, Bitter gourd, Tomato, Brinjal, Chilli, etc.	Cauliflower
		Nursery	Cauliflower	Cucumber, Bottle gourd, Bitter gourd, Tomato, Brinjal, Chilli, etc.	Cauliflower	Cucumber, Bottle gourd, Bitter gourd, Tomato, Brinjal, Chilli, etc.	Cauliflower
6.2	Nurpur (Minj Gram)	Crops	-	-	-	-	Chinese cabbage, Leaf lettuce, Pak-choy

No.	BPMU (Pilot Area)	Type	2017 Rabi	2018 Kharif	2018 Rabi	2019 Kharif	2019 Rabi
6.3	Nurpur (Chatred)	Crops		Tomato, Cucumber	<i>Chinese cabbage, Leaf lettuce, Pak-choy</i>	Tomato, Cucumber	-
7	Una (Badhera Lower)	Crops	Early cauliflower , French beans, Onion, <i>Broccoli, Swiss chard, Kale, Chioggia beetroot</i>	Zucchini, Cucumber, Bottle gourd, Bitter gourd, Tomato, Brinjal, Chilli, Okra, Capsicum, French beans, Long yard bean etc. <i>Swiss chard, Cherry tomatoes, Orange pumpkin, Black cabbage, Yellow Zucchini and Butternut</i>	Early cauliflower , French beans, Onion, <i>Broccoli, Swiss chard, Kale, Chioggia beetroot</i>	Zucchini, Cucumber, Bottle gourd, Bitter gourd, Tomato, Brinjal, Chilli, Okra, Capsicum, French beans, Long yard bean etc. <i>Swiss chard, Cherry tomatoes, Orange pumpkin, Black cabbage, Yellow Zucchini and Butternut</i>	Early cauliflower , French beans, Onion, <i>Broccoli, Swiss chard, Kale, Chioggia beetroot</i>
8	Bilaspur (Balhseena)	Crops	Cauliflower	Cucumber, Bottle gourd, Bitter gourd, Tomato, Brinjal, Capsicum, Okra, Onion etc.	Cauliflower	Cucumber, Bottle gourd, Bitter gourd, Tomato, Brinjal, Capsicum, Okra, Onion etc.	Cauliflower
		Nursery	Cauliflower	Tomato	Cauliflower	Tomato	Cauliflower

Source: PMU and JICA TCP Experts Team

Note: *Italics* are exotic vegetables and **bolds** are crops in polyhouses.

Regarding local specialty, activities related to processing were recommended keeping in consideration the availability of local specialties like Rhododendron flowers, Ash gourds, Sour apples, wild Raspberries, Galgals (Hill lemon), Apricots, Quinces and implemented as follows:

Table 2.3.11 Local Specialties Promotion for Stage 1

No.	BPMU (Pilot Area)	Activities		
		Presentation	Demonstration	Hands-on training
1	Bajnath (Gabli Kuhl)	-	-	-
2	Bilaspur (Balhseena)	-	-	-
3	Mandi (Jail Khad Dhangadhar)	Sour apple jam	Sour apple jam	Sour apple jam
		Rhododendron jam and juice	Rhododendron jam and juice	Rhododendron jam and juice
		Gucci mushroom cultivation Slurry mass method PSA (Potato Sucrose Agar) method	Gucci mushroom cultivation Slurry mass method PSA method	Gucci mushroom cultivation Slurry mass method PSA method
	Mandi (Badli Bagh)	Salted Perilla leaves Apricot pickles Rhododendron jam, compote Rhododendron tea Himalayan violet tea	Cultivation of Perilla leaves Apricot pickle preparation Packing and weighing of Apricot pickle Rhododendron jam, compote,	Cultivation of Perilla leaves Apricot pickle preparation Packing and weighing of Apricot pickle Rhododendron jam, compote

No.	BPMU (Pilot Area)	Activities		
		Presentation	Demonstration	Hands-on training
			tea Himalayan violet tea	Rhododendron tea Himalayan violet tea
	Mandi (Sundarnagar)	Rhododendron juice and jam Ash gourd juice Hill lemon (Galgal), Chilli paste	Ash gourd juice	-
	Mandi (Karsog)	Local specialties	-	-
4	Hamirpur (Chelleli)	-	-	-
5	Nurpur (JoharDariya)	-	-	-
6	Una (Badhera Lower)	Ash gourd juice and Cherry tomato jam and sauce	Cherry tomato jam and sauce	Cherry tomato jam and sauce
7	Sarkaghat (Sandal)	Rhododendron juice and jam, Ash gourd juice, Ginger and garlic paste	Ash gourd juice	Ash gourd juice
	Sarkagaht (Gohal)	Ash gourd juice	Rhododendron jam and juice	Rhododendron juice
8	Dehra (Gela Kuhal)	-	-	-

Source: PMU and JICA TCP Experts Team

(3) Stage 2

Number and area of facilities introduced to each pilot area are shown as follows:

Table 2.3.12 Facilities and Inputs Provided in Stage 2

No.	BPMU (Pilot Area)	Facilities and Inputs						
		Walk-in polytunnel (35 m ² , 300kg)	Low polytunnel (3.6 m ² , 25kg)	Shade net (400m ² /farmer)	Non- woven sheet (100 m ²)	Poly- mulch (150 m ²)	Staking net (200m ²)	Anti-hail net (400m ²) x6 (2400m ²) x1
1.1	Hamirpur (Majhog)	-	-	-	1	4	-	-
1.2	Hamirpur (Dudhana)	-	1	-	-	2	4	-
2	Dhera (Dughiari)	-	1	-	1	-	-	-
3	Bajjnath (Hartara)	2	1	-	-	-	-	-
4	Sarkaghat (Dhamella)	2	3	-	-	-	-	7
5	Mandi (Kataula)	1	-	1	-	1	-	-
6	Nurpur (Minj Gram)	3	3	-	1	-	-	-
7	Una (Sathru)	-	3	-	-	1	1	-
8	Bilaspur (Jhamradiyan)	2	2	-	-	-	4	-

Source: PMU and JICA TCP Experts Team

Using those facilities and inputs, activities as shown below table were implemented for improved nursery production, early nursery raising, off-season and exotic vegetable cultivation in each pilot area along with BPMU, PMU and DOA staff.

Table 2.3.13 Season-Wise Activities in Each Pilot Area for Stage 2

No.	BPMU (Pilot Area)	Type	2020 Kharif	2020 Rabi	2021 Kharif	2021 Rabi	2022 Kharif
1.1	Hamirpur (Majhog)	Crops	Bottle gourd, Cucumber, Bitter gourd,	Early Cauliflower, Cauliflower	-	-	-

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No.	BPMU (Pilot Area)	Type	2020 Kharif	2020 Rabi	2021 Kharif	2021 Rabi	2022 Kharif
			<i>Butternut, Orange Pumpkin</i>				
1.2	Hamirpur (Dudhana)	Crops	-	-	Cucumber, Bottle gourd, Long yard bean, Brinjal, Tomato, Chilli, Capsicum, Sponge gourd, Bitter gourd, Watermelon	Early Cauliflower, Spinach, Radish, Coriander	Cucumber, Tomato, Pumpkin, Chili, Bottle gourd, Bitter gourd, Brinjal, Sponge gourd
2	Dhera (Dughiari)	Crops	Cucumber, Tomato, Pak-choy, Bottle gourd, Bitter gourd, Sponge gourd, Zucchini, Long yard beans	Tomato, Cucumber, Early Cauliflower, Cauliflower, Onion, Knol-Khol (Kohlrabi) Broccoli, Pak-Choy	Cucumber, Tomato, Pak-choy, Bottle gourd, Bitter Gourd, Sponge gourd, Zucchini, Long yard beans	Tomato, Cucumber, Early Cauliflower, Cauliflower, Onion, Knol-Khol (Kohlrabi) Broccoli, Pak-Choy	Cucumber, Tomato, Pak-choy, Bottle gourd, Capsicum, Brinjal, Sponge gourd
		Nursery	Bottle gourd, Cucumber, Bitter gourd, Snake gourd, Sponge gourd, Tomato, Capsicum, Long yard beans, Brinjal, <i>Pak-choy</i>	Cauliflower, Onion, <i>Broccoli, Pak-Choy</i>	Bottle gourd, Cucumber, Bitter gourd, Snake Gourd, Sponge gourd, Tomato, Capsicum, Long yard bean, Brinjal, <i>Pak-choy</i>	Cauliflower, Onion, <i>Broccoli, Pak-Choy</i>	-
3	Bajjnath (Hartara)	Crops	Bottle gourd, Tomato, Cucumber, Brinjal	Onion, Cauliflower, Cabbage, Garlic, <i>Broccoli</i>	Bottle Gourd, Tomato, Cucumber, Brinjal	Onion, Cauliflower, Cabbage, Garlic, <i>Broccoli</i>	Bitter gourd, Sponge gourd, Bottle gourd, Okra, Brinjal, Tomato, Cucumber
		Nursery	Bottle gourd, Cucumber, Bitter gourd, Snake gourd, Sponge gourd, Tomato, Brinjal, Chilli, Capsicum, Long yard bean	Cauliflower, <i>Broccoli</i> , Onion, Cabbage, Knol-Khol (Kohlrabi)	Bottle gourd, Cucumber, Bitter gourd, Snake gourd, Sponge	Cauliflower, <i>Broccoli</i> , Onion, Cabbage, Knol-Khol (Kohlrabi)	Bottle gourd, Cucumber, Bitter gourd, Sponge gourd, Chili, Capsicum, Brinjal, Tomato,

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No.	BPMU (Pilot Area)	Type	2020 Kharif	2020 Rabi	2021 Kharif	2021 Rabi	2022 Kharif
					gourd, Tomato, Brinjal, Chilli, Capsicum, Long yard bean		Long yard bean
4	Sarkaghat (Dhamella)	Crops	Bottle gourd, Cucumber, Bitter gourd, Tomato, Brinjal, Chilli, Capsicum, Long yard bean, Kharif Onion sets, Cucumber, Butternut	Onion, Cauliflower, Garlic, Radish, Early Cauliflower, Broccoli	Bottle gourd, Cucumber, Bitter gourd, Tomato, Brinjal, Chilli, Capsicum, Long yard bean, Kharif Onion sets, Cucumber, Butternut	Onion, Cauliflower, Garlic, Radish, Early Cauliflower, Broccoli	Tomato, Bottle gourd, Chili, Brinjal, Sponge gourd, Bitter gourd, Capsicum, Long yard bean, <i>Butternut</i>
		Nursery	Bottle gourd, Cucumber, Bitter gourd, Tomato, Brinjal, Chilli, Capsicum, Long yard bean	<i>Broccoli</i> , Onion, Cauliflower, Green onion (Off-set seedling)	Bottle gourd, Cucumber, Bitter gourd, Tomato, Brinjal, Chilli, Capsicum, Long yard bean	<i>Broccoli</i> , Onion, Cauliflower, Green onion (Off-set seedling)	Tomato, Cucumber, Bottle gourd, Chili, Brinjal, Capsicum, Bitter gourd, Sponge gourd
5	Mandi (Kataula)	Crops	Capsicum, Tomato, Cucumber, Bottle gourd	Garlic, Onion, Cauliflower, Cucumber, Early Cauliflower, Broccoli	Capsicum, Tomato, Cucumber, Bottle gourd	Garlic, Onion, Cauliflower, Early Cauliflower, Broccoli	Tomato, Cucumber, Capsicum, Bottle gourd, <i>Zucchini, Colourful Swiss chard</i>
		Nursery	Cucumber, Capsicum, Tomato	Cauliflower, Onion, <i>Lettuce, Celery, Parsley, Broccoli</i>	Cucumber, Capsicum, Tomato	Cauliflower, Onion, Garlic, <i>Lettuce, Celery, Parsley, Broccoli, Leek</i>	Tomato, Cucumber, Capsicum
6	Nurpur (Minj Gram)	Crops	Cucumber, Bottle gourd, Bitter gourd, Tomato, Brinjal, Chilli, Capsicum, Sponge gourd	Onion, Cauliflower	Cucumber, Bottle gourd, Bitter gourd, Tomato, Brinjal, Chilli, Capsicum, Sponge	Onion, Cauliflower	Tomato, Cucumber, Brinjal, Chili, Okra, Bottle gourd, Bitter gourd, Sponge gourd

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No.	BPMU (Pilot Area)	Type	2020 Kharif	2020 Rabi	2021 Kharif	2021 Rabi	2022 Kharif
					gourd		
		Nursery	Cucumber, Bottle gourd, Bitter gourd, Tomato, Brinjal, Chilli, Capsicum, Sponge gourd, Long yard bean	Onion, Cauliflower, Cabbage, Knol-Khol (Kohlrabi), Early Cauliflower, Broccoli	Cucumber, Bottle gourd, Bitter gourd, Tomato, Brinjal, Chilli, Capsicum, Sponge gourd, Long yard bean	Onion, Cauliflower, Cabbage, Knol-Khol (Kohlrabi), Early Cauliflower, Broccoli	Tomato, Cucumber, Capsicum, Brinjal, Chili, Bottle gourd, Sponge gourd, Pumpkin, Long yard bean
7	Una (Sathru)	Crops	Zucchini, Cucumber, Bottle gourd, Bitter gourd, Tomato, Brinjal, Long yard bean	Cauliflower, Onion, Garlic, Early Cauliflower, Tomato, Cucumber, Broccoli	Summer squash, Cucumber, Bottle gourd, Bitter gourd, Tomato, Brinjal, Long yard bean	Cauliflower, Onion, Garlic, Early Cauliflower, Tomato, Cucumber, Broccoli	Tomato, Cucumber, Brinjal, Chili, Bottle gourd, Bitter gourd, Pumpkin, Snake gourd
		Nursery	Cucumber, Bottle Gourd, Bitter Gourd, Tomato, Brinjal, Chilli, Capsicum, Zucchini	Onion, Cauliflower, Broccoli , Cucumber, Tomato	Cucumber, Bottle Gourd, Bitter Gourd, Tomato, Brinjal, Chilli, Capsicum, Zucchini	Onion, Cauliflower, Broccoli , Cucumber, Tomato	Tomato, Cucumber, Brinjal, Chili, Bottle gourd, Bitter gourd, Sponge gourd, Pumpkin
8	Bilaspur (Jhamradiyan)	Crops	Cucumber, Bottle gourd, Bitter gourd, Tomato, Brinjal, Chilli, Long yard bean, Zucchini, Sponge gourd, Cucumber	Cauliflower, Onion	Cucumber, Bottle gourd, Bitter gourd, Tomato, Brinjal, Chilli, Long yard bean, Zucchini, Sponge gourd, Cucumber	Cauliflower, Onion	Tomato, Cucumber, Brinjal, Chili, bottle gourd, Bitter gourd, Long yard bean
		Nursery	Tomato, Brinjal, Chilli, Capsicum, Cucumber, Bottle gourd, Bitter gourd, Long yard bean, Zucchini, Sponge gourd	Cauliflower, Onion, Early Cauliflower, Broccoli	Tomato, Brinjal, Chilli, Capsicum, Cucumber, Bottle gourd, Bitter	Cauliflower, Onion, Early Cauliflower, Broccoli	Tomato, Cucumber, Capsicum, Brinjal, Bottle gourd, Bitter gourd, Pumpkin, Long yard

No.	BPMU (Pilot Area)	Type	2020 Kharif	2020 Rabi	2021 Kharif	2021 Rabi	2022 Kharif
					gourd, Long yard bean, Zucchini, Sponge gourd		bean

Source: JICA TCP Expert Team

Note: *Italics* are exotic vegetables and **bolds** are crops in poly-tunnels or polyhouses.

To support PMU, DOA staffs and farmers, a small survey on demand and supply of exotic vegetables in Kullu and Manali area was conducted. During the survey discussions with the farmers growing exotic vegetables, commission agents and the hotel and restaurants staffs were carried out to get information on use of exotic vegetables. Information on timings of peak requirement period was gathered along with the sources of supply. In continuation to the same activity small survey in Chandigarh and Gurugram area was also carried out from where also important information on demand and supply was obtained. It was observed that this is a great opportunity to develop a new marketing channel among farmers from sub-project areas with the shopkeepers within state as well as neighbouring states and in Delhi.

Regarding local specialty production, farmers at Majhog have started production of dried Cherry tomatoes since July 2019. The raw material of yellow Cherry tomato has been produced by the farmer. Its TSS (sweetness) is more than 10. Therefore, the dried Cherry tomato was sold in Delhi in good price. Later the production and marketing work of dried Cherry tomato were supported by one of the JOCV (Japan Overseas Cooperation Volunteers).

At Hartara (Bajjnath), demonstration on Mulberry leaf tea preparation was done in the presence of extension staff in March 2020. SHG members were guided to make the tea and store it since it is a seasonal activity as the leaves appears in early spring. In April, by the SHG members started production of Mulberry leaf tea vigorously since the leaves are easily available in that season. In March 2021, the SHG members in Hartara has started production of Mulberry leaf tea again. Even they have started Garlic Ginger paste and Chilli Garlic chutney production in October 2021.

In addition to these activities from Stage 1, Pine leaves were harvested and dried to make Pine leaf tea. After preparing the tea samples, it was sent to Radiant Research Laboratories, Bangalore for Acute Oral Toxicity Analysis and HPLC (High Performance Liquid Chromatography) Analysis to IHBT (Institute of Himalayan Bio-resource Technology) Palampur to check its safety and efficacy.

Table 2.3.14 Local Specialties Promotion for Stage 2

No.	BPMU (Pilot Area)	Activities		
		Presentation	Demonstration	Hands-on training
1	Hamirpur (Majhog)	Dried Cherry tomato	Dried Cherry tomato	Dried Cherry tomato
2	Dhera (Dughiari)	-	-	-
3	Bajjnath (Hartara)	Mulberry leaf tea	Mulberry leaf tea	Mulberry leaf tea, Garlic-Ginger paste, Chilli-Garlic Chutney
4	Sarkaghat (Dhamella)	-	-	-
5	Mandi (Jail Khad Dhangadhar)	Gucci mushroom cultivation PSA (Potato Sucrose Agar) method Grain method	Gucci mushroom cultivation PSA method Grain method	Gucci mushroom cultivation PSA method Grain method
	Mandi (Badli Bagh)	Salted Perilla leaves Apricot pickles	Cultivation of Perilla leaves Apricot pickle preparation	Cultivation of Perilla leaves, Apricot pickle preparation,

No.	BPMU (Pilot Area)	Activities		
		Presentation	Demonstration	Hands-on training
		Rhododendron jam, compote Rhododendron tea Himalayan violet tea	Packing and weighing of Apricot pickles Rhododendron jam, compote, tea Himalayan violet tea	Packing and weighing of Apricot pickles, Radish pickles with Perilla leaves Rhododendron jam, compote, tea Himalayan violet tea
	Mandi (Kataula)	Himalayan violet tea	-	-
6	Nurpur (Minj Gram)	-	-	-
7	Una (Sathru)	-	-	-
8	Bilaspur (Jhamradiyan)	-	-	-

Source: JICA TCP Experts Team

2.3.4 Conduct Monitoring and Evaluation of Progress and Achievement of Pilot Activities and Compile Packages of Techniques to Promote Crop Diversification [2.4]

(1) Stage 1

Regular monitoring at each pilot area was conducted by JICA TCP in cooperation with PMU and DOA. In addition, BPMU extension staffs were requested to submit the weekly record of site visit. The format is shown in Attachment-2.3.4. The result of pilot activity in Stage 1 in terms of vegetable cultivation area and income are shown as follows:

Table 2.3.15 The Result of Vegetable Cultivation Area and Income (Stage 1)

No.	BPMU (Pilot area)	Before the pilot activities			After the pilot activities (2018-19)		
		Area	Income	Crops	Area	Income	Crops
1	Hamirpur (Chelleli)	NA	NA	NA	123m ² (3 walk-in + 3 low tunnels for nursery raising)	23,460 INR	Cauliflower, Onion
		NA	NA	NA	123m ² (3 walk-in + 3 low tunnels for nursery raising)	12,000 INR	Tomato, Okra, Bottle Gourd, Brinjal Bitter Gourd, Capsicum, Cucurbit
2	Dehra (Gela Kuhai)	NA	NA	NA	70m ² (2 walk-in tunnels for nursery raising)	133,000 INR	Cauliflower, Cabbage, Knol-Khol, Broccoli
		NA	NA	NA	70m ² (2 walk-in tunnels for nursery raising)	209,000 INR	Bitter gourd, Bottle gourd, Okra, Cucumber, Ridge gourd, Snake gourd, Brinjal, Capsicum, Chilli
3	Bajjnath (Gabli Kuhl)	NA	NA	Cauliflower, <i>Broccoli</i>	4800m ² (Crop area) 60m ² (Low tunnels)	80,000 INR	Cauliflower, <i>Broccoli</i>
		NA	NA	Cucumber	4800m ² (Crop area)	187,000	Cucumber

No.	BPMU (Pilot area)	Before the pilot activities			After the pilot activities (2018-19)		
		Area	Income	Crops	Area	Income	Crops
					60m ² (Low tunnels)	INR	
4	Sarkaghat (Sandral)	300m ²	NA	Cauliflower, <i>Broccoli</i> , Tomato	800m ² (Crop area)	18,000 INR	Cauliflower, Tomato, Broccoli
		During this season, the early activity was not carried out by the farmer because of personal reasons. Lately cauliflower and onion seed were sown.					
5	Mandi (Jail Khad Dhangadhar)	During this season, farmers did not cultivate due to heavy snow.					
		Approx. 8,000m ² (Crop area)	NA	Cauliflower, Cabbage	200m ² (5 walk-in tunnels) 9,000m ² (Crop area)	316,000 INR	Cauliflower
6	Nurpur (Johar Dariya)	First Time	NA	NA	30m ² (5 low tunnels)	11,775 INR	Cauliflower nursery, Cauliflower, Onion
		First Time	NA	NA	30m ² (5 low tunnels)	7,960 INR	Brinjal and Tomato nursery, Cucumber
7	Una (Badhera Lower)	Approx. 500m ²	NA	Potatoes	18 m ² (3 low tunnels) Approx. 6000m ² (open)	37,000 INR	Cauliflower, <i>Broccoli</i>
		Approx. 500m ²	NA	Okra & Brinjal	18 m ² (3 low tunnels) Approx. 6000m ² (open)	6,810 INR	Bottle gourd, Cucumber, Pumpkin
8	Bilaspur (Balhseena)	First time	NA	NA	129m ² (3walk-in+ 4low tunnels)	26,500 INR	Cauliflower, Nursery
		First time	NA	NA	129m ² (3walk-in+ 4low tunnels)	30,000 INR	Okra, French Bean, Bottle gourd, Bitter gourd, Brinjal, Tomato, Cucumber

Source: JICA TCP Experts Team

Note: Most of farmers were a beginner. Therefore, the data before the pilot activities were not available.

Note: Above shows Rabi and below shows Kharif

(2) Stage 2

Regular monitoring at each pilot area was conducted in same way as Stage 1 in cooperation with PMU and DOA. The result of pilot activity in Stage 2 in terms of vegetable cultivation area and income are shown as follows:

Table 2.3.16 The Result of Vegetable Cultivation Area and Income (Stage 2)

No.	BPMU (Pilot area)	Before the pilot activities			After the pilot activities (2022)		
		Area	Income	Crops	Area	Income	Crops
1.1	Hamirpur (Majhoga)	NA	NA	NA	900 m ² (1 polyhouse (105m ²) + 1 low tunnel for nursery raising)	-	-
		NA	NA	NA	900 m ² (1 polyhouse (105m ²) + 1 low tunnel for nursery raising)	-	-
1.2	Hamirpur (Dudhana)	NA	NA	NA	1,600m ² (No labour)	16,000 INR	<Crops> Cucurbits, Tomato,

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No.	BPMU (Pilot area)	Before the pilot activities			After the pilot activities (2022)		
		Area	Income	Crops	Area	Income	Crops
							Chilli, Brinjal
		NA	NA	NA	1,600m ² (No labour) 100m ² poly house	50,000 INR	<Crops> Cucumber, Cauliflower, <i>Broccoli</i>
2	Dehra (Dhughiari)	NA	NA	NA	400m ² +105m ² (1 polyhouse)	25,000 INR	<Crops> Pak-choy, Cucumber, Tomato, Cauliflower, Cabbage, Radish
		NA	NA	NA	400m ² +105m ² (1 polyhouse)	35,000 INR	<Crops> Pak-choy, Cucumber, Tomato, Spinach, Coriander, Cucurbits, Brinjal, Long yard beans, Okra
3	Bajjnath (Hartara)	NA	NA	NA	76 m ² (2 walk-in poly- tunnels and 1 Low polytunnel)	40,000 INR	<Seedlings> Cauliflower, Broccoli, Cabbage, Knol-Khol (Kohlrabi), Onion <Crops> Cauliflower, <i>Broccoli, Cabbage,</i> Onion
		NA	NA	NA	76 m ² (2 walk-in poly- tunnels and 1 Low polytunnel)	48,000 INR	<Seedlings> Cucurbits, Tomato, Brinjal, Capsicum, Chilli, <Crops> Coriander, Long yard beans, Cucurbits, Brinjal, Okra
4	Sarkaghat (Dhamella)	NA	NA	NA	4,000 m ² (Crop area) 70 m ² (2 walk-in poly- tunnels)	150,000 INR	<Seedlings> Cauliflower, Broccoli, Onion, <Crops> Cauliflower, <i>Broccoli, Onion,</i> <i>Lettuce, Radish,</i> Garlic
		NA	NA	NA	4,000 m ² (Crop area) 70 m ² (2 walk-in poly- tunnels)	100,000 INR	<Seedlings> Onion <Crops> Cucurbits, Tomato, Capsicum, Chilli, <i>Butternut</i>
5	Mandi (Kataula)	Approx. 800m ² (Crop area)	40,000 INR	Broccoli, Red Cabbage	35 m ² (1 walk-in poly-tunnels) 3,200m ² (Crop area)	250,000 INR	<Seedlings> Cauliflower, <Crops> Cauliflower, Onion,

No.	BPMU (Pilot area)	Before the pilot activities			After the pilot activities (2022)		
		Area	Income	Crops	Area	Income	Crops
6	Nurpur (Minjh Gram)						<i>Broccoli</i>
		Approx. 800m ² (Crop area)	40,000 INR	Broccoli, Red Cabbage	35 m ² (1 walk-in poly-tunnels) 3,200m ² (Crop area)	100,000 INR	<Crops> Cucurbits, Capsicum, Tomato, <i>Coloured Swiss chard</i>
		NA	NA	NA	123m ² (3 low tunnels + 3 walk-in poly-tunnels) 2400 m ² (Crop area)	45,000 INR	<Seedlings> Cauliflower, Broccoli, Cabbage, Knol-Khol, Onion Cauliflower <Crops> Cauliflower, <i>Broccoli</i> , Cabbage, Knol-Khol, Onion
7	Una (Sathru)		NA	Okra & Brinjal	1 low tunnel 600 m ² (Crop area)	27,000 INR	<Seedlings> Cauliflower <Crops> Cauliflower
		Approx. 300m ²	NA	Cauliflower	1 low tunnel 600 m ² (Crop area)	25,000 INR	<Seedlings> Cucurbits, Tomato, Chili, Brinjal <Crops> Cucurbits, Tomato Chili, Brinjal, Long yard beans
8	Bilaspur (Jhamradiyan)		NA	NA	86 m ² (2 walk-in poly- tunnels+ 105 m ² (polyhouse) 4800 m ² (Crop area)	40,000 INR	<Seedlings> Cauliflower <Crops> Cauliflower
		NA	NA	NA	86 m ² (2 walk-in poly- tunnels+ 105 m ² (polyhouse) 4800 m ² (Crop area)	60,000 INR	<Seedlings> Cucurbits, Tomato, Brinjal, Capsicum, Chilli <Crops> Cucurbits, Tomato, Brinjal, Capsicum, Chilli

Source: JICA TCP Expert Team

Note: *Italics* are exotic vegetables. Bolds are crops grown in poly-house or walk-in tunnel

Note: Most of farmers were a beginner. Therefore, the data before the pilot activities were not available.

Note: Above shows Rabi and below shows Kharif

(3) Compilation of Package of Techniques

Guideline for crop diversification was prepared in JICA TCP Phase-1. Though this guideline contains sufficient information regarding crop diversification, it is not suitable for extension officers to carry it at site and utilize it for their extension activity. Considering the situation, picture story was prepared as

package of techniques so that extension officers can use it at site for their extension activity.

5 packages of techniques were prepared, nursery raising, fertilizer application, protected cultivation, vegetative propagation (cutting and grafting) and local specialty production. Regarding 4 packages of techniques except local specialty, training on how to use them was conducted for extension officers in PMU, DOA and ATMA and their feedback were utilized for finalizing the 5 packages of techniques.

3 packages of techniques, nursery raising, fertilizer application and protected cultivation, were laminated and printed and distributed to sales centers in each target district. Remaining 2 packages of techniques, vegetative propagation (cutting and grafting) and local specialty production, were distributed to PMU and DOA as soft copy. It is recommended that the picture story was utilized by extension officers for their extension activity towards farmers.

(4) Results

The farmers associated with JICA TCP have become more adaptive to new cultivation techniques and the number of new techniques that farmers accepted is increased. The following are techniques that farmers especially accepted:

- 1) Poly tunnels (making it possible to produce seedlings early and income increased)
- 2) Preparation of raised bed, line sowing proper spacing and double tunnel (improving nursery raising and generating income from selling seedlings)
- 3) Off season vegetable cultivation and mulching (making it possible to produce vegetable aiming at higher price and increasing market access)
- 4) Local specialty production (income increased through food processing by utilizing locally available materials in SHG)
- 5) Selection of improved varieties, proper timing of production to get good price, spacing, transplanting, training, pruning, staking, fertigation, additional fertilizer application, insect pest control (making it possible for farmers to sell at good price)

2.4 Activities to Achieve Output-3: Effective Marketing Activities for Farm Produce are Identified

2.4.1 Collect Information and Analyze the Current Situation and Issues Regarding Marketing of Farm Produce in the Target Areas and Make Plans for Promotion [3.1]

The first activity for Output 3 was the study to make plans for promotion of crop diversification from viewpoint of marketing. It was commenced in April 2017 and completed in June 2017. However, collection of information and analysis of current situation of each sub-project were carried out afterward as the site survey to determine target sub-projects of the activity.

(1) Understanding the Current Situation & Issues

To secure a smooth and quick launch of the study, JICA TCP took a leadership role in this activity. As it was obvious, officials of PMU/DOA/APMC knew well about current situation and issues regarding vegetable production and marketing in the target area than any newcomers to HP. Therefore, JICA TCP took the initiative in collection of information/data and field visits to obtain himself sufficient knowledge to discuss causes of problems and realistic countermeasures with PMU/DOA/APMC.

Existing information such as block-wise vegetable production data, information of APMC market yards

were requested DOA and AMPC to provide. Information on vegetable production in 210 sub-projects was collected by the Output 4. As a result, following information/data were collected in paper/data form.

- Block-wise area & production of vegetables in the 5 Districts, 2015-2016
- Information of the AMPC market yards (Agmarknet Mandi Profile) in the 5 Districts
- Legislation concerning APMC market yards
- Monthly arrival quantity of major vegetables in APMC market yards, by origin, 2015-2016
- Price data of major vegetables at some AMPC market yards, 2015-2016
- Distribution channels of locally-produced vegetables in the 5 districts (updated information)
- CDP and location map of sub-projects

Firsthand information and unfiltered opinions were collected by means of observation and interview to farmers, market players and concerned officials. Field visit by JICA TCP to 4 districts (Bilaspur, Una, Kangra and Mandi) were conducted during 12 - 27 April 2017 to observe the vegetable production and ways of selling produce in sub-projects, and to observe the trading, package/handling of produce, mode of transportation and market facility at AMPC market yards. Field visit to some sub-projects and AMPC market yards in Hamirpur were conducted sporadically in April and May 2017 when time allowed. JICA TCP also made field visits to Kullu and Shimla to check the ways of marketing by commercial vegetable farmers, to check trading and postharvest handling of off-season vegetables in APMC market yards, and to find case example of contract farming and collective marketing by cooperative.

In parallel to the collection of existing information and field visits, in April 2017, “observation and opinion about problem & solution related to vegetable marketing” were collected from PMU staff and APMC secretaries who must know well about current situation and issues.

All response sheets were examined one by one. Unexplained/dubious points were discussed /clarified in the DCs committee for Output 3, and problems that were misinterpretation of facts were excluded. Opinions about solution also examined by the DCs committee, and ideas of solution that were not realistic or obviously beyond the scope of work of DOA/PMU/APMC were excluded. Results of this exercise are shown in Attachment-2.4.1.

Through the discussion/examination in the 2 times of DCs committee in May 2017 (02 & 09 May), collected information on problems and opinions about solution were sorted into 11 categories. Summary of the obtained opinions about solution for each category (problem) was reported in the monthly DCs general meeting held on 15 May 2017. Most reported issue was low price of winter-harvest vegetables after Dec./Jan. due to large supply from Panjab. Details of the provided opinions are shown in Attachment-2.4.2.

Table2.4.1 Summary of Problems and Opinions about Solution

Category (problem)	Opinions about solution / Problems / Needs
1: Glut of vegetables / low price of vegetables	To advice farmers what/when/how much to produce, To introduce early/late sowing/maturity variety, make gap in sowing time, To go for processing/value addition or storage
2: Selling outlet / alternative way of selling	To promote the retail sale: Start Apni mandi / provide places to producers, To promote the collective selling/marketing, To promote the contract farming, To introduce value addition (processing unit)
3: Storage	To build adequate storage/cold storage /CA storage
4: Damages during transportation	To use proper container / packaging material, To provide training on proper packaging in practical shape at APMC, To make road condition better
5: Poor road linkage	To provide road facility

Category (problem)	Opinions about solution / Problems / Needs
6: Grading by producers	To provide for practical training to farmers
7: Small-scale processing by SHGs	<i>Very low price of processed food made by SHGs</i>
8: AMPC market yards	<i>Buying capacity of AMPC market yard is limited. Sometimes difficult to sell all</i>
9: Market/price Information	To use better method; mobile group message, website, etc., To teach farmers the price trend/fluctuation, To train farmers to do marketing research by himself
10: Problem on vegetable production	<i>Wild animal / monkey / stray cattle, Non-availability / high rates of labour, Some farmers do not use certified seed / improved variety, Less production due to still practice old farming methods</i>
11: Consumer needs	Easy to buy / regular supply of fresh vegetables, People are getting more health cautious now; Packed & free from any chemical, Organic produce, GAP certified produce

Note: Problems are indicated in italic.
Source: JICA TCP Experts Team

(2) Understanding the Market Requirements & Opportunities

To grasp market requirements for general kind vegetables and market opportunity for exotic vegetables in big cities, following survey were conducted:

- Field visit to AMPC market yards, supermarkets and retailers in Ludhiana and Chandigarh (11-13 May 2017).
- Checking of assortment, quality (appearance and freshness), display and package materials in some supermarkets in New Delhi (19 June 2017).
- Interview to Japanese distributor of vegetables in Delhi; to some Japanese residents in New Delhi and Gurugram.

Major findings are as follows:

- In Ludhiana APMC market yard, only one wholesaler (distributor) supply various vegetables include exotic vegetables to hotels/restaurants in Chandigarh. Selection/cleaning are practiced in the shop by hand work in accordance with customers' needs.
- Ludhiana has very large population (over 3 million). However, it's a town of factory workers and no prospect of large (or growing) demands of exotic vegetables.
- In Chandigarh AMPC market yard, exotic vegetables are sold (retailed) to consumers at small-scale stalls. There are some wholesalers who deal with organic produce.
- Mode/method of selling of vegetables in supermarkets such as Reliance Fresh, Big Baser, Mega Mart is same; consumers select ones from heap of produce (very limited packed vegetables).
- Japanese distributor purchases vegetables directly from various producers and sell to Japanese and foreign residents. Her key criterion in rating vegetables is "taste delicious (for her)". Taste/ delicious vary by individual, nationality/culture and ways of cooking, and it is impossible to set universal (numerical) index. Assured food safety is not yet her key criterion.
- Japanese residents feel anxious about pesticide residues. Some say that "detergent for washing vegetables is sold in India. It means that vegetables are contaminated and hazardous".

It was frequently heard that "Hamirpur people worry about food safety of vegetables from Panjab", "People prefer (pay more money) to local vegetables because they are fresh and safe" from PMU/DOA staff and others (car driver, etc.). Therefore, small-scale questionnaire survey was conducted in late May 2017 to check the concern/needs on safe vegetables of PMU staff. As the result, most of the respondents are satisfied with quality and available kind of vegetables in Hamirpur, but most of the respondents feel

anxious about pesticide residues in vegetable; especially female respondents are anxious seriously. Primary analysis of the collected data is shown in Attachment-2.4.3.

Collected information of APMC market arrival data, price data and cropping season were analyzed. One important affirmation of fact is that seasonal price fluctuations are consistent from year to year and there is large variation in the prices of some vegetables. Seasonal price trends of major vegetables are shown in Pages 19 and 20 of Attachment-2.4.4.

(3) Formulation of Plans for Promotion and Ideas of Candidate Activities

Based on the obtained information, issues to take up for planning were tentatively nailed down by JICA TCP for discussion with PD in the middle of May 2017.

Rough draft of Plans for Promotion was prepared by JICA TCP and it was explained and discussed in the DCs committee for Output 3 held on 01 June 2017. After touch-up some points, 1st draft of Plans for Promotion and Ideas of Candidate Activities was prepared and it was briefly explained to PMU staff on 13 June 2017. Proposed process and timeline for selection of activities for stage 1 were also explained to PMU. Key issue and direction of promotion proposed in the Plans for Promotion are as follows:

Selling method to promote	Direction of promotion				Conditions of sub-project sites
	Means for increase of farmers' selling price				
	Seasonal price trends	Direct sales and freshness	Value-adding by safeness	Enhance bargaining power	
Direct sales to local consumers	✓	✓	✓		Not far from towns and Small outputs (early stage)
Direct sales to local retailers; contract-base	✓	✓	✓		
Collective shipment to APMC market yards	✓			✓	Far from towns or Large outputs
Direct sales to buyers of niche/particular kind of market in big city		✓	✓		Stable production, and Experienced in contract-based shipping

↓

Branding of
"Made in 5-districts" produce

To promote crop diversification, economic motivation for vegetable production should be maintained or enhanced. Thus, one of key issues is an increase of farmers' selling price. Above-mentioned four means for increase of farmers' selling price are proposed in this plan. For each of selling method to promote, means to pursue the realization are indicated with ✓.

Source: JICA TCP Expert Team

Figure2.4.1 Key Issue and Proposed Direction of Promotion

An explanatory paper on 1st draft of Plans for Promotion and Ideas of Candidate Activities for Stage 1 was prepared (whole paper is shown in Attachment-2.4.4) and it was delivered to PMU/DOA/PD ATMA/APMC secretaries on 17 June 2017 to get feedback. As a result, the provided feedbacks were as

follows:

Table 2.4.2 State of Feedback on Ideas of Candidate Activities

Organizations	Proposal of additional activity
DPMU/BPMU	No proposal of additional activity
DOA	No proposal of additional activity
PD ATMA	No proposal of additional activity
APMC secretaries	Two (2) activities were suggested: - Creation of farmer's cooperative/federation - Registering the GAP certified producers with e-Nam and electronic auction of produce

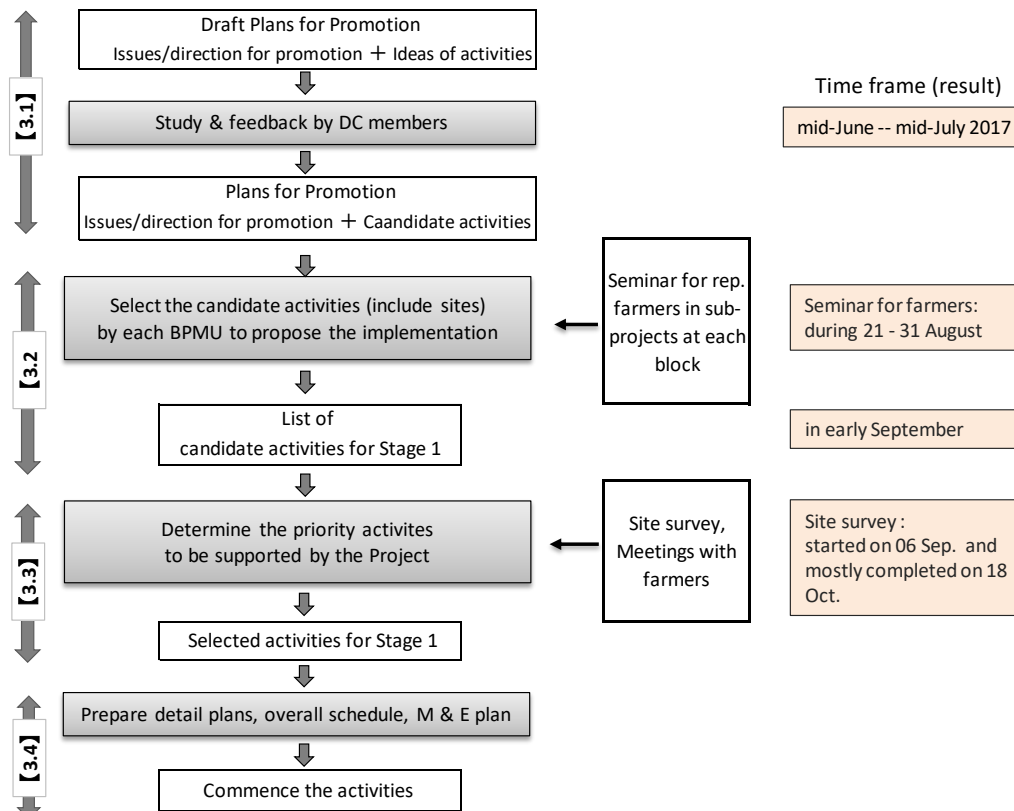
Source: JICA TCP Experts Team

Suggested activities by APMC secretaries are shown in Attachment-2.4.5.

2.4.2 List up Candidate Activities to Promote Marketing of Farm Produce Through Seminars and Meetings with Various Stakeholders Including Private Companies and Farmers (Groups) [3.2]

(1) Process for Determining the Activities for Stage 1

Whole process and time frame for determining the activities for Stage 1 are illustrated as Figure 2.4.2.



Source: JICA TCP Experts Team

Figure 2.4.2 Process and Time Frame for Determining the Activities for Stage 1

The situations of respective sub-projects were not same in terms of vegetable production, location, human resources, farmers' motivation and so on. Therefore, each BPMU pre-selected the activities and sites, and then finalized a list of candidate activities for stage 1 through seminars and meetings with farmers. Priority activities (target sub-projects) were determined through the discussion with PMU as well as through field survey of every candidate sub-projects by JICA TCP and BPMU.

(2) Formulation of Candidate Activities for Stage 1

In light of the given feedbacks on the draft of Plans for Promotion and Ideas of Candidate Activities, 8 activities shown in the next table were set as the candidate activities for Stage 1. A-1 is for all sub-projects, and F-1 is to be implemented by SMU. Therefore, each BPMU selected candidate activities from 6 activities, which are highlighted in boldface type in the next table.

Table2.4.3 Candidate Activities for Stage 1

Direction of Promotion	Candidate activities for Stage 1		Remarks
A: Promotion of sales planning by farmers	A-1	Support the practice of preparing the sales plan by farmers	All sub-project sites
B: Promotion of direct sales to local consumers/retailers	B1-1	Support the installation of simplified roofed stall for retailing	
	B2-1	Support the formation/enhancement of business relation with retailers	
C: Promotion of collective shipment when selling at APMC	C-1	Support the establishment of a firm system for collective shipment to APMC market yards	
D: Promotion of vegetable production aim to sell at time of higher-price	D-1 (1)	Development of time-shifted cultivation method aim to sell at time of higher-price: (1) Farmers' trial - trial cultivation of early/late varieties in open fields	
	D-1 (2)	Development of time-shifted cultivation method aim to sell at time of higher-price: (2) PMU's trial - use of cultivation environment control technology	
E: Challenge the value-adding by means of GAP certification	E-1	Verification of effects on value-adding by means of GAP certification	Detail planning and initial works only
F: Challenge the entry into niche/particular kind of market in the big city	F-1	Market survey to gather information of distributors and their requirements, etc.	To be implemented by PMU

Source: JICA TCP Experts Team

(3) Prepare a List of Candidate Activities for Stage-1 by BPMU through Seminar for Farmers

Selections of candidate activities for Stage-1 were carried out by each BPMU during late-July to early-October 2017. Selection procedure was as follows:

- i) BPMU preliminarily selected the activities and candidate sub-projects. BPMU reviewed/examined the states of vegetable production/marketing and socioeconomic conditions in sub-projects before the pre-selection, if necessary.
- ii) BPMU explained the contents of activities to representative farmers of pre-selected sub-projects in the seminar.
- iii) Pre-selection was amended to incorporate the opinions of farmers obtained in the seminar.

BPMU completed the preliminarily selection in early August. Seminars for representative farmers of pre-selected sub-projects were conducted at each BPMU during 21 - 31 August 2017. Results of the selection by BPMUs were reported in the monthly DCs general meeting held on 07 September 2017.

Because the number of selected activities/target sub-projects after the seminar by BPMU Sarkaghat was too many (10 sub-projects, total of 24 activities), prioritization was requested by JICA TCP. In October 2017, BPMU Sarkaghat narrowed down to three sub-projects. As the result, preparations of lists of candidate activities by each BPMU were completed. Candidate activities/ target sub-project selected by BPMUs after the seminar were as follows:

Table 2.4.4 Candidate Activities and Sub-Projects for Stage 1

	BPMU	Sub-project	Output-2 sites	B1-1 Simple stall for retailing	B2-1 Sell to retailers	C-1 AMPC shipment	D-1(1) Trial of early/late variety	D-1(2) Trial of protected cultivation	E-1 GAP
1	Bajjnath	Rani Kuhl			✓	✓	✓		
2		Gabli Kuhl	★	✓	✓	✓	✓		
3		Thathi			✓	✓	✓		
4	Nurpur	Minjh Gram		✓	✓		✓		
5		Johar Dariya	★	✓	✓				
6	Dehra	Dhugiari			✓		✓		
7		Gela Kuhl	★	✓	✓	✓			
8		Dadu Kuhl				✓			
9		Pagdandi Kuhl		✓	✓	✓	✓	✓	
10	Bilaspur	Parohi				✓			
11		Nalwar Kotlu		✓	✓		✓	✓	
12		Chhiber Ballu		✓	✓		✓	✓	
13		Balhseena	★	✓	✓		✓	✓	
14		Fogog Dol Lasawa			✓		✓	✓	
15	Mandi	Chho Nalla		✓	✓	✓	✓		
16		Kandi Nalah		✓	✓	✓	✓		
17		Biaru Khad		✓	✓	✓	✓		
18		Batheri			✓	✓	✓		
19	Una	Badhera Lower	★	✓		✓	✓		
20		Jarlakouri			✓	✓	✓		
21		Nagar Chowki		✓			✓		
22		Krishna Nagar				✓			
23	Hamirpur	Deot-1			✓		✓	✓	
24		Chelleli	★		✓		✓	✓	
25		Panjahli			✓		✓	✓	
26	Sarkaghat	Kanger Kothi		✓	✓		✓		
27		Thana Mohin		✓	✓		✓		
28		Lahra			✓		✓		
		Total	6	15	23	14	23	8	0

Source: JICA TCP Experts Team

(4) Formulation of Candidate Activities for Stage 2

Based on the results of implemented activities and the actual state of vegetable production in sub-projects being observed in Stage 1, target area and candidate activities for Stage 2 were prepared by JICA TCP at the end of Stage 1.

1) Target Area for Stage 2

Ongoingly, Output-3 targeted the sub-montane & low hill area so-called less crop diversified area where irrigation facility was introduced for the first time by HPCDP-1, beneficiaries does not have much experience of vegetable cultivation and occupy a large portion of the area under HPCDP-1.

Vegetable production by use of irrigation facility was just begun in the less crop diversified area. Sub-projects and beneficiaries committed to produce vegetables for selling purpose were actually very

limited. In the site surveys of 40 sub-projects carried out in the Stage 1, it was found that such committed persons were only several per sub-project (maximum 5 persons) and many of them were elderly people such as retired military personnel. In addition, they were beginners in vegetable cultivation.

On the other hand, at mid/high hills area so-called more crop diversified area (which occupy a limited portion of the area under HPCDP-1), off-season vegetable fields were increased by HPCDP-1. So far no hear the news about price decline due to expansion of cultivation area, and beneficiaries receive benefit of good price and have no desire to change the ways of selling.

In this context, crop diversification in the less crop diversified area was judged to have higher priority and key issue was to promote a start-up of commercial vegetable production by beginners-cum-elderly people.

2) Candidate (Proposed) Activities for Year 2020 in Stage 2

Candidate (proposed) activities at the time of end of Stage 1 (June 2019) were as below: A: Promotion of sales planning by farmers was altered to A: Promotion of market-oriented production planning by farmers. They were prepared by JICA TCP and explained in the DCs Meeting in June 2019. No seminars/meetings with various stakeholders including private companies and farmers for purpose of formulation of candidate activities were executed.

Table 2.4.5 Candidate (Proposed) Activities in Stage 2 for Year 2020 (as of June 2019)

Code & title of the activity	Candidate Sub-projects	Continuing activity	New activity
A: Promotion of market-oriented production planning by farmers			
A-1: Assistance to make a production plan for open field with drip irrigation system	Sub-projects participate in D-1(2)-5		✓
A-2: Assistance to make a production plan for poly-house	SPMU poly-house owners & serious vegetable producers		✓
A-3: Assistance to make a production/shipping plan for year 2020 to target specific buyer	Nurpur - Chatredi, Minji Gram		✓
B: Promotion of direct sales to local consumers / local retailers			
B1-1: Support the installation of simplified roofed stall for retailing - Mobile cart type / Permanent type	on request basis	✓	
B1-1- d) Realization of retail outlets at/around the IIT Mandi at Kamand	to be determined in the activity	✓	
B1-2-a) Support the Planned production of Pak-choi in poly-houses to sell to nearby Tibetan monastery	Nurpur - Chatredi	✓	
B2-3-a) Support the Start-up of mini-tomato production to sell to Green Leaf	Nurpur - Minjh Gram	✓	
<i>Technical support to put a made production plan by [A] into practice</i>	to be determined		✓
D: Promotion of vegetable production aim to sell at time of higher-price			
D-1(2)-4: Trial - Coriander cultivation in July-Aug under poly-sheet roof (2019)	Hamirpur - Panjahli Bilaspur -Fogog Dol Lasawa	✓	
D-1(2)-5: Trial - Cucumber & Early cauliflower cultivation by use of mulching sheet (2019)	Bilaspur - Fogog Dol Lasawa, Chibber Ballu, Nalwar Kotlu, Noa Sarkaghat - Ukhla, Damella, Hamirpur - Manjru	✓	
D-2(1): Promotion - xxxxxx& Early cauliflower cultivation by use of mulching sheet (2020) *	to be determined		✓
<i>New trial or Promotion - Vegetable cultivation under simple rain protection</i>	to be determined		✓
<i>D-2(X) Technical support to put a made production plan by [A] into practice</i>	to be determined		✓

Code & title of the activity	Candidate Sub-projects	Continuing activity	New activity
F : Challenge the entry into niche/particular market in the big city			
No proposal			
X. Complement/follow-up Activities			
(i) Create a home consumption demand of Pak-choi in/around sub-project Chatredi in Nurpur	Nurpur - Chatredi		✓
(ii) Dissemination of the ridger	to be determined	✓	
(iii) Follow-up assistance to the advanced commercial farmers	Mandi - Chho Nalla, Kandi Nalah Advanced farmer in Hamirpur		✓
(iv) Follow-up study of “Study on introducing exotic vegetables production in sub-projects in Nurpur”			✓

* D-2(1) is not a trial. It is an extension of technologies by BPMUs, and it shall be executed as Output-1 activity.

Source: JICA TCP Expert Team

3) Candidate (Proposed) Activities for Year 2021 in Stage 2

Candidate (proposed) activities for Year 2021 were as below. They were prepared by JICA TCP and explained in the DCs Meeting in January 2021. Due to difficult situation brought by COVID-19 to plan new activities, candidate activities were limited to the same ones for year 2020 including the ones cancelled in 2020.

Table 2.4.6 Candidate (Proposed) Activities in Stage 2 for Year 2021 (as of Jan. 2021)

Code & title of the activity	Candidate Sub-projects	Repeating activity	Activity cancelled in 2020
A: Promotion of market-oriented production planning by farmers			
A-2: Assistance to make a production plan for poly-house	To be determined	✓	
A-3: Assistance to make a production/shipping plan for year 2021 to target specific buyer	Nurpur - Minji Gram		✓
A-4: Assistance to make a production plan for whole farm	Nurpur – Chatredi Bilaspur - Nalwar Kotlu	✓	
B: Promotion of direct sales to local consumers / local retailers			
B2-3-a) Support the Start-up of mini-tomato production to sell to Green Leaf	Nurpur - Minjh Gram		✓
<i>Technical support to put a made production plan by [A] into practice</i>	To be determined		
D: Promotion of vegetable production aim to sell at time of higher-price			
D-1(2)-6: Trial - Cucumber + Early cauliflower cultivation in paddy area by use of mulching sheet, furrow irrigation and underground drain	Bajnath – Ragloo		✓
D-2(1): Promotion - Cucumber & Early cauliflower cultivation by use of mulching sheet & drip irrigation (2021)	To be determined	✓	
D-2(2): Cultivation of early cucumber + other crops in poly house	SPMU/DOA poly-house owners	✓	
Trial - Anaerobic/Biological Soil Disinfestation inside poly house	Advanced farmer in Hamirpur, Nurpur - Minji Gram		✓
<i>Technical support to put a made production plan by [A] into practice</i>	To be determined		
F : Challenge the entry into niche/particular market in the big city			
Support for the consignment cultivation of vegetables by the farmers at sub-project Kandi Nalah – Mandi	Mandi - Kandi Nalah		✓

Code & title of the activity	Candidate Sub-projects	Repeating activity	Activity cancelled in 2020
X. Complement/follow-up Activities			
(i) Dissemination of the ridger	To be determined	✓	

Source: JICA TCP Expert Team

4) Candidate (Proposed) Activities for Year 2022 in Stage 2

Candidate (proposed) activities for Year 2022 were shown as below. New activities were not planned, and candidate activities were limited to the ones recommended by the result of Output-3. Target districts were also limited to Hamirpur and Bilaspur. In addition, two trial activities cancelled/incomplete in Year 2020 and 2021 were selected.

Table 2.4.7 Candidate (Proposed) Activities in Stage 2 for Year 2022 (as of Dec. 2021)

Code & title of the activity	Candidate Sub-projects/villages	Activity cancelled in 2021
A: Promotion of market-oriented production planning by farmers		
A-2: Assistance to make a production plan for poly-house	To be determined in Hamirpur district	
D: Promotion of vegetable production aim to sell at time of higher-price		
D-1(2)-6: Trial - Cucumber + Early cauliflower cultivation in paddy area by use of mulching sheet, furrow irrigation and underground drain	Baijnath – Ragloo	✓
D-2(1): Promotion - Cucumber & Early cauliflower cultivation by use of mulching sheet & drip irrigation (2022)	To be determined in Hamirpur district and Bilaspur district	
D-2(2): Cultivation of early cucumber + other crops in poly house	To be determined in Hamirpur district and Bilaspur district	
Trial - Anaerobic/Biological Soil Disinfestation inside poly house	Advanced farmer in Hamirpur	

Source: JICA TCP Expert Team

2.4.3 Select Higher Priority Activities to be Supported by the Project from the List Prepared [3.3]

(1) Selection of Priority Activities in Stage-1

Priority activities (target sub-projects) were determined through site survey of actual state of vegetable production/sales, famers' willingness/necessity of support, location/distance to towns, existence of local traders, etc. at sub-project by JICA TCP with BPMU.

In the Stage 1, site survey was carried out at 39 sub-projects in total. Summary of findings in the 1) Sep. – Nov. 2017 survey and 2) Mar. – April 2018 survey are shown in Attachment-2.4.6 and 2.4.7. The 4) Nov. 2018 – Jan. 2019 survey were carried out to determine the target sites for D-1(2)-5: Cucumber & cauliflower cultivation by use of mulching sheet.

Table 2.4.8 Site Survey to Select Priority Activities/Sub-Projects Carried out in Stage 1

Time of survey	Number of surveyed sub-projects		
	Initially selected 28 sub-projects	Newly nominated sub-projects	Follow-up survey
1) Sep. – Nov. 2017	24	0	0
2) Mar. – May 2018	3	6	4
3) Jul. – Oct. 2018	1	1	6
4) Nov. 2018 – Jan. 2019	---	4	9
Total	28	11	---

Source: JICA TCP Experts Team

In addition, following survey were conducted in 2018 to clarify the current situation/issues and to consider ideas for supportive activities.

Table 2.4.9 Survey to Think of Ideas for Supportive Activities Conducted in Stage 1

Subject / Purpose	Time of survey	Results
Fact finding survey about problem of exotic vegetable marketing in Karsog, Mandi	May 2018	Selling problem claimed by farmer was false.
Clarify feasibility of an idea for “Promotion of Kaccha Alu production & marketing in Una”	April - May 2018	Idea for promotion was judged as irrelevance (obtained information at Krishna Nagar sub-project was not very correct).
Collect information about vegetable wholesaler/distributor in Ghurmarwin town, Bilaspur	Sep. – Oct. 2018	No vegetable wholesaler/distributor were found in/around Ghurmarwin town.
Study on introducing exotic vegetables production in sub-projects in Nurpur (F-1-2)	Nov. 2018 - June 2019	Target buyers and exotic vegetables were identified and then execution plan of new activity (include production plan) was prepared for Minjh Gram and Chatredi.

Source: JICA TCP Experts Team

Selected priority activities/sub-projects in Stage 1 are shown in the next table.

Table 2.4.10 Selected Activities/Sub-Projects After the Site Survey in Stage 1 (as of June 2019)

BPMU	Sub-project	Output-2	A	Market-oriented production planning	B-I-1	Simple stall for retailing	B-I-2, B2-2, B2-3	Sell to local retailers / institutional customer	C-1	AMPC shipment	D-I(1)					D-I(2)					E-1				
											Time-shifted cultivation: Trial of early/late variety					Time-shifted cultivation: Trial of environment control technology						Value added by GAP certification			
											1	2	3	4	5		1	2	3	4	5				
1	Bajrath	Rani Kuhl																							
2		Gabi Kuhl																							
3		Thathi																							
4	Nupur	Majhi Gram		*																					
5		Johar Darya																							
6		Fali Kohal																							
7		Chandri		*																					
8	Dehra	Dhagari																							
9		Gala Kuhl																							
10		Dadi Kuhl																							
11		Pagandi Kuhl																							
12	Bilaspur	Parohi																							
13		Nabar Kotlu																							
14		Chhiber Balhu																							
15		Balsena																							
16		Fogga Dol Lasawa																							
17		Swara																							
18		Nca																							
19		Domehar																							
20	Mandi	Chho Nalla																							
21		Kandi Nalsh																							
22		Bara Khad																							
23		Barheri																							
24	Una	Bothara Lower																							
25		Nagar Chowki																							
26		Jalakouri																							
27		Krishna Nagar																							
28	Hamirpur	Doot 1																							
29		Chelcheli																							
30		Panjahli																							
31		Balela Khurd																							
32		Manra																							
33		Mantra																							
34		Samlog																							
35	Sarkaghat	Kanger Kohli																							
36		Thana Mohin																							
37		Lakra																							
38		Damella																							
39		Udha																							
40		Ladhari Barin																							

Decision after the Site survey

Do implement it.

Keep watch on the situation of production/sale. Depending on the future discussion with farmers

No implementation (No farmers' needs/willingness, Location does not fit the conditions)

State of activity implementation

Implementation on-going

Implementation completed

D-I(2) Trial of environment control technology
1: Protection of off-season cauliflower seedlings from low-temperature by poly-tunnels
2: Early cultivation of okra and cucumber to harvest in April - June (2018)
3: Early cultivation of cole crops by use of mulching sheet (2018)
4: Corander cultivation in July-August under poly-sheet roof (2018) (2019)
5: Cucumber & Early cauliflower cultivation by use of mulching-sheet (2019)

Source: JICA TCP Expert Team

(2) Selection of Priority Activities in Stage-2

Same as the Stage-1, priority activities and target sub-projects were determined through the discussion with PMU and site survey of candidate sub-projects by BPMU and JICA TCP.

1) Selection of Priority Activities for Year 2020

- Promotion of Cucumber & Early Cauliflower Cultivation by Use of Mulching Sheet & Drip Irrigation (2020) (D-2(1))

Positive results were obtained from the trial of new cropping system; "D-1(2)-5 Cucumber & Early cauliflower cultivation by use of mulching sheet (2019)", and 5 BPMU (Hamirpur, Bilaspur, Sarkaghat, Una, Dehra) decided to promote a new cropping system in 2020 season. Each BPMU selected candidate sub-projects and site surveys were conducted in November to December 2019. JICA TCP assisted the site survey by BPMU except BPMU Bilaspur. In case of BPMU Bilaspur, the BPMU selected candidate sub-projects and implemented one workshop for candidate farmers on 10th December 2019, and then determined the target sub-projects and farmers.

Table 2.4.11 Site Survey to Select Target Sub-Projects/Farmers for D-2(1)

BPMU	Nos. of candidate sub-project selected by BPMU	Field survey by BPMU with JICA TCP	
		Sub-projects	Date of Survey
Sarkaghat	5	LIS Karadi Kandyol, WHS-LIS Sadhot, FIS Tikari	18 Nov. 2019
Hamirpur	6	LIS Majhot, LIS Dharnasi, LIS Rahjol	20 Nov. 2019
		LIS Kirwin-1, LIS Beha	21 Nov. 2019
Una	2	LIS Berian, LIS Krishna Nagar	22 Nov. 2019
Dehra	1	FIS Ketal Kuhal	13 Dec. 2019

Source: JICA TCP Experts Team

A leaflet being used in the field survey to explain about new cropping system of Cucumber & Early cauliflower to candidate farmers is shown in Attachment-2.4.8

- Trial - Cucumber & Early Cauliflower Cultivation in Paddy Area by Use of Mulching Sheet, Furrow Irrigation and Underground Drain (D-1(2)-6)

In Nov. 2019, JICA TCP and BPMU Baijnath decided to test an improvement of drainage by underground drain and the cropping system of Cucumber + Early cauliflower in terraced paddy fields. BPMU selected several candidate sub-projects and site survey of sub-project Ragloo was conducted in November to check a proposed terraced field, farmer's skill level/willingness and locally available materials for making underground drain.

2) Selection of Priority Activities for Year 2021

- Promotion of Cucumber & Early Cauliflower Cultivation by Use of Mulching Sheet & Drip Irrigation (2021) (D-2(1))

Selection of candidate sub-projects were started in mid-January at four BPMU/DOA (Hamirpur, Bilaspur, Sarkaghat/Mandi and Una). PMU was scheduled to end in June, therefore, JICA TCP requested to select the sub-projects by mutual consent; by having a meeting between BPMU and DOA. However, BPMU/DOA in Hamirpur and Bilaspur selected candidates separately, and after that, JICA TCP arranged the meetings.

BPMU Hamirpur/Bilaspur/Sarkaghat re-selected the sub-projects where the activity was implemented in 2020. BPMUs staff experienced the site survey in 2020, and they checked the field conditions/willingness/skill level of new farmers. JICA TCP assisted only BPMU Una in conducting the survey since BPMU Una was unable to execute the planed activity in 2020 due to COVID-19 and less-experienced.

DOA Hamirpur and Bilaspur selected the villages/farmers outside of HPCDP-1 sub-projects. JICA TCP/DOA and BPMU surveyed these villages during early to middle of February and some villages/farmers were excluded.

It was worried about having to exceed available resources of DOA after June to cover all selected sites solely. However, it was informed that BPMU must continue to exist after June since the HPCDP-2 has started, and BPMUs must be able to continue the assistance to DOA for implementing the activity until Oct./Nov.; until harvest of cauliflower crop.

- Cultivation of Early Cucumber + Other Crops in Polyhouse (2021) D-2(2)

BPMU Bilaspur/Sarkaghat/Hamirpur requested JICA TCP to assist the repeating/expanding of the activity in November 2020. In response to requests from BPMUs, JICA TCP assisted the determination of target farmers/poly-house. Target sub-projects/farmers and field area for year 2021 were finalized as

follows:

Table 2.4.12 Target Sub-Projects/Farmers for Year 2021

Implementing BPMU	BPMU Bilaspur	BPMU Hamirpur	BPMU Sarkaghat	BPMU Una
Nos. of sub-project (Repeating & New)	9 (1 + 8)	12 (5 + 7)	8 (4 + 4)	1 (0 + 1)
Nos. of farmers (Repeating & New)	10 (1 + 9)	12 (5 + 7)	8 (4 + 4)	1 (0 + 1)
Target area (total, m ²) & Nos. of poly-house	1050, 10	1260, 12	1090, 9	105, 1

Source: JICA TCP Expert Team

3) Selection of Priority Activities for Year 2022

- Promotion of Cucumber & Early Cauliflower Cultivation by Use of Mulching Sheet & Drip Irrigation (2022) (D-2(1))

Selection of candidate sites-cum-farmers were started in November 2021 at DOA Hamirpur and DOA Bilaspur. JICA TCP requested DOA to select the HPCDP-1 sub-projects, however, DOA selected some sites (villages) outside of HPCDP-1 area. Field survey to check the field conditions/willingness/skill level of farmers were carried out in Dec. 2021 and Jan. 2022 by JICA TCP and each DOA. Then, based on the results of the survey, candidate sites-cum-farmers were finalized.

- Cultivation of Early Cucumber + Other Crops in Polyhouse (2022) D-2(2)

DOA Hamirpur requested JICA TCP to assist the repeating/expanding of the activity in October 2021, and DOA selected the candidates. In case of Bilaspur, candidate farmer of above D-2(1) requested to add himself to the activity. After the field survey in Nov. 2021, target sites/farmers/polyhouses were finalized as follows:

Table 2.4.13 Target Sub-Projects/Farmers for Year 2022

Implementing DOA	DOA Bilaspur	DOA Hamirpur
Nos. of sub-project (Repeating & New)	1 (0 + 1)	5 (1 + 4)
Nos. of farmers (Repeating & New)	1 (0 + 1)	5 (1 + 4)
Target area (total, m ²) & Nos. of polyhouse	500 m ² , 1	1,718 m ² , 7

Source: JICA TCP Expert Team

- Trial - Cucumber & Early Cauliflower Cultivation in Paddy Area by Use of Mulching Sheet, Furrow Irrigation and Underground Drain (D-1(2)-6)

In Nov. 2019, JICA TCP and BPMU Baijnath decided to carry out this trial. Since the trial was postponed 2 times (2 years), willingness of farmer at sub-project Ragloo was confirmed again in Dec. 2021. During the last two years period, polyhouse was installed in the initial target fields at Ragloo, and it became no way to do a “with or without” test. JICA TCP and BPMU Baijnath carried out the site survey to find another field/willing farmer suit for a “with or without” test in Feb. 2022, and selected Makruhal Kuhl (HPCDP-1 sub-project).

2.4.4 Implement Selected Activities in Collaboration with Agricultural Produce Market Committees (APMCs) [3.4]

(1) Detail Planning of the Selected Activities in Stage 1

Detail implementation plans were prepared after the selection of priority activities. Planning works made in Stage 1 are as follows. Detail work schedule of each activity are shown in Attachment-2.4.9.

Table 2.4.14 Planning Works Made in Stage 1 (as of June 2019)

Title of the activity	Month of completion	Target sub-projects
B1-1: Support the installation of simplified roofed stall for retailing - Mobile cart type	Oct. 2017 and afterward	Dehra - Dhugiari, Pagdandi Kuhal Nurpur - Minjh Gram, Johar Dariya, Fali Kuhal Bajnath - Gabli Kuhl Bilaspur - Nalwar Kotlu Una - Badhera Lower
B1-1: Support the installation of simplified roofed stall for retailing - Permanent type	Dec. 2017 and afterward	Bilaspur - Nalwar Kotlu, Balhseena
B2-2: Build a simple facility of collection point	Dec. 2017	Bilaspur - Chhiber Ballu
D-1(2)-1: Trial of protection of off-season cauliflower seedlings from low-temperature by poly-tunnels	Nov. 2017	Bajnath - Thathi
D-1(2)-2: Trial of early cultivation of okra and cucumber to harvest in April - June	Dec. 2017	Dehra - Pagdandi Kuhal Bilaspur - Fogog Dol Lasawa
C-2: Support for linkage building with wholesalers who deal with exotic vegetables in Chandigarh	Dec. 2017	Mandi - Chho Nalla, Kandi Nalah
D-1(2)-3: Trial of early cultivation of cole crops by use of mulching sheet	April 2018	Bilaspur - Fogog Dol Lasawa, Chhiber Ballu Sarkaghat - Ukhla
D-1(2)-4: Coriander cultivation in July-Aug under poly-sheet roof	April 2018	Hamirpur - Panjahli
F-1-1: Market survey (business meeting with buyers) in Delhi under the Support for business building of commercial farmer who seek a new outlet	July 2018	-----
F-1-2: Study on introducing exotic vegetables production in sub-projects in Nurpur	Oct 2018	Nurpur- Minjh Gram, Chatredi
D-1(2)-5: Cucumber & Early cauliflower cultivation by use of mulching sheet (Extension-cum-trial of vegetable production by use of mulching sheet)	Dec. 2018	Bilaspur - Fogog Dol Lasawa, Chhiber Ballu, Nalwar Kotlu, Noa Sarkaghat - Ukhla, Damella Hamirpur - Manjru
B1-2: Support the Planned production of Pak-choi in polyhouses to sell to nearby Tibetan monastery	May 2019	Nurpur- Chatredi
B2-3: Support the Start-up of mini-tomato production to sell to Green Leaf	June 2019	Nurpur- Minjh Gram
B1-1: Realization of retail outlets at/around the IIT Mandi at Kamand	Penping	Mandi - Biar Khad, Batheri, etc.

Source: JICA TCP Experts Team

(2) Implementation of Selected Activities in Stage 1

1) A: Promotion of Market-Oriented Production Planning by Farmers

i) Switch to “Promotion of Market-Oriented Production Planning by Farmers”

Generating a mind of market-oriented farming is important issue for promoting vegetable production by small scale-uncommercial-beginner-farmers. Therefore, “A-1: Support the practice of preparing a sales plan by farmers” was planned to be compulsory for all sub-project sites at the beginning.

However, vegetable production in many sub-projects were limited and feasible sales method was also limited; sell to villagers/nearby shops in most cases. Thus, there was no necessity of preparing a written sales plan. In addition, collective marketing is not common approach in HP state. Naturally, it is difficult to prepare a sales plan for entire sub-project.

Considering this situation, it was judged as better to shift to the support of making a production plan (cropping system / land use plan) based on market opportunity such as seasonal price trend and potential buyers.

In late October 2018, farmers in Ukhla sub-project (Sarkaghat) who participated in the trial of early cultivation of cole crops by use of mulching sheet (under D-1: Development of time-shifted cultivation method aim to sell at time of higher-price) said that they were considering a change of seeding method from interval method to one-time sowing to harvest more in early October after experiencing the price change in October; farmers' selling price to nearby retail shop was Rs. 40/kg in early October, then, selling price was gradually dropped to Rs. 30/kg after a week and Rs. 20-25/kg in late October.

This was the case that a farmer's challenge to produce vegetables to sell at time of higher-price created a mind of market-oriented farming. Only making a production plan must not work to create this mind. Technical support on production (applying new method) must be essential for small-scale beginner farmers. Therefore, supportive service to prepare a market-oriented production plan should be provided to the participated farmers in D-1: Development of time-shifted cultivation method aim to sell at time of higher-price.

- ii) Implementation of Supportive Service to Prepare a Market-Oriented Production Plan by Farmers
In the Stage 1 (until the June 2019), supportive services were carried out at following sub-projects.

Table 2.4.15 State of Implementation of Supportive Service to Prepare a Market-Oriented Production Plan (as of June 2019)

BPMU	Sub-project	Production plan prepared	Progress status
Nurpur	Chatredi	Production/ shipment plan during June - Oct. 2019" Continuous production of Pak-choi in 3 polyhouses, Target to sell to Tibetan monastery, Shipping @50kg/week; July to Oct. 2019	Completed in May 2019
Nurpur	Minji Gram	Starting up a mini-tomato production in polyhouse, Target to sell to Green Leaf, Shipping @10kg/week; until Nov. 2019	Completed in June 2019

Source: JICA TCP Experts Team

This supportive service was planned to be provided to the farmers/sub-projects participating in D-1: Development of time-shifted cultivation method aim to sell at time of higher-price; namely Chibber Ballu, Fogog Dol Lasawa in Bilaspur, Ukhla in Sarkaghat-during Oct.-Nov. 2019 (in Stage 2) after peak of harvesting cauliflower. In addition, it was under consideration that to assist farmers who have and who want to have a polyhouse to prepare his market-oriented cropping pattern in polyhouse at some sub-projects.

- 2) B1: Promotion of Direct Sales to Local Consumers
- i) B1-1: Support the Installation of Simplified Roofed Stall for Retailing
- a) Mobile Cart Type Stall

Sub-projects	Active sub-projects: 1st batch: Baijnath - Gabli Kuhl, Nurpur - Minjh Gram, Johar Dariya, Dehra - Pagdandi Kuhl 2nd batch: Una - Badhera Lower, Bilaspur - Nalwar Kotlu Additional upon request: Nurpur - Fali Kohal, Dehra - Dhugiari
Contents of	Provide mobile cart type stall and other tools to groups of famers to enhance/start retailing

support	of vegetables at each locality.
Period of support	Nov. 2017 – Dec. 2019
Progress situation	<p>Works done before end of Nov. 2017: Clarifying the users/groups (1st batch), Designing of mobile cart/signboard, Procurement/manufacturing of equipment (partly)</p> <p>Works done from Dec.2017 to end of May 2018: Clarifying the users/groups (2nd batch), Procurement/manufacturing of equipment Delivery and handover of equipment, Guidance on usage and sales record keeping Pulling out provided equipment from Dehra -Gela Kuhal (04 May)</p> <p>Works done from June to end of Nov. 2018: Evaluation of effect of having a retail outlet and survey on users' evaluation of design of mobile cart at 3 sub-projects (Johar Dariya, Pagdandi Kuhal and Nalwar Kotlu) Site survey, delivery and handover of equipment and guidance on usage and sales record keeping at Nurpur - Fali Kohal and Dehra - Dhugiari</p> <p>Works done from Dec. 2018 to Dec. 2019: Periodic monitoring of sales / utilization of stall, collection of sales data and summarizing sales record data</p>
Note	<ul style="list-style-type: none"> - All equipment provided to Gela Kuhal - Dehra was taken back from farmers' groups on 04 May 2018 because of no use. - Periodic monitoring and collection of sales data of 1st and 2nd batch users was ended in Jan. 2019. - Periodic monitoring and collection of sales data of Fali Kohal and Dhugiari was ended in Dec. 2019. - In-kind support shall be provided to farmer group(s) in the Stage-2, only if it is requested by BPMU/farmers.

b) Permanent Type (Renovation of Existing Hut)

Sub-projects	Bilaspur - Nalwar Kotlu
Contents of support	Support reforming of existing hut on the roadside and provide other tools to a group of famers to start retailing of vegetables.
Period of support	Nov. 2017 - Dec. 2018
Progress situation	<p>Works done before end of Nov. 2017: Clarifying the users, Determination of details of renovation and work demarcation</p> <p>Works done from Dec.2017 to end of May 2018: Renovation by beneficiary - repair roof and wall, painting of outside wall Procurement of equipment, Delivery and handover of equipment (02 Feb.) Guidance on sales record keeping</p> <p>Works done from June to end of Nov. 2018: Monitoring of sales / utilization of shop (until Dec. 2018), Summarizing sales record data</p>

c) Permanent Type (Utilization of Existing Shop)

Sub-projects	Bilaspur - Balhseena
Contents of support	Support utilizing of existing shop on the roadside and provide other tools to a group of famers to start collaborative selling/collecting of vegetables.
Period of support	Nov. 2017 - Dec. 2018

Progress situation	<p>Works done from Dec. 2017 to end of May 2018:</p> <ul style="list-style-type: none"> Clarifying the users. Confirmation of vegetable production area/kind in this spring-summer season and farmers' idea (plan) for marketing Procurement of equipment, Delivery and handover of equipment (27 April) Guidance on sales record keeping <p>Works done from June to end of Dec. 2018:</p> <ul style="list-style-type: none"> Monitoring of sales / utilization of shop
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d) Realization of Retail Outlets at/around the Indian Institutes of Technology Mandi at Kamand

Sub-projects	Mandi - Biar Khad, Batheri (Note : other sub-projects in/near Kamand may be involved)
Rationale of support	Construction of new IIT campus is ongoing near Kataula town. It is obvious that big demand of vegetables will be generated after the construction. At present, it is unknown how foodstuff is supply to the resident in the campus; built shops for daily necessities in the campus or not, etc. It is worth trying to get such information from IIT Mandi. Contents of support are to be formulated after obtaining information from IIT.
Progress situation	<p>Preparatory works done from Dec. 2017 to end of May 2018:</p> <ul style="list-style-type: none"> Kick-off discussion by BPMU Mandi and JICA TCP to decide next step to take Identifying a contact person of IIT Mandi by BPM Mandi (*BPM Mandi explained the intent briefly to someone in IIT Mandi. However, no useful information has yet obtained since the contact person considers the completion of new campus construction is still years ahead). <p>Preparatory works done from June to end of Nov. 2018:</p> <ul style="list-style-type: none"> Nil <p>Preparatory works done from Dec. 2018 to end of June 2019:</p> <ul style="list-style-type: none"> Nil (*BPM Mandi tried to set a second-time meeting with IIT Mandi in May 2019, but failed it.)
Note	Preparatory works (i.e. to get information from IIT Mandi, and to formulate an activity plan) must be an ongoing task in the stage-2, however, it should be conducted at the initiative of BPM Mandi.

ii) B1-2: Support the Market-Oriented Production Target at Particular Consumer

a) Support the Planned Production of Pak-choi in Polyhouses to Sell to Nearby Tibetan Monastery

Sub-projects (number of farmers)	Nurpur - Chatredi (3)
Contents of support	Support the implementation of planned production of pak-choi in three polyhouses to sell to Tibetan monastery nearby
Period of support	May 2019 - Sep. 2019
Outline of the production plan	<p>Mode of production: Continuous cultivation in 7 plots by rotation; in polyhouse</p> <p>Field size: Total about 120 m²; include walking space</p> <p>Plot (bed) size: About 10m², 0.8m x 11.5-12.5m x 7 beds</p> <p>Cultivation period: Middle of June 2019 - end of Oct. 2019</p> <p>Shipping period: Middle of July - end of Oct. 2019 (15 times)</p> <p>Sowing: Once in a week; start at middle of June, @330 seeds/time</p> <p>Target harvest volume: @50kg/week</p> <p>Watering: Drip irrigation 30cm interval</p>
Progress	Works done in May-June 2019:

situation	<p>Finalize the Execution Plan</p> <p>Assistance to confirm the demand/ buying intention of Tibetan monasteries again before starting production</p> <p>Facilitate a discussion by farmers about sales/price variation & allocation of sales</p> <p>Procurement and delivery of necessary items for seedling production</p> <p>On-site technical guidance on seedling production, bed preparation, transplanting and temperature control in polyhouse</p> <p>Works done in July-Sep. 2019:</p> <p>Procurement and delivery of equipment for harvesting/shipping work</p> <p>On-site technical guidance on disease and insect control</p> <p>Periodical monitoring</p> <p>Works done in January 2020:</p> <p>Assistance to review the production/sale result and to prepare a production plan for year 2020</p>
Results of support	<p>Transplanting on 1st plot was done in late June. 1st and 2nd plot were damaged by insect. Although it was planned to make business with Tibetan monastery, harvest were sold to local shops and Green Leaf because the volume was less due to stem rot and insect damage. Continuous cultivation in 7 plots by rotation was unsuccessful.</p> <p>Cultivation skill/practice especially practices of heat control by shade-net & ventilation should be improved. In addition, soil condition in polyhouses should be improved; physical condition of all 3 polyhouses, moisture condition during rainy season of 1 polyhouse.</p> <p>Planned production (continuous cultivation by plots rotation) was too ambitious for beginner farmers; i.e. target farmers are not ready for contract-based business. In addition, it seems that farmers are little willingness to collective way of farming.</p> <p>Assistance to prepare a production plan of polyhouses was carried out in Jan. 2020, and the farmers abandon the planned-cum-collective pak-choi production in polyhouses to sell to Tibetan monastery.</p>
Note	<ul style="list-style-type: none"> - Production plan was prepared in the “Study on introducing exotic vegetables production in sub-projects in Nurpur [F-1-2]. - Execution Plan of Activity (include production/shipment plan during June - Oct. 2019 and Technical manual for continuous cultivation in polyhouse) is shown in Attachment-2.4.10 - Field visit report is shown Attachment-2.4.11 - Demonstration of how to make rice-husk charcoal (material for improving soil conditions) was not conducted because it became clear that no commercial rice mill in the area and large volume of husk was unprocurable. - Assistance to review the production/sale result and to prepare a production plan for year 2020 was conducted in January 2020 as activity A: Promotion of market-oriented production planning by farmers.

3) B2: Promotion of Direct Sales to Local Retailers

i) B2-2: Support the Installation of Collection Point

a) Build a Simple Facility of Collection Point

Sub-projects	Bilaspur - Chhiber Ballu
Contents of support	Support building of simple facility and provide tools for harvest/postharvest handling to a group of famers to enhance sales to retailers in Ghumarwin.
Period of support	Nov. 2017 - Dec. 2018

Progress situation	<p>Works done before end of Nov. 2017:</p> <p>Confirming the land for facility building, Determine work demarcation and rough time schedule</p> <p>Works done from Dec. 2017 to end of May 2018:</p> <p>Rough designing of facility through discussion with users Discussion about postharvest works to do at the facility * Following the direction of JICA India office, facility construction (works of (1) to (15)) was implemented by BPMU Bilaspur.</p> <ol style="list-style-type: none"> (1) Preparation of Notice Inviting Tender (2) Preparation of Bill of Quantities (3) Sale of bid documents (4) Explanation to KVA (5) Tender opening (6) Ensuring the eligibilities of bidders (7) Preparation of competitive statement of respective bidders (8) Preparation of justification (9) Negotiation with the lowest bidder (10) Selection of Contractor (11) Preparation of agreement and Contract (12) Hand-over the site to contractor (13) Construction and supervision <p>Works done from June to end of Dec. 2018:</p> <ol style="list-style-type: none"> (13) Construction and supervision (14) Handing-over from contractor to BPMU with Completion Certificate (15) Taking-over by KVA (MOU) <p>Provision of tools for post-harvest works Wall painting</p>
Note	Monitoring of vegetable production/sales in the sub-project and utilization of facility is continuing after the construction.

ii) B2-3: Support the Market-Oriented Production Target a Particular Retailer

a) Support the Start-up of Mini-Tomato Production to Sell to Green Leaf

Sub-projects (number of farmers)	Nurpur - Minji Gram (1)
Contents of support	Support the farmer to start up a mini-tomato (new exotic vegetable) production in polyhouse to sell to Green Leaf
Period of support	June 2019 - August 2019
Progress situation	<p>Works done in June 2019:</p> <p>Discussion with farmer to finalize a start-up production plan based on prospective demand of Green Leaf and farmer's resource/skill level Finalize the Execution Plan with BPMU and farmer Provision of seedlings to start the cultivation</p> <p>Works done in July – Aug. 2019:</p> <p>On-site guidance on new technic to apply Periodical monitoring</p>
Outline of the	Field size: 1 bed (80-90cm x 13m) in polyhouse

start-up production plan	<p>Number of plant & spacing: 90 plants, 30cm x 2 lines</p> <p>Cultivation period : June 2019 - Nov. 2019</p> <p>Target production (shipping) volume : 10kg/week</p> <p>New technic to apply:</p> <ol style="list-style-type: none"> 1) Pruning and supporting method 2) Fertilizer application, watering & plant nutrition/vigor control 3) Usage of 4-CPA in hot season 4) Temperature control in polyhouse 5) How to prepare seedlings by cutting <p>Farm work schedule:</p> <p>Planting of seedlings : 21-24 June</p>
Result of support	<p>Seedlings (made by cutting) were provided and transplanted in late June.</p> <p>Cultivation was unsuccessful mainly because of soil borne disease.</p> <p>Practical method of soil sterilization should be introduced.</p>
Note	<ul style="list-style-type: none"> - Start-up production plan (draft) was prepared in the “Study on introducing exotic vegetables production in sub-projects in Nurpur [F-1-2]. - Execution Plan of Activity is shown in Attachment-2.4.12 - Field visit report is shown in Attachment-2.4.13 - Assistance to prepare a production plan for year 2020 shall be made after (or at the time of) a trial of soil sterilization during hot season in April-May.

4) C: Promotion of Collective Shipment to APMC Market Yards

i) C-2: Support for Linkage Building with Wholesalers (C/A) who Deal with Exotic Vegetables in Chandigarh

Sub-projects	Mandi - Chho Nalla, Kandi Nalah	
Background and Contents of support	<p>Chho Nalla and Kandi Nala produce off-season vegetables and systems of selling off-season vegetables are established and functioned well. Now, farmers have idea/willingness to start exotic vegetables production, but current buyers do not deal with exotic vegetables. Therefore, they need to find new buyers in Chandigarh, Delhi. Contents of support are:</p> <ul style="list-style-type: none"> - Financial support to visit Chandigarh: Transportation/accommodation costs, etc. - Arrange a meeting with potential buyers (C/A) in Chandigarh AMPC market yard. - Technical guidance, tools/equipment to materialize exotic vegetable production/posh-harvest/shipment, if necessary. <p>* Target time of visiting Chandigarh: in February (farmers' request)</p>	
Period of support	Dec. 2017 – Mar. 2018	
Progress situation	<p>Works done from Dec.2017 to end of May 2018:</p> <p>Kick-off discussion by BPMU Mandi and JICA TCP</p> <p>Arranging a business meeting with C/A in AMPC Chandigarh</p> <p>Visit to Chandigarh for business meeting (28 Feb. to 01 Mar. 2018)</p> <p>Works done from June to end of Nov. 2018:</p> <p>Collect information/data of broccoli production and sales results</p>	
Results of support	Date of the meeting:	01 March at APMC Chandigarh office
	Participants from HP:	3 farmers from Chho Nalla, 1 farmer from Kandi Nalah, Agri. expert BPMU Mandi, Secretary APMC Hamirpur, JICA TCP Experts
	Participants from Chandigarh	6 buyers in APMC Chandigarh Secretary APMC Chandigarh

	<p>Market opportunity of Broccoli and buyers were confirmed in the meeting; and cultivation started in Kandi Nalah.</p> <p>In Kandi Nalah, 3 farmers cultivated broccoli in 1600 m² totally. They sold it individually at APMC Mandi and Bajaura in Kullu; since the volume was limited. Price was Rs. 15/kg at the beginning of harvest (May), Rs. 35/kg in June. In addition to those 3 farmers there are 3-4 farmers plan to cultivate broccoli in next season (assumed 15-20 kanal totally), and to contact to C/A in Chandigarh directly.</p> <p>In Chho Nalla, there was no broccoli production. Farmers were satisfied with their current cole crop cultivation and prices (cauliflower Rs. 25-35/kg, and cabbage Rs. 6-8/kg).</p>
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- 5) D: Promotion of Vegetable Production Aim to Sell at Time of Higher-Price
- i) D-1: Development of Time-Shifted Cultivation Method Aim to Sell at Time of Higher-Price: (2) PMU's Trial - Use of Cultivation Environment Control Technology
- a) Protection of Off-Season Cauliflower Seedlings from Low-Temperature by Poly-Tunnels [D-1(2)-1]

Sub-projects	Bajjnath - Thathi
Aim	To protect seedlings of off-season cauliflower from low temperature in October –November by use of poly-tunnels
Contents of support	Provide 16 poly-tunnels and on-site guidance on cultivation
Period of support	Nov. 2017 - Nov. 2018
Progress situation	<p>Works done before end of Nov. 2017:</p> <p>Clarify the users and scale of trial by BPMU, farmers and JICA TCP, Procurement and delivery of equipment (Nov. 2017)</p> <p>Works done from June to end of Nov. 2018:</p> <p>On-site guidance by BPMU on assembling and usage of poly-tunnel (20 Sep.) Monitoring and farmers' evaluation of effect of poly-tunnel</p>
Note	Provided poly-tunnels were not used in 2017 because the delivery was not in time.
Results of trial	<p>16 units of poly-tunnels were provided in 2017, and 9 units were utilized in 2018 by 9 farmers (1 farmer per unit) for growing cauliflower seedling.</p> <p>Seedling production was started around beginning of Nov. 2018 and transplanting will be done during end of Nov. to beginning of Dec. 9 farmers are growing seedlings and will distribute or sell them to other farmers living in Thathi in the end of Nov. Cultivation of cauliflower will be in total about 6 ha by around 30 farmers.</p> <p>Farmers using poly-tunnel are feeling the condition of seedlings raised inside poly-tunnels are better (more healthy and bigger) than raised outside. Poly-tunnels can protect seedlings not only from low temperature but also from hail storm. 16 farmers including 7 farmers not using this year want to use poly-tunnels next year. There was no problem for farmers to produce seedlings under poly-tunnels.</p>

- b) Early Cultivation of Okra and Cucumber to Harvest in April - June [D-1(2)-2]

Sub-projects (number of farmers)	<p>BPMU Dehra - Pagdandi Kuhal (1)</p> <p>BPMU Bilaspur - Fogog Dol Lasawa (2)</p>
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Aim	To harvest cucumber and okra in April by means of seedling production in poly-house (cucumber and okra) and direct sowing under poly-tunnels (okra)		
Contents of support	Provide materials (poly-pots, plug trays, plastic film, seeds, etc.) and on-site guidance		
Period of support	Nov. 2017 - June 2018		
Progress situation	<p>Works done before end of Nov. 2017: Preparation of trial plan (proposal)</p> <p>Works done from Dec. 2017 to end of May 2018: Discussion by BPMU & JICA TCP to finalize the details of trial plan Determining participating farmers, Procurement of tools/materials On-site technical guidance on potting soil preparation, bamboo bending, land preparation, poly-tunnel preparation, sowing, transplanting Trial site (Fogog Dol Lasawa) visiting by farmers of other sub-projects nearby</p> <p>Works done from June to end of Nov. 2018: Monitoring of harvest and collection of sales record</p>		
Results of trial		Fogog Dol Lasawa	Pagdandi Kuhal
	Cucumber	Harvest started from 11 April 2018	First sowing (21 Jan.2018) resulted in failure, and second sowing was made in 13 Feb 2018. Harvest did not start in April 2018.
	Okra	Harvest started from 22 April 2018	
<p>Harvest of cucumber was started in April by means of large-size seedling production in polyhouse. Okra also possible to harvest in end of April - beginning of May, but results were not satisfactory, growth of plant was not so good. In Fagog Dol Lasawa although harvest was there but yield was very less (only for home consumption). Applied methods are considered not so practical and not recommendable. Okra seedlings did not hold soil in pot as expected and large numbers of seedlings were required. In case of direct sowing under poly-tunnels, it required works to control internal temperature by open/close poly-sheet in line with external temperature.</p> <p>Farmers of other sub-projects nearby Fogog Dol Lasawa who observed the trial expressed interest in early-cucumber production. Extension of early-cucumber production to those sub-projects is considered a succeeding activity in the next season.</p>			

c) Early cultivation of Cole Crops by Use of Mulching Sheet [D-1(2)-3]

Sub-projects (number of farmers)	BPMU Bilaspur - Chibber Ballu (1), Fogog Dol Lasawa (2) BPMU Sarkaghat - Ukhla (4)
Aim	<p>Prime target of the trial is to harvest cauliflower (1st crop) in October; before starting the large inflow of cole crops from Panjab.</p> <p>To harvest cauliflower in October, transplanting should be done in mid - late August; i.e. cultivation starts in rainy-season under very wet condition. Land preparation (plowing & bed making) in midst of rainy season is difficult. Therefore, it should be done before or early time of rainy-season; in mid-June, and prepared bed should be covered with mulching sheet to prevent flourishing of weed to maintain shape of bed until transplanting take place. To utilize mulched-beds, continuous cultivation of cole crop is recommended.</p> <p>By using mulching sheet and bed;</p> <ul style="list-style-type: none"> - Maintain (protect) shape of bed during rainy-season - Prevent washout of manure/fertilizer components by rain - Reduce labor cost for weeding (Rs1000/kanal x 2 times)

	<ul style="list-style-type: none"> - Prevent excessive soil moisture; then to promote healthy growth of roots <p>By making seedlings in plug tray, in polyhouse/poly-tunnel</p> <ul style="list-style-type: none"> - Forward the harvest time; by minimizing the roots damage occur in transplanting <p>By continuous (2 times) cropping in same beds;</p> <ul style="list-style-type: none"> - Reduce labor cost for land preparation for 2nd crop (Rs1000/kanal)
Contents of support	<p>Provide materials and on-site guidance.</p> <p><i>Note: BPMU Bilaspur shall provide materials and on-site guidance to/at sub-project Kahali. Extension staff shall learn what to teach, how to teach in Chibber Ballu and Fogog (on-site TOT by TCP), and apply it at Kahali.</i></p>
Period of support	April 2018 - April 2019
Progress situation	<p>Works done before end of May 2018:</p> <ul style="list-style-type: none"> Preparation of trial plan (proposal) by JICA TCP Discussion by BPMUs & JICA TCP to finalize the details of trial plan Determination of participating farmers <p>Works done from June to end of Nov. 2018:</p> <ul style="list-style-type: none"> Procurement of materials, On-site technical guidance Monitoring of harvest and collection of sales record (1st crop) Trial site (Chibber Ballu, Ukhla) visiting by farmers of other sub-projects <p>Works done from Dec. 2018 to April 2019:</p> <ul style="list-style-type: none"> On-site technical guidance on 2nd cole crop Monitoring of harvest and collection of sales record (2nd crop)
Note	<ul style="list-style-type: none"> - Execution plan is shown in Attachment-2.4.14 - Execution results (data sheets) is shown in Attachment 2.4.15
Result of trial	<p>Prime target of the trial; i.e. to harvest cauliflower in October was achieved. Harvest started in early October (05 October 2018 at Ukhla and 08 October 2018 at Fagog dol Lasawa and Chibber Ballu) as planned, and farmers' selling price to nearby retail shop was Rs. 40/kg at first harvest. Then, selling price was gradually dropped; Rs. 30/kg after a week and Rs. 20-25/kg in late October 2018. Hence, the trial method is judged as an appropriate method for time-shifted cultivation to sell at time of higher-price.</p> <p>Candidate sub-projects (farmers who showed interest in applying the trial method) for technical extension in next 2019 season were identified in the trial site visiting conducted in Oct. 2018.</p> <p>Participating farmers were all beginners and most of them could not get a good yield due to failure in insect control, poor fertilization, etc. It is essential to increase the yield (salable volume) to cover the cost of mulching sheets which is out of DOA subsidy scheme.</p>

d) Coriander Cultivation in July-August under Poly-Sheet Roof [D-1(2)-4]

Sub-project (number of farmers)	<p>[2018 season] BPMU Hamirpur - Panjahli (2)</p> <p>[2019 season] BPMU Hamirpur - Panjahli (1), BMPU Bilaspur - Fogog Dol Lasawa (2)</p>
Aim	Coriander price tend to hike during rainy season in Hamirpur. This trial is to verify the effect of simple rain protection; whether it can make cultivation easier; it can increase yield or not.
Contents of support	Provide materials for simple rain protection and on-site guidance on cultivation
Period of support	<p>[2018 season] April 2018 - Aug. 2018</p> <p>[2019 season] May 2019 - Aug. 2019</p>
Progress situation	<p>[2018 season]</p> <p>Works done before end of May 2018:</p>

	<p>Preparation of trial plan (proposal) by JICA TCP Discussion by BPMU & JICA TCP to finalize the details of trial plan Determination of participating farmers, Procurement of materials (partly) Works done from June to end of Nov. 2018: Procurement of materials, On-site technical guidance Monitoring of harvest and collection of sales record Farmers' evaluation of effect of rain protection by poly-sheet roof [2019 season] Works done from May to end of June 2019 Determination of participating farmers, Procurement of materials On-site technical guidance on how to set a rain protection Works done from July to August 2019: Monitoring of growth/harvest and sales</p>
Note	<ul style="list-style-type: none"> - Execution plan for 2018 season is shown in Attachment-2.4.16 - No materials were provided to sub-project Panjahli in 2019.
Result of trial	<p>[2018 season] Sowing seeds under poly-sheet roof was made 3 times in early June – July 2018. One farmer abandoned the trial after destroyed the poly-sheet roof by cow in an early stage. Another farmer had only one-time harvest on 24 Aug. 2018; his selling price to a retail shop was Rs. 180/kg. Although their trial was not successful, one farmer expressed his intention to try again next year. He analyzed reasons for his failure as below, and he said he would do it better way next year.</p> <ul style="list-style-type: none"> - Field for this trial was sandy soil and dried up quickly after watering; then resulted poor germination. A field where can keep moisture well should be selected. <p>[2019 season] Coriander growth was OK at Fogog Dol Lasawa, however, selling price at nearby town was not attractive. It was confirmed that coriander price hike during rainy season in Hamirpur but no hike in Bilaspur as the APMC price data shows.</p>

e) Cucumber & Early Cauliflower Cultivation by Use of Mulching Sheet (Extension-Cum-Trial of Vegetable Production by Use of Mulching Sheet) [D-1(2)-5]

Sub-project (number of farmers)	<p>BPMU Hamirpur - Manjru (3) BPMU Sarkaghat - Ukhla (3), Damella (4) BMPU Bilaspur - Fogog Dol Lasawa (2), Chibber Ballu (1), Nalwar Kotlu (3), Noa (1)</p>
Aim	<p>This is a succeeding activity of D-1(2)-3) and prime target of trial remains to harvest cauliflower in October; before starting the large inflow of cole crops from Panjab. Based on the finding/results in D-1(2)-3), several improvements in customary farm works are planned. Technic to apply (tested in D-1(2)-3))</p> <ul style="list-style-type: none"> - Mulching by plastic film - Seedling production with plug-tray for cauliflower <p>New technic to apply / Improving customary practice</p> <ul style="list-style-type: none"> - Grow cucumber before cauliflower to utilize mulched-beds - Use of drip irrigation; including proper maintenance - Bed preparation by use of 2-wheel tiller; including a modification/development of ridger attachment - Application of FYM - Timely application of insecticide; including proper usage / self-protection

	<ul style="list-style-type: none"> - Vertical training of vine by use of bamboo posts - Seedling production with plastic pot or plug-tray for cucumber <p>Cropping system:</p> <ul style="list-style-type: none"> - Set mulch sheet in April - May - April/May - Aug: Cucumber - Aug - Oct: Cauliflower - Nov - : Farmers will decide <p>Watering method:</p> <ul style="list-style-type: none"> - April - June/July: Drip irrigation - July - Aug: Rain-fed - Sep - Oct: Drip irrigation <p>In addition, this activity aims to extend the early cauliflower cultivation by use of mulching sheet to the sub-projects/farmers who showed interest in it when the trial site visiting was conducted in Oct. 2018.</p>
Contents of support	Provide materials and on-site guidance
Period of support	Oct. 2018 - Dec. 2019
Progress situation	<p>Works done from Oct. 2018 to end of June 2019:</p> <ul style="list-style-type: none"> Preparation of trial plan (proposal) by JICA TCP Discussion by BPMU & JICA TCP to finalize the details of trial plan Determination of sub-projects, farmers and farm fields through site survey Installation of drip irrigation facility by BPMU Determination of cost/work sharing by JICA TCP/BPMU/farmers Fabrication of ridger Pre-test to confirm methods to apply (bed making, fertilizer, cucumber staking) On-site demonstration of bed making, cucumber staking Procurement of materials/tools for bed preparation, cucumber cultivation Monitoring of progress and on-site guidance on seedling production, bed preparation, transplanting, bamboo posts and wire setting <p>Works done from July to Dec. 2019:</p> <ul style="list-style-type: none"> Monitoring of cucumber growth and on-site guidance on pest control Monitoring of harvest and collection of sales record (Cucumber) Procurement of materials for cauliflower cultivation Monitoring of progress and on-site guidance on cauliflower cultivation Monitoring of harvest and collection of sales record (Cauliflower) Trial site visiting by farmers of other sub-projects Trial site visiting by EOs of 8 BPMUs in October
Note	<ul style="list-style-type: none"> - Draft execution plan for discussion purpose is shown in Attachment-2.4.17 - Execution results (data sheets) (updated) is shown in Attachment-2.4.18 - Training material used in trial site visiting by EOs is shown in Attachment 2.4.19

6) F-1 : Market Survey to Gather Information of Distributors and Their Requirements

i) Market Survey in Delhi under the Support for Business Building of Commercial Farmer who Seek a New Outlet [F-1-1]

Sub-projects	----
Aim	Aim to make a model case of promotion of vegetable production in sub-project(s) led by a commercial farmer
Contents of	1. Consultation for marketing/production planning

support	<p>2. Support on market survey & approaching target customers</p> <p>3. Support on introducing new production technology</p> <p>4. Support on introducing necessary post-harvest handling system</p> <p>5. Support on starting a consignment production with sub-project(s)</p>												
Progress situation	<p>Works done before end of Nov. 2018:</p> <p>Consultation for making of presentation papers and business brochure</p> <p>Consultation for determining target market (potential buyers)</p> <p>Support for arranging business meeting with potential buyers in Delhi</p> <p>Business meeting with potential buyers in Delhi (05-06 Oct. 2018)</p> <p>Visited companies are as follows:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 25%;">Company name</th> <th style="width: 35%;">Type of business</th> <th style="width: 40%;">Feature</th> </tr> </thead> <tbody> <tr> <td>HASORA</td> <td>Retailer/wholesaler (Processor (plan))</td> <td>Operated by Japanese and main customer are Japanese live in Delhi. Quality (safety) conscious buyer.</td> </tr> <tr> <td>Jaivik Haat</td> <td>Retailer</td> <td>Organic produce shop; but do not demand a certification for fresh produce</td> </tr> <tr> <td>VEGFRU</td> <td>Matching service provider (Introduce vegetables buyers to seller/producer)</td> <td>Sell the service as package</td> </tr> </tbody> </table>	Company name	Type of business	Feature	HASORA	Retailer/wholesaler (Processor (plan))	Operated by Japanese and main customer are Japanese live in Delhi. Quality (safety) conscious buyer.	Jaivik Haat	Retailer	Organic produce shop; but do not demand a certification for fresh produce	VEGFRU	Matching service provider (Introduce vegetables buyers to seller/producer)	Sell the service as package
Company name	Type of business	Feature											
HASORA	Retailer/wholesaler (Processor (plan))	Operated by Japanese and main customer are Japanese live in Delhi. Quality (safety) conscious buyer.											
Jaivik Haat	Retailer	Organic produce shop; but do not demand a certification for fresh produce											
VEGFRU	Matching service provider (Introduce vegetables buyers to seller/producer)	Sell the service as package											
Result of support	<p>As a result of business meeting in early October 2018 with potential buyer in Delhi, commercial farmer has delivered sample of vegetables and started price negotiation in late Oct. After negotiation in late Nov, he has started the business with the buyer.</p> <p>In addition, foresee a demand of the buyer, he has planned to start working on consignment production of particular kinds of vegetables by some sub-projects.</p> <p>However, volume of order remains small and consignment production has not yet started until now (June 2019).</p>												
Note	<p>Since there is no commercial farmer who fits to precondition to provide supportive service to explore new outlets in big cities in the selected/site-surveyed sub-projects, a commercial farmer outside of sub-project has been selected by JICA TCP.</p>												

ii) Study on Introducing Exotic Vegetables Production in Sub-Projects in Nurpur [F-1-2]

Sub-projects	To be determined in the study
Aim	<p>Study a possibility to sell exotic vegetables to GREEN LEAF (a trader who collects exotic vegetables from Nurpur and ships to McLeod Ganj) and identify traders who market vegetables to McLeod Ganj / Dharmsala.</p> <p>Understand the trader's demand and required conditions to do business with them. Then, based on the current technical ability of farmers to grow vegetables, make a realistic plan for how to introduce exotic vegetables production in sub-project(s) in Nurpur.</p>
Period of study (result)	<p>STAGE 1 : Nov. 2018 - Jan. 2019</p> <p>STAGE 2 : May - June 2019</p>
Contents of the study	<p>STAGE 1: Study the possibility to sell exotic vegetables to GREEN LEAF and identify potential buyers (traders)</p> <p>(1) WORK 1: Collect information</p> <p>1) From GREEN LEAF</p> <p>2) From/at APMC Kangra</p> <p>3) Quick survey of sub-projects near Dharmsala or on the route to Dharmsala</p> <p>(2) WORK 2: Review the collected information and clarify demand for exotic vegetables</p> <p>STAGE 2: Plan how to introduce exotic vegetables production in sub-project(s)</p>

	<p>A plan shall cover following contents:</p> <ul style="list-style-type: none"> - Target buyer (s): include the detail description of buyer’s requirements - Production plan: items, volume, harvest time (cropping calendar), necessary field area - Cultivation method of each item: method of watering/ seeding/ spacing/ weeding/ pest control/ etc. - Postharvest handling plan: method of cleaning/ sorting/ packing/ delivery/ etc. - Skills and equipment/ materials/ tools newly required to realize above production plan and postharvest handling plan. - On-site training plan: include the necessity to prepare new training materials - In-kind support plan: items & specification, quantity, deadline of provision, prices, total cost - Overall time schedule in Gantt chart - Implementation strategy based on the limitation of BPMU/ JICA TCP - manpower, budget - Candidate sub-project(s): include the reasons for selection by BPMU - Demarcation of works/ costs between BPMU and JICA TCP
<p>Progress situation</p>	<p>Works done in Nov. 2018:</p> <p>Preparation of study plan (draft) Discussion by BPMU & JICA TCP to finalize the plan Kick-off the study</p> <p>Works done in Dec. 2018 to Jan. 2019:</p> <p>STAGE 1: (1) WORK 1: Collect information STAGE 1: (2) WORK 2: Review the collected information and clarify demand for exotic vegetables</p> <p>Works done in Feb. to March 2019:</p> <p>Collection of supplemental information</p> <p>Works done in May to June 2019:</p> <p>STAGE 2: Plan how to introduce exotic vegetables production in sub-project(s)</p>
<p>Result of the Study</p>	<p>Following market-oriented production plans and BPMU/JICA TCP’s supportive activities were prepared.</p> <p>For Sub-project Chatredi:</p> <p>Planned production of Pak-choi in polyhouse to sell to nearby Tibetan monastery, Production/shipment plan during June - Oct. 2019 Execution plan of supportive activity of BPMU/JICA TCP * This is categorized into B1: Promotion of direct sales to local consumers</p> <p>For Sub-project Minjh Gram:</p> <p>Startup production plan of mini-tomato to sell to Green Leaf Execution plan of supportive activity of BPMU/JICA TCP * This is categorized into B2: Promotion of direct sales to local retailers.</p>
<p>Note</p>	<p>Study plan is shown in Attachment-2.4.20 Results of the Study is shown in Attachment 2.4.21</p>

(3) Detail Planning of the Selected Activities in Stage 2

1) Year 2020

Detail operating plans were prepared for “D-2(1): Promotion of Cucumber & Early cauliflower cultivation by use of mulching sheet & drip irrigation (2020)” in Jan – Feb. 2020. EOs of each BPMU carried out planning with support of JICA TCP. Contents of prepared operating plans were as follows: Detail implementation plan of 5 BPMUs are shown in Attachment-2.4.22.

- Data sheet of essential information - target sub-projects, farmers & field area, available irrigation facility/machinery/tools
- Procurement plan - items & q'ty, approximate cost estimate, cost share, procurement & delivery schedule
- Cultivation schedule and target time of sowing& transplanting
- TOT plan (schedule of on-site guidance by JICA TCP from March to early-August)
- Use of "WhatsApp" (SNS application) in the Extension Service
- WBS for preparation works in February and March

As the results of detail planning, target sub-projects/farmers and field area to promote the new cropping system in 2020 season were finalized as follows:

Table 2.4.16 Target Sub-Projects/Farmers to Promote the New Cropping System in 2020

BPMU	Nos. of Sub-project (Farmer)	Area where Drip irrigation will be installed (m ²)	Area of Cucumber (m ²)	Area of Cauliflower (m ²)
Hamirpur	7 (12)	3,000	6,100	6,100
Bilaspur	9 (22)	7,200	10,400	10,400
Sarkaghat	5 (12)	550	3,650	3,150
Una	2 (5)	1,500	1,500	1,500
Dehra	1 (1)	800	800	800
Total	24 (52)	13,050	22,450	21,950

Source: JICA TCP Expert Team

2) Year 2021

Detail operating plans for “D-2(1): Promotion of Cucumber & Early cauliflower cultivation by use of mulching sheet & drip irrigation (2021)” to target HPCDP-1 sub-projects were prepared by each BPMU in this year.

Target sub-projects/villages, farmers and field area to practice the new cropping system in 2021 season were finalized as follows:

Table 2.4.17 Target Sites/Farmers to Promote the New Cropping System in 2021

District	Implementing party	Nos. of Sub-project & village (Farmer)	Installation of Drip irrigation in this year (m ²)	Area of Cucumber (m ²)	Area of Cauliflower (m ²)
Hamirpur	BPMU	5 (9)	0	3,500	2,500
	DOA	1 (1)	400	400	3,500
Bilaspur	BPMU	10 (23)	400	10,550	8,550
	DOA	3 (3)	400	1,600	800
Mandi (Sarkaghat)	BPMU	5 (11)	200	3,450	4,950
	DOA	---	---	---	0
Total		24 (47)	1,400	19,500	20,300

Source: JICA TCP Expert Team

3) Year 2022

Detail operating plans for “D-2(1): Promotion of Cucumber & Early cauliflower cultivation by use of mulching sheet & drip irrigation (2022)” were prepared with support of JICA TCP in the planning meeting held in Feb. 2022 at each district DOA. Target sites, farmers and field area were finalized as

follows:

Table 2.4.18 Target Sites/Farmers to Promote the New Cropping System in 2022

District	HPCDP-1 sub-project or not	Nos. of Sub-project & village (Farmer)	Installation of Drip irrigation in this year (m ²)	Area of Cucumber (m ²)	Area of Cauliflower (m ²)
Hamirpur	HPCDP-1 sub-project	4 (4)	1,850	1,850	1,850
	No (village)	1 (1)	250	250	250
Bilaspur	HPCDP-1 sub-project	1 (1)	0	400	400
	No (village)	3 (3)	1,600	2,200	1,800
Total		9 (9)	3,700	4,700	4,300

Note: Above figures are as of Feb. 2022; after the planning meetings.

Source: JICA TCP Expert Team

(4) Implementation of Selected Activities in Stage 2

1) Continuing activity

Progress situations of the continuing activities of Stage 1 during the period from June 2020 to October 2020 are as follows:

Table 2.4.19 Progress Situations of the Continuing Activities During June 2020 to October 2020

Code and title	Progress situation (works done)
B: Promotion of direct sales to local consumers / local retailers	
B1-1-a/b/c): Support the installation of simplified roofed stall for retailing - Mobile cart type / Permanent type (3 rd butch)	Provision of equipment to farmer in sub-project Guriah, Hamirpur in 3 rd week of July 2020
B1-1-d): Realization of retail outlets at/around the IIT Mandi at Kamand	No works were made (no progress in work of BPM Mandi)

Source: JICA TCP Expert Team

2) Activity in Stage 2 – Year 2020

Progress situations of the new activities for year 2020 (as of end of 2020) were as follows: Five activities were unable to implement due to COVID-19 and postponed to year 2021. Contents of activity of those five activities are shown in the succeeding section “3) Activity in Stage 2 – Year 2021”.

Table 2.4.20 Progress Situations (Results) of New Activities for Year 2020 (as of end of 2020)

Code & title of the activity	Target sub-projects	Progress situation
A: Promotion of market-oriented production planning by farmers		
A-1: Assistance to make a production plan for open field with drip irrigation system	Sarkghat - Ukhla Bilaspur - Nalwar Kotlu, Fogog Dol Lasawa, Chibber Ballu Hamirpur - Manjru	Implemented
A-2: Assistance to make a production plan for polyhouse	Bilaspur - Chibber Ballu Sarkghat – Ukhala, Khanote, Karadi Kandiol Hamirpur – Beha, Guhal, Kirwin Nurpur - Chatredi	Implemented
A-3: Assistance to make a production/shipping plan to target specific buyer	Nurpur - Minji Gram	Called off due to COVID 19
A-4: Assistance to make a production plan for whole farm	Nurpur - Chatredi, Bilaspur - Nalwar Kotlu	Implemented
B: Promotion of direct sales to local consumers / local retailers		

Code & title of the activity	Target sub-projects	Progress situation
B2-3-a): Support the Start-up of mini-tomato production to sell to Green Leaf	Nurpur - Minjh Gram	Called off due to COVID 19
D: Promotion of vegetable production aim to sell at time of higher-price		
D-1(2)-6: Trial - Cucumber + Early cauliflower cultivation in paddy area by use of mulching sheet, furrow irrigation and underground drain	Bajjnath - Ragloo	Called off due to COVID 19
D-2(1): Promotion of Cucumber & Early cauliflower cultivation by use of mulching sheet & drip irrigation (2020)	25 sub-projects in Hamirpur / Bilaspur / Sarkaghat / Una /Dehra	Implemented
<i>Technical support to put a made production plan by [A] into practice</i>		
D-2(2): Cultivation of early cucumber + other crops in poly house (2020)	Bilaspur - Chibber Ballu Sarkaghat - Ukhala, Khanote, Karadi Kandiol, Ladheri Barin Hamirpur – Beha, Guhal, Kirwin, Dharnasi, Neir Bahg	Implemented
D-2(3): Support the very beginner farmer for starting a commercial production (2020)	Nurpur - Chatredi	Implemented
New trial of soil heat treatment in polyhouse	Nurpur - Minji Gram and other (to be confirmed)	Called off due to COVID 19
F : Challenge the entry into niche/particular market in the big city		
Support on consignment production of off-season vegetables	Mandi - Kandi Nalah	Called off due to COVID 19

Source: JICA TCP Expert Team

i) A: Promotion of Market-Oriented Production Planning by Farmers

a) A-1: Assistance to Make a Production Plan for Open Field with Drip Irrigation System

Sub-projects (number of farmers)	Sub-projects participate in D-1(2)-5; BPMU Sarkghat - Ukhla (3) BPMU Bilaspur - Nalwar Kotlu (4), Fogog Dol Lasawa (3), Chibber Ballu (1) BPMU Hamirpur - Manjru (2) * Nos. of farmer (households) is participants of planning meeting; include farmer who has no drip irrigation but willing to adopt new cropping system.
Aim	By the activity “D-1(2)-5: Trial - Cucumber & Early cauliflower cultivation by use of mulching sheet (2019), drip irrigation systems were installed in 7 sub-projects and amateur vegetable growers have gained some cultivation skill/experiences. This assistance program targets such participants of D-1(2)-5 who are somehow serious about vegetable production. This activity aims to create case examples of profitable cropping pattern by utilizing drip irrigation as well as to create case examples of needs-driven technical support.
Contents of support	JICA TCP/BPMU assist non-professional vegetable growers to consider a production plan for his/her open field with drip irrigation system. Production plan should be a market-oriented / profitable; and at the same time it should be in keeping with individual interest/circumstances such as available labor/skill level. Necessity of technical support to put a farmer-made-plan into practice shall be considered and determined case by case, and then if necessary technical support (on-site guidance for particular farm work, periodic monitoring, etc.) shall be planned.
Period of support	Nov. – Dec. 2019

Progress situation	Workshop-style meetings were held in Nov. & Dec. 2019 at each sub-project.					
	BPMU	Sarkghat	Bilaspur		Hamirpur	
	Sub-project	Ukhla	Nalwar Kotlu	Fogog Dol Lasawa	Chibber Ballu	Manjru
	Date of planning meeting	04 Nov.	06 Nov	08 Nov. & 02 Dec.	10 Dec.	11 Dec.
Results	Farmers decided to apply Cucumber + Early cauliflower cultivation by use of mulching sheet. Target time of sowing/transplanting/field preparation and target sales were determined in consideration of the results in 2019 season.					
Note	<ul style="list-style-type: none"> - All sub-projects/participants have been selected as target for D-2(1): Promotion of Cucumber & Early cauliflower cultivation by use of mulching sheet & drip irrigation (2020) by BPMUs. - Planning format is shown in Attachment-2.4.23 					

b) A-2: Assistance to Make a Production Plan for Polyhouse

Sub-projects	BPMU	Sub-project	Nos. of farmer	Possession of poly house: Total area (m ²), (Nos. of poly house), Fund source	
	Bilaspur	Chibber Ballu	1	105 (1) HPCDP-1	
	Sarkaghat	Ukhala	1	105 (1) HPCDP-1	
		Khanote	1	105 (1) HPCDP-1	
		Karadi Kandiol	1	357 (2) HPCDP-1, DOA	
	Hamirpur	Beha	1	105 (1) HPCDP-1	
		Guhai	1	105 (1) HPCDP-1	
		Kirwin	1	105 (1) HPCDP-1	
Nurpur	Chatredi	3	210 (2) HPCDP-1, DOA 288 (1) DOA		
Aim	This activity aims to create case examples of market-oriented / profitable cropping pattern in polyhouse as well as to create case examples of technical support.				
Contents of support	<p>JICA TCP/BPMU assist poly-house owners to consider a production plan in his/her polyhouse.</p> <p>Prime target is owners of HPCDP-1 polyhouse. As a preliminary preparation, by showing candidates a good example of advanced vegetable farming in polyhouse to create a future picture in their mind. Production plan should be matched with skill level of each owner. But if necessary, technical support shall be planned together with the production plan.</p>				
Period of support	Nov. 2019 – Jan. 2020				
Progress situation	<p>(1) Exposure visit to poly-houses of advanced farmer was held on 15 Nov. 2019. 21 farmers (mostly poly-house owners) and EOs were participated. Assurances of BPMU/TCP for production planning were extended to willing farmers among the participants.</p> <p>(2) Workshop-style meetings were held in Dec. 2019 & Jan. 2020.</p>				
	BPMU	Bilaspur	Sarkaghat	Hamirpur	Nurpur
	Date of planning meeting	10 Dec.	12 Dec.	17 Dec.	23 Dec.
Results	<p>1) Farmers of Bilaspur, Sarkaghat, Hamirpur:</p> <p>Farmers decided to challenge Early cucumber cultivation and target time of sowing/transplanting/bed preparation were planned. Technical support was prepared concurrently. Prepared production plans and technical support plans are shown in</p>				

	Attachment 2.4.24 2) Farmers of Nurpur – Chatredi: Three farmers made two different annual production plans based on their interest and current standing crops in his polyhouse; which are combination of tomato-cucumber-pakchoi-coriander-cole crops. Support on vegetable production to carry out the made-plans was limited to occasional on-site guidance. Prepared production plans are shown in Annex of Attachment 2.4.24
Note	- Report on Exposure visit to polyhouses of advanced farmer is shown in Attachment 2.4.25 - Technical support for the farmers of Bilaspur, Sarkaghat, Hamirpur is coded/titled as D-2(2): Cultivation of early cucumber + other crops in poly house, 2020

c) A-3: Assistance to Make a Production/Shipping Plan to Target Specific Buyer

It was considered to extend the assistance to prepare production plan for 2020 as well as technical support to Nurpur - Chatredi for Planned production of pak-choi in polyhouses to sell to nearby Tibetan monastery (B1-2-a), and to Nurpur - Minjh Gram for Mini-tomato production in polyhouse to sell to Green Leaf (B2-3-a).

However, farmers of Nurpur - Chatredi abandon the idea of planned-cum-collective pak-choi production in polyhouses to sell to Tibetan monastery. Consequently, it is no need to make a plan.

Regarding the Nurpur - Minjh Gram, trial cultivation of mini-tomato in 2019 ended poor result due to soil-borne disease in polyhouse. Therefore, Soil Heat Treatment was planned in May (hottest month in a year) and then to prepare a production planning. However, due to COVID 19, Soil Heat Treatment and planning were called off.

d) A-4: Assistance to Make a Production Plan for Whole Farm

In response to the request of particular farmers, TCP and BPMU assisted them to make production plan of whole farm.

➤ Ms. Bavita in sub-project Nalwar Kotlu, BPMU Bilaspur

Target field area: 3950m² (open field) include area for wheat and maize production

First planning meeting for rough planning was conducted in Feb. 2020. Second and third meetings were conducted in Mar. 2020 and a final production plan for Year 2020 was prepared.

Prepared production plan is shown in Attachment-2.4.26. No technical support activity of TCP was planned since the farmer was one of advanced vegetable farmer, but BPMU would assist the farmer in routine work.

➤ Mr. Tilak in sub-project Chatredi BPMU Nurpur

Target field area: 400m² (open field). Target area was limited intentionally because the farmer had few experience/knowledge of vegetable cultivation.

Planning meeting was held in Jan. 2020. After making the production plan for Year 2020, technical support activity of JICA TCP and BPMU (D-2(3)) was prepared since the farmer was beginner.

Prepared production plan is shown in Attachment-2.4.27.

ii) B: Promotion of Direct Sales to Local Consumers / Local Retailers

This activity is planned to be implemented after “Trial - Anaerobic/Biological Soil Disinfestation inside

poly house” is implemented at Minjh Gram at Nurpur. The trial at Minjh Gram was called off due to COVID-19 and then this activity was also called off.

iii) D: Promotion of Vegetable Production Aim to Sell at Time of Higher-Price

a) D-1(2)-6: Trial - Cucumber + Early Cauliflower Cultivation in Paddy Area by Use of Mulching Sheet, Furrow Irrigation and Underground Drain

This activity was called off due to cancelation of JICA TCP experts visit by COVID-19.

b) D-2(1): Promotion of Cucumber & Early Cauliflower Cultivation by Use of Mulching Sheet & Drip Irrigation (2020)

Nos. of sub-projects / farmers	BPMU	Nos. of Sub-project (Farmer)	Area where Drip irrigation will be installed (m ²)	Area of Cucumber (m ²)	Area of Cauliflower (m ²)
		Hamirpur	7 (12)	3,000	6,100	6,100
	Bilaspur	9 (22)	7,200	10,400	10,400
	Sarkaghat	5 (12)	550	3,650	3,150
	Una	2 (5)	1,500	1,500	1,500
	Dehra	1 (1)	800	800	800
	Total	24 (52)	13,050	22,450	21,950
Aim	This is a succeeding activity of D-1(2)-5 to promote new cropping system in 2020 season				
Contents of support	Provide materials and on-site guidance				
Period of activity	Jan. 2020 – Nov. 2020				
Progress situation	<p>Target sub-projects/farmers/field area was concluded and detail operating plans were prepared in Jan – Feb. 2020.</p> <p>Works done from Feb. to March 2020:</p> <ul style="list-style-type: none"> Installation of drip irrigation system by BPMU Pre-demonstration of bed making, cucumber staking for EOs Demonstration of bed making, cucumber staking for farmers by EOs with support of JICA TCP Procurement and distribution of items to farmers for seedling production and bed preparation Formation of WhatsApp Group (EOs & farmers) by BPMU <p>Works done from March to May 2020:</p> <ul style="list-style-type: none"> Monitoring of cucumber transplanting/making of staking by WhatsApp Installation of drip irrigation system by BPMU Hamirpur (5 sub-projects), BPMU Una (2 sub-projects), BPMU Dehra (1 sub-project), BPMU Sarkaghat (2 sub-projects) Monitoring of growth/harvest and collection of sales record (Cucumber) Procurement of materials for cauliflower cultivation <p>Works done from June to October 2020:</p> <ul style="list-style-type: none"> Monitoring of growth/harvest and collection of sales record (Cauliflower) Monitoring of cauliflower seedling production and transplanting by WhatsApp Field visiting by farmers of other sub-projects <ul style="list-style-type: none"> - Khanote in Sarkaghat BPMU - Guriah in Hamirpur BPMU - Domehar in Bilaspur BPMU <p>Works done from November to December 2020:</p>				

	Monitoring of growth/harvest and collection of sales record (Cauliflower) Summarizing the result of this activity
Results	<p>Cucumber</p> <ul style="list-style-type: none"> - Profit (net) : Rs. 26,051/kanal - Yield : 1,906kg/kanal - Selling price : Rs. 15-20/kg in average <p>Cauliflower</p> <ul style="list-style-type: none"> - Profit (net) : Rs. 30,421/kanal - Yield : 761/kanal - Selling price : Rs. 47/kg in average
Note	<ul style="list-style-type: none"> - Operating plans are shown in Attachment-2.4.22 - One sub-project in Hamirpur got out of the activity. Two sub-projects in Una failed to start cucumber cultivation due to fail in material procurement by BPMU. Three sub-projects in Bilaspur gave up cucumber cultivation. In other sub-projects, transplanting of cucumber was made mostly on schedule in late April – early May. - Monitoring of progress of farm works and giving instruction by EOs of BPMUs have been carried out by use of “WhatsApp” (smartphone application) after the lockdown against COVID 19. - Detail result of cucumber and cauliflower cultivation in 2020 is shown in Attachment-2.4.28

c) D-2(2): Cultivation of Early Cucumber + Other Crops in Polyhouse (2020)

Sub-projects (number of farmers) & Target area	BPMU	Bilaspur	Sarkaghat	Hamirpur
	Sub-projects (number of farmers)	Chibber Ballu (1)	Ukhala,(1) Khanote (1) Karadi Kandiol (1) Ladheri Barin (1)	Beha (1) Guhai (1) Kirwin (1) Dharnasi (1) Neir Bahg (1)
	Nos. of polyhouse	1	5	5
	Field area (total, m ²)	105	672	525
	Aim	<p>This is an assistance to put farmer-made plan by “A-2: Assistance to make a production plan for poly-house” into practice.</p> <p>Prime target is to market cucumber in mid-March to end-April. To achieve it, following technique should be adapted by farmers.</p> <ul style="list-style-type: none"> - Seedling production with poly-pots and low poly-tunnel with bamboo frame inside of polyhouse - Fertilizing by liquid fertilizer with drip system - Improvement of staking method 		
Contents of support	Provide materials and on-site guidance			
Period of activity	Dec. 2019 – April 2020			
Progress situation	<p>Works done from Dec. 2019 – April 2020:</p> <p>Procurement and distribution of items to farmers for seedling production and low poly-tunnel (by BPMU)</p> <p>On-site guidance on “how to make low poly-tunnel” and “seedling production with poly-pot”; JICA TCP to EOs and EOs to farmers</p> <p>Monitoring of cucumber growth and on-site guidance</p>			

Results	It was reported that some farmers started harvesting cucumber in April and sold it at Rs. 25-35/kg.
Note	<ul style="list-style-type: none"> - Plan of activity is shown in Attchemnt-2.4.24 - Sub-project Ladheri Barin (Sarkaghat), Dharnasi and Neir Bahg (Hamirpur) were not target (participant) of A-2: Assistance to make a production plan for polyhouse. BPMUs added these sub-projects/farmers after the planning meeting. - JICA TCP provided technical guidance (OJT) to EOs only once, and then EOs carried out on-site guidance at each sub-project. - After cucumber cultivation, JICA TCP will not provide technical guidance (OJT) to EOs for subsequent crops. Only when urgent issue emerges, JICA TCP must assist EOs.

d) D-2(3): Support to a Very Beginner Farmer for Starting a Commercial Production (2020)

Sub-projects (number of farmers)	BPMU Nurpur – Chatredi (1)								
Aim	<p>This is an assistance to put farmer-made plan by “A-4: Assistance to make a production plan for whole farm” into practice. Outline of production plan is as follows:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;">Target area</td> <td>Total 400 m² in 4 plots</td> </tr> <tr> <td>Target crop & harvest time</td> <td>Cucumber: June to early Aug. Cauliflower: Early Oct. to mid Nov. Coriander: Late May to end July Radish/leafy vegetables: mainly Dec. to Feb.</td> </tr> <tr> <td>Technique to introduce/improve</td> <td>- Cropping system of “Cucumber & early cauliflower cultivation by use of mulching sheet & drip irrigation” (300m²) - Coriander cultivation under simple rain protection (100m²) - Improvement of seedling production, fertilizer application, etc.</td> </tr> <tr> <td>Target sales (annual, Rs.)</td> <td>Cucumber: 16,500 Cauliflower: 15,000 Radish: 3,500 Leafy veg: 5,000 Total: 40,000</td> </tr> </table>	Target area	Total 400 m ² in 4 plots	Target crop & harvest time	Cucumber: June to early Aug. Cauliflower: Early Oct. to mid Nov. Coriander: Late May to end July Radish/leafy vegetables: mainly Dec. to Feb.	Technique to introduce/improve	- Cropping system of “Cucumber & early cauliflower cultivation by use of mulching sheet & drip irrigation” (300m ²) - Coriander cultivation under simple rain protection (100m ²) - Improvement of seedling production, fertilizer application, etc.	Target sales (annual, Rs.)	Cucumber: 16,500 Cauliflower: 15,000 Radish: 3,500 Leafy veg: 5,000 Total: 40,000
Target area	Total 400 m ² in 4 plots								
Target crop & harvest time	Cucumber: June to early Aug. Cauliflower: Early Oct. to mid Nov. Coriander: Late May to end July Radish/leafy vegetables: mainly Dec. to Feb.								
Technique to introduce/improve	- Cropping system of “Cucumber & early cauliflower cultivation by use of mulching sheet & drip irrigation” (300m ²) - Coriander cultivation under simple rain protection (100m ²) - Improvement of seedling production, fertilizer application, etc.								
Target sales (annual, Rs.)	Cucumber: 16,500 Cauliflower: 15,000 Radish: 3,500 Leafy veg: 5,000 Total: 40,000								
Contents of support	<p>Provide materials and on-site guidance</p> <p>Material support:</p> <p>By BPMU & DOA</p> <ul style="list-style-type: none"> - Installation of drip irrigation system for 300m² (2 plots) - Construction of water tank 9m³ by using the subsidy from soil conservation department of DOA <p>By JICA TCP</p> <ul style="list-style-type: none"> - Construction of intake pit - Mulching sheet, plastic mesh net for 300m² - Low poly-tunnel pipe frame, plastic sheet for 90-100m² - Seeds, poly-pots, etc. <p>Technical support:</p> <p>By EOs to farmers</p> <ul style="list-style-type: none"> - Periodical field check and on-site guidance <p>By TCP to EOs</p> <ul style="list-style-type: none"> - TOT for EOs by on-site guidance on key farm works - Field check and guidance; when problems occur <p>* On-site guidance shall be given not only for open fields but also for his poly-house.</p>								
Period of	Feb. 2020 – Feb. 2021								

activity							
Progress situation	<p>Works done from Feb. – May 2020:</p> <p>Preparation to construct water tank and to improve intake pit by DOA subsidy</p> <p>Procurement of items and on-site guidance for seedling production, bed preparation, cucumber staking</p> <p>Works done from June to October 2020:</p> <p>Monitoring of cucumber growth and on-site guidance</p> <p>Monitoring of harvest and collection of sales record (Cucumber)</p> <p>Installation of drip irrigation system</p> <p>Procurement of materials for low poly-tunnel for 90-100m² and on-site guidance on assembling</p> <p>Assisting construction of water tank</p> <p>On-site guidance on spinach/coriander cultivation</p> <p>Procurement of items and on-site guidance for cauliflower production</p> <p>Works done from November and December 2020:</p> <p>Monitoring of harvest and collection of sales record</p>						
Results	<table border="1" style="width: 100%;"> <tr> <td style="width: 25%;">Actual area</td> <td>Total 300 m² in 2 plots</td> </tr> <tr> <td>Actual crop & harvest time</td> <td>Cucumber: June to early Aug. Cauliflower: End Oct. to End Nov and Jan. to Mid Mar Radish: no cultivation Leafy vegetable: End Jun. to Mid Aug. Tomato: End Jun. to End Aug. (not in plan) Beans: End Apr. to End Early Jun. (not in plan)</td> </tr> <tr> <td>Actual sales (annual, Rs.)</td> <td>Cucumber: 8,000 Cauliflower: 9,000 Radish: 00 Leafy veg: 4,200 Tomato: 4,500 Beans: 3,500 Total: 29,200</td> </tr> </table> <p>- While actual area gets smaller than target, total actual sale is almost achieved target proportionally (Rs. 100/m²)</p> <p>- This good result leads farmer to continue this activity in 2021</p>	Actual area	Total 300 m ² in 2 plots	Actual crop & harvest time	Cucumber: June to early Aug. Cauliflower: End Oct. to End Nov and Jan. to Mid Mar Radish: no cultivation Leafy vegetable: End Jun. to Mid Aug. Tomato: End Jun. to End Aug. (not in plan) Beans: End Apr. to End Early Jun. (not in plan)	Actual sales (annual, Rs.)	Cucumber: 8,000 Cauliflower: 9,000 Radish: 00 Leafy veg: 4,200 Tomato: 4,500 Beans: 3,500 Total: 29,200
Actual area	Total 300 m ² in 2 plots						
Actual crop & harvest time	Cucumber: June to early Aug. Cauliflower: End Oct. to End Nov and Jan. to Mid Mar Radish: no cultivation Leafy vegetable: End Jun. to Mid Aug. Tomato: End Jun. to End Aug. (not in plan) Beans: End Apr. to End Early Jun. (not in plan)						
Actual sales (annual, Rs.)	Cucumber: 8,000 Cauliflower: 9,000 Radish: 00 Leafy veg: 4,200 Tomato: 4,500 Beans: 3,500 Total: 29,200						
Note	Plan of activity and production plan is shown in Attachment-2.4.27						

e) New Trial of Soil Heat Treatment in Polyhouse

This activity was called off due to cancelation of JICA TCP experts visit by COVID-19.

iv) F : Challenge the Entry into Niche/Particular Market in the Big City

a) Support on Consignment Production of Off-Season Vegetables

This activity was called off due to cancelation of JICA TCP experts visit by COVID-19.

3) Activity in Stage 2 – Year 2021

Selected activities for year 2021 and progress situations as of end of 2021 is as follows. Five activities were unable to implement due to COVID-19.

Table 2.4.21 Progress Situations of New Activities for Year 2021 (as of end of 2021)

Code & title of the activity	Target sub-projects	Progress situation
A: Promotion of market-oriented production planning by farmers		
A-2: Assistance to make a production plan for poly-house (2021)	Hamirpur – 12 sub-projects, Bilaspur – 9 sub-projects	Called off due to COVID-19

Code & title of the activity	Target sub-projects	Progress situation
	Sarkaghat – 8 sub-projects Una -1 sub-project	
A-3: Assistance to make a production/shipping plan to target specific buyer	Nurpur - Minji Gram	Called off due to COVID-19
A-4: Assistance to make a production plan for whole farm	Nurpur - Chatredi, Bilaspur - Nalwar Kotlu	Implemented
B: Promotion of direct sales to local consumers / local retailers		
B2-3-a): Support the Start-up of mini-tomato production to sell to Green Leaf	Nurpur - Minjh Gram	Called off due to COVID-19
D: Promotion of vegetable production aim to sell at time of higher-price		
D-1(2)-6: Trial - Cucumber + Early cauliflower cultivation in paddy area by use of mulching sheet, furrow irrigation and underground drain	Bajinath - Ragloo	Called off due to COVID-19
D-2(1): Promotion of Cucumber & Early cauliflower cultivation by use of mulching sheet & drip irrigation (2021)	Hamirpur – 5 sub-projects & 1 village Bilaspur – 10 sub-projects & 3 villages Sarkaghat – 5 sub-projects	Implemented
D-2(2): Cultivation of early cucumber + other crops in poly house (2021)	Same as A-2	Implemented
D-2(3): Support the very beginner farmer for starting a commercial production (2021)	Nurpur - Chatredi	Implemented
Trial - Anaerobic/Biological Soil Disinfestation inside poly house	Advanced farmer in Hamirpur, Nurpur - Minjh Gram	Implemented only for advanced farmer in Hamirpur
F : Challenge the entry into niche/particular market in the big city		
Support for the consignment cultivation of vegetables by the farmers at sub-project Kandi Nalah – Mandi	Mandi - Kandi Nalah	Called off due to COVID-19

Note: “Trial - Anaerobic/Biological Soil Disinfestation inside poly house”, A-2 and B2-3-a) target a poly-house owner in Minjh Gram and these three are successive activities. A-4 and D-2(3) target a beginner farmer in Chatredi and they are successive activities.

Source: JICA TCP Expert Team

i) A: Promotion of Market-Oriented Production Planning by Farmers

a) A-2: Assistance to Make a Production Plan for Polyhouse (2021)

Support to make plans for succeeding crops and workshop style meetings at each BPMU were scheduled to be executed when harvest of cucumber came to end in May. However, this activity was called off because lockdown was implemented at that time and JICA TCP local staff could not visit sub-projects.

b) A-3: Assistance to Make a Production/Shipping Plan to Target Specific Buyer

This activity is planned to be implemented after “Trial - Anaerobic/Biological Soil Disinfestation inside poly house” is implemented at Minjh Gram at Nurpur. The trial at Minjh Gram was called off due to COVID-19 and then this activity was also called off.

c) A-4: Assistance to Make a Production Plan for Whole Farm

Same as last year, two farmers were assisted to plan his/her cropping system and land use.

➤ Ms. Bavita in sub-project Nalwar Kotlu, BPMU Bilaspur

Target Area: 2,600 m² (open field)

Target Vegetable: cucumber, capsicum, brinjal, tomato and cauliflower

Production plan was prepared by the farmer with assistance of EOs in January 2021.

➤ Mr. Tilak in sub-project Chatredi BPMU Nurpur

Target Area: 380 m² (open field)

Target Vegetable: cucumber, capsicum, radish and cauliflower

Production plan was prepared by the farmer and BPMU with assistance of JICA TCP in January 2021.

ii) B: Promotion of Direct Sales to Local Consumers / Local Retailers

This activity is planned to be implemented after “Trial - Anaerobic/Biological Soil Disinfestation inside poly house” is implemented at Minjh Gram at Nurpur. The trial at Minjh Gram was called off due to COVID-19 and then this activity was also called off.

iii) D: Promotion of Vegetable Production Aim to Sell at Time of Higher-Price

a) D-1(2)-6: Trial - Cucumber + Early Cauliflower Cultivation in Paddy Area by Use of Mulching Sheet, Furrow Irrigation and Underground Drain

This activity was called off again due to COVID-19 because JICA TCP Japanese experts were not able to travel to India.

b) D-2(1): Promotion of Cucumber & Early Cauliflower Cultivation by Use of Mulching Sheet & Drip Irrigation (2021)

Nos. of sub-projects /villages & farmers						
	District	Implementing party	Nos. of Sub-project &village (Farmer)	Installation of Drip irrigation (m ²)	Area of Cucumber (m ²)	Area of Cauliflower (m ²)
Hamirpur		BPMU	5 (9)	0	3,500	2,500
		DOA	1 (1)	400	400	3,500
Bilaspur		BPMU	10 (23)	400	10,550	8,550
		DOA	3 (3)	400	1,600	800
Mandi (Sarkaghat)		BPMU	5 (11)	200	3,450	4,950
		DOA	0	0	0	0
	Total		24 (47)	1,400	19,500	20,300
Aim	This is a succeeding activity of D-1(2)-5 to promote new cropping system in 2021 season					
Contents of support	Provide materials and on-site guidance					
Period of activity	Jan. 2020 to Nov. 2021					

Progress situation	<p>Works done from Jan. to April 2021:</p> <ul style="list-style-type: none"> Determination of target sub-projects/villages, farmers and field area Installation of drip irrigation system by BPMU / DOA (partly ongoing) Pre-demonstration of bed making, cucumber staking for EOs Demonstration of bed making, cucumber staking for farmers by EOs with support of JICA TCP Procurement and distribution of items to farmers for seedling production and bed preparation Formation of WhatsApp Group (EOs & farmers) by BPMU <p>Works done from May to November 2021:</p> <ul style="list-style-type: none"> Installation of drip irrigation system by DOA (2 farmers) Monitoring of cucumber transplanting/making of staking Monitoring of growth/harvest and collection of sales record (Cucumber) Procurement of materials for cauliflower cultivation Monitoring of cauliflower seedling production and transplanting Monitoring of growth/harvest (Cauliflower) Field visiting by farmers of other sub-projects; implemented by DOA; Hamirpur at Budhwin (28 Oct.) and Bilaspur at Auhar (10 Nov.) Collection of sales records (Cauliflower) and summarizing the result 																																								
Results	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 20%;">Cucumber</th> <th style="width: 15%;"></th> <th style="width: 15%;">Average</th> <th style="width: 15%;">Max.</th> <th style="width: 15%;">Min.</th> </tr> </thead> <tbody> <tr> <td>Profit (net)</td> <td>Rs./kanal</td> <td>30,761</td> <td>44,036</td> <td>18,845</td> </tr> <tr> <td>Yield</td> <td>Kg/kanal</td> <td>1,747</td> <td>2,395</td> <td>1,276</td> </tr> <tr> <td>Selling price</td> <td>Rs./kg</td> <td>21</td> <td></td> <td></td> </tr> <tr> <th>Cauliflower</th> <th></th> <th>Average</th> <th>Max.</th> <th>Min.</th> </tr> <tr> <td>Profit (net)</td> <td>Rs./kanal</td> <td>31,733</td> <td>36,378</td> <td>26,088</td> </tr> <tr> <td>Yield</td> <td>Kg/kanal</td> <td>793</td> <td>885</td> <td>657</td> </tr> <tr> <td>Selling price</td> <td>Rs./kg</td> <td>50</td> <td></td> <td></td> </tr> </tbody> </table>	Cucumber		Average	Max.	Min.	Profit (net)	Rs./kanal	30,761	44,036	18,845	Yield	Kg/kanal	1,747	2,395	1,276	Selling price	Rs./kg	21			Cauliflower		Average	Max.	Min.	Profit (net)	Rs./kanal	31,733	36,378	26,088	Yield	Kg/kanal	793	885	657	Selling price	Rs./kg	50		
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Note	- Detail result of cucumber and cauliflower cultivation in 2021 is shown in Attachment-2.4.28.																																								

c) D-2(2): Cultivation of Early Cucumber + Other Crops in Polyhouse (2021)

Sub-projects, Number of farmers, & Target area	BPMU	Bilaspur	Sarkaghat	Hamirpur	Una
Sub-projects (nos. of farmers)		Chibber Ballu (1) Fagog (2) Takra (1) Parohi (1) Androli (1) Domehar (1) Lehari serial (1) Bakroha (1) Noa (1)	Ukhala,(1) Khanote (1) Karadi Kandiol (1) Ladheri Barin (1) Lingri Chidbadanu (1) Jadhanallah (1) Kunalag (1) Damella (1)	Beha (1) Guhali (1) Kirwin (1) Dharnasi (1) Neir Bahg (1) Panjhali (1) Challeli (1) Beha Balla (1) Jamali (1) Ser Mahal (1) Deot-2 (1) Manjru (1)	Badsala (1)
Nos. of farmers (repeating & newcomer)		10 (1 + 9)	8 (4 + 4)	12 (5 + 7)	1 (0 + 1)
Nos. of polyhouse		10	9	12	1
Field area (total, m ²)		1050	1090	1260	105

Aim	Prime target is to market cucumber in mid-March to end-April. To achieve it, farmers should adapt following technique. <ul style="list-style-type: none"> - Seedling production with poly-pots and low poly-tunnel with bamboo frame inside of polyhouse - Fertilizing by liquid fertilizer with drip system - Improvement of staking method
Contents of support	Provide materials and on-site guidance
Period of activity	Dec. 2020 – Oct. 2021
Progress situation	Works done from December 2020 to April 2021: Procurement and distribution of items to farmers for seedling production and low poly-tunnel (by BPMU) On-site guidance on “how to make low poly-tunnel” and “seedling production with poly-pot”; JICA TCP to EOs and EOs to farmers in January. Monitoring of cucumber growth and on-site guidance Works done from May to October 2021: Monitoring of cultivated vegetable in poly house and on-site guidance
Results	- Good profit was obtained for cucumber harvested March to April because selling price was higher (Rs. 30/kg) compared the price of cucumber harvested June to August (Rs. 20/kg)
Note	- A-2: Assistance to make a production plan for polyhouse (2021) was called off due to lockdown in May 2021 and plan of succeeding crops after cucumber was not prepared. Farmers individually decided what to cultivate after cucumber.

d) D-2(3): Support the Very Beginner Farmer for Starting a Commercial Production (2021)

Sub-projects (number of farmers)	BPMU Nurpur – Chatredi (1)	
Aim	This is an assistance to put farmer-made plan by “A-4: Assistance to make a production plan for whole farm” into practice. Production plan for year 2021 was prepared in 22 January. Outline is as follows:	
	Target area	Total 300 m ² in 2 plots
	Target crop & harvest time	Cucumber: End April to Sep. (3 planting) Cauliflower: Early Oct. to early Nov. and Mid. Dec. to mid. Jan. Capsicum: Late May to mid. Aug. Radish: Mid. Oct. to Early Nov.
	Technique to introduce/improve	- Cropping system of “Cucumber & early cauliflower cultivation by use of mulching sheet & drip irrigation” (250m ²) - Capsicum cultivation under simple rain protection (30m ²) - Improvement of seedling production, fertilizer application, etc.
	Target sales (annual, Rs.)	Cucumber 30,000, Cauliflower 12,000, Radish 3,000, Capsicum 3,000, Total 48,000
Contents of support	Provide technical support (on-site guidance). No material support in this year. Technical support: By EOs to farmers <ul style="list-style-type: none"> - Periodical field check and on-site guidance By JICA TCP to EOs <ul style="list-style-type: none"> - TOT for EOs by on-site guidance on key farm works 	

	- Field check and guidance; when problems occur * On-site guidance shall be given not only for open fields but also for his poly-house.						
Period of activity	Feb. 2021 to Aug./Sep. 2021						
Progress situation	Works done from Feb. to April 2021: On-site guidance on field preparation, seedling production for cucumber Monitoring of cucumber growth and on-site guidance Works done from May to October 2021: Monitoring of cauliflower growth and on-site guidance						
Results	<table border="1" style="width: 100%;"> <tr> <td>Actual area</td> <td>Total 200 m² in 1 plot</td> </tr> <tr> <td>Actual crop & harvest time</td> <td>Cucumber: June to early Aug. Cauliflower: Sep. to End Nov</td> </tr> <tr> <td>Actual sales (annual, Rs.)</td> <td>Cucumber: no record Cauliflower: no record Total: no record</td> </tr> </table>	Actual area	Total 200 m ² in 1 plot	Actual crop & harvest time	Cucumber: June to early Aug. Cauliflower: Sep. to End Nov	Actual sales (annual, Rs.)	Cucumber: no record Cauliflower: no record Total: no record
Actual area	Total 200 m ² in 1 plot						
Actual crop & harvest time	Cucumber: June to early Aug. Cauliflower: Sep. to End Nov						
Actual sales (annual, Rs.)	Cucumber: no record Cauliflower: no record Total: no record						
Note	- The farmer was not so willing to this activity compared to last year. Growth of cucumber and cauliflower were not good due to poor management. The farmer did not make sale record for both vegetables.						

e) Trial - Anaerobic/Biological Soil Disinfestation inside Polyhouse

Sub-projects	Advanced farmer in Hamirpur, Nurpur - Minjh Gram
Background & Aim	Mini-tomato production by the farmer in Minji Gram was supported in 2019 under B2-3-a) and the result was unsuccessful mainly because of soil borne disease in polyhouse. Without countermeasure against soil borne disease, it is impossible to grow tomato. Therefore, soil sterilization in hot season (April to May) by using locally available materials is planned to experiment. It is said that many polyhouses are contaminated by soil borne disease. If this trial proves successful, it has an effect to promote tomato and other fruit vegetables production.
Contents of activity	1. Preparation of the trial 2. Implementation of soil treatment (in May; for 3 weeks period) 3. Technical transfer to DOA/BPMU through participation in the trail 4. Growth test (comparison test) by tomato seedlings (June to Aug.) 5. Making of manual
Outline of the trial	Materials to use : wheat bran, wheat straw (chopped), cow manure compost 10 tons of water/100m ² , plastic sheet Period of soil treatment : 3 weeks (1) 1st trial: Site : Badhera village near Kangoo, Nadaun tehsie, Hamirpur Nos. of polyhouse : 1 unit (105m ²) Plot setting : 80 m ² treated / 20m ² un-treated; for comparison test (2) 2nd trial: Site : Minji Gram Nos. of polyhouse : 1 unit (105m ²), No plot setting Treatment procedure / method shall be altered based on the lessons learnt in the 1st trial.
Period of activity	April to October 2021

Progress situation	<p>Works done from April to July 2021:</p> <ul style="list-style-type: none"> Preparation of work instruction manual Preparation of materials Implementation of 1st trial in early-May Growth test (comparison test) by tomato & cucumber <p>Works to be supposed to be made:</p> <ul style="list-style-type: none"> Implementation of 2nd trial in mid-May Making of manual (Sep.)
Result	<ul style="list-style-type: none"> - In the growth test at treated polyhouse of 1st trial, symptom like soil borne disease was observed in cucumber. However, it may be cause by insects because the advanced farmer said that some seedlings had insect damage before transplanting. - Soil treatment was carried out by remote and it was hard to know the degree of soil wetness and color change after the treatment. Therefore, the trial should be implemented again in 2022.
Note	<ul style="list-style-type: none"> - 1st trial in Hamirpur was carried out by remote; by giving work instructions from Japan to TCP local staff through WhatsApp video call. - 2nd trial at Minjh Gram was called off due to lockdown in HP.

iv) F: Challenge the Entry into Niche/Particular Market in the big city

a) Support for the Consignment Cultivation of Vegetables by the Farmers at Sub-Project Kandi Nalah – Mandi

Sub-projects	BPMU Mandi – Kandi Nalah																																																																													
Background	<p>Advanced farmer in Hamirpur (hereafter called the outsourcer) sought farmers/fields for consignment production of exotic leafy vegetables in sub-project(s) in cool area, and he explained and discussed his idea with farmers of sub-project Kandi Nalah in Dec. 2019 and Feb. 2020. As a result, three farmers decided to engage in the consignment production. Target period of harvest is from May to October and heavy rain in rainy season must hinder the continued production/harvest. The outsourcer planned a rain protection method by using low tunnel to overcome the difficulty, and inquired about possibility to extend a material support from BPMU/JICA TCP to sub-project Kandi Nalah. Considering the following points, BPMU/JICA TCP decided to provide material support but the costs shall be shared by farmers 10%, outsourcer 30%, BPMU 30% and JICA TCP 30% in Feb. 2020.</p> <ul style="list-style-type: none"> ➤ It is an opportunity for the farmers to extend their outlet (buyer) as well as to add new items in their vegetable farming. ➤ If using of low tunnel (pipe frames + poly-sheets) for rain protection work well, it can be a good demonstration of new method. ➤ End-consumers are Japanese people in New Delhi. If farmers' production and shipments go well, it is a success case of entering into niche market in big city. <p>Production plan (shipment time) (prepared for 2020 season)</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th rowspan="2">Items</th> <th colspan="8">Target time of harvest</th> </tr> <tr> <th>Apr.</th> <th>May</th> <th>Jun.</th> <th>Jul.</th> <th>Aug.</th> <th>Sep.</th> <th>Oct.</th> <th></th> </tr> </thead> <tbody> <tr> <td>C. Cabbage</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>J. Cabbage</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>Broccoli</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>Lettuce</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>Cauliflower</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>Shungiku</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </tbody> </table>	Items	Target time of harvest								Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.		C. Cabbage										J. Cabbage										Broccoli										Lettuce										Cauliflower										Shungiku									
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	<p>* Target crops under rain protection are Chinese cabbage, Cabbage, Lettuce * Feld area is 400m²</p>												
Contents of support	<p>1. Material support:</p> <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Items</th> <th>Quantity for 400 m²</th> </tr> </thead> <tbody> <tr> <td>GI pipe/frames</td> <td>132 frames</td> </tr> <tr> <td>PVC pipe</td> <td>132 pcs</td> </tr> <tr> <td>Poly sheet</td> <td>386 m²</td> </tr> <tr> <td>Shade net</td> <td>386 m²</td> </tr> <tr> <td>Clips for jointing</td> <td>264 pcs</td> </tr> </tbody> </table> <p>* Cost share shall be Farmers 10%: Outsourcer 30%: BPMU 30%: TCP 30%</p> <p>2. Technical support to the farmers: On-site guidance: By outsourcer Periodical monitoring: By BPMU Mandi</p>	Items	Quantity for 400 m ²	GI pipe/frames	132 frames	PVC pipe	132 pcs	Poly sheet	386 m ²	Shade net	386 m ²	Clips for jointing	264 pcs
Items	Quantity for 400 m ²												
GI pipe/frames	132 frames												
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Poly sheet	386 m ²												
Shade net	386 m ²												
Clips for jointing	264 pcs												
Period of activity	Originally scheduled for March to October 2021												
Progress situation	<p>No works were implemented. Planned works in/after May 2021 were as follows: Assistance for making an agreement with the outsourcer Discussion with BPMU/DOA about the cost sharing Procurement and delivery of items Periodical field check by BPMU/DOA Field visit to check the utilization / effect of provided materials</p>												
Note	<ul style="list-style-type: none"> - Activity plan (draft) is shown in Attachment-2.4.29 - Due to COVID-19, demand of off-season/exotic vegetables was reduced and this activity was called off in 2020 and 2021. 												

4) Activity in Stage 2 – Year 2022

Selected activities for year 2022 and progress situations as of end of September is as follows.

Table 2.4.22 Progress Situations of New Activities for Year 2022 (as of end of Sep. 2022)

Code & title of the activity	Target site	Progress situation
A: Promotion of market-oriented production planning by farmers		
A-2: Assistance to make a production plan for polyhouse (2022)	Hamirpur – 3 sub-projects & 1 village	Implemented
A-4: Assistance to make a production plan for whole farm	Hamirpur - Maharal	Implemented
D: Promotion of vegetable production aim to sell at time of higher-price		
D-2(1): Promotion of Cucumber & Early cauliflower cultivation by use of mulching sheet & drip irrigation (2022)	Hamirpur – 2 sub-projects & 3 village Bilaspur – 1 sub-projects & 2 villages	Ongoing
D-2(2): Cultivation of early cucumber + other crops in poly house (2022)	Hamirpur – 3 sub-projects & 1 village (same as A-2) Bilaspur – 1 village	Implemented
D-1(2)-6: Trial - Cucumber + Early cauliflower cultivation in paddy area by use of mulching sheet, furrow irrigation and underground drain	Bajjnath - FIS Ragloo, FIS Makruhal Kuhl	Underground drain : installed in April Cultivation: Ongoing
Trial - Anaerobic/Biological Soil Disinfestation inside poly house	Advanced farmer in Hamirpur	Implemented

Note: Nos. of target site for D-2(1) were altered after starting the activity.

Source: JICA TCP Expert Team

i) A: Promotion of Market-Oriented Production Planning by Farmers

a) A-2: Assistance to Make a Production Plan for Polyhouse (2022)

DOA Hamirpur and JICA TCP assisted poly-house owners to consider a production plan in his/her polyhouse by taking annual price trend into account. Workshop-style meetings were held in Dec. 2021 at LIS Jamli (Bhijari block) in Hamirpur and 14 farmers were participated. In addition to five target farmers of D-2(2), poly-house owners in Bhijari block were invited.

A production plan of Jamli farmer was prepared in the meeting. Since cucumber cultivation in Jan - May was scheduled, succeeding crops in 2022 and 2023 were discussed and planned. Target vegetables and its cultivation time were determined to utilize advantages of polyhouse (protected from rainfall, higher temperature) and to harvest/sell produce in late stage of rain season when vegetable prices are good. Although Jamli farmer is yet beginner, he decided to challenge capsicum production starting harvest from late July.

b) A-4: Assistance to Make a Production Plan for Whole Farm

DOA Hamirpur and JICA TCP assisted a beginner farmer at Maharal to plan cropping system/land use in his open field (about 1000m²) and poly-house under-construction (250m²) in May 2022.

The farmer (Mr. Amit) was hotel employee and boomeranged to home due to COVID-19 and has no experience in vegetable cultivation. Therefore, proposed plan (include target sales) was prepared by DOA Hamirpur and JICA TCP, and then, it was explained/discussed and amended with farmer. Prepared production plan is shown in Attachment-2.4.30.

ii) D: Promotion of Vegetable Production Aim to Sell at time of Higher-Price

a) D-2(1): Promotion of Cucumber & Early Cauliflower Cultivation by Use of Mulching Sheet & Drip Irrigation (2022)

Nos. of sub-projects /villages & farmers	District	HPCDP-1 sub-project or not	Nos. of site (Farmer)	Area of Drip irrigation installed (m ²)	Area of Cucumber cultivated (m ²)	Area of Cauliflower cultivated (m ²)
	Hamirpur		HPCDP-1 sub-project	2 (2)	350	350	750
		No (village)	3 (3)	2,140	1,100	1,300
Bilaspur		HPCDP-1 sub-project	1 (1)	0	400	400
		No (village)	2 (2)	800	800	1,000
Total			8 (8)	3,290	2,650	3,450
Above figures were not same with the ones in the planning stage. After stating the activity, some farmers withdrew and some others newly participated. Above figures are results as of end of Aug.						
Aim	This is a succeeding activity of D-1(2)-5 to promote new cropping system in 2022 season					
Contents of support	Provide materials and on-site guidance					
Period of activity	Jan. 2022 to Nov. 2022					
Progress situation	Works done from Jan. to April 2022: Determination of target sub-projects/villages, farmers and field area					

	<p>Installation of drip irrigation system by DOA (3 farmers) Demonstration of bed making, cucumber staking for farmers by EOs with support of JICA TCP Procurement and distribution of items to farmers for seedling production and bed preparation Formation of WhatsApp Group (EOs & farmers) by DOA Works done from May to September 2022: Installation of drip irrigation system by DOA (3 farmers) Monitoring of cucumber transplanting/making of staking Monitoring of growth/harvest and collection of sales record (Cucumber) Procurement of materials for cauliflower cultivation Monitoring of cauliflower seedling production and transplanting Monitoring of growth (Cauliflower) Works to be made by DOA in October - November 2022: Monitoring of harvest (Cauliflower) Field visiting by farmers of other sub-projects/villages Collection of sales records (Cauliflower) and summarizing the results Planning and budget allocation for year 2023 activity</p>				
Results	Cucumber		Average	Max.	Min.
	Profit (net)	Rs./kanal	29,593	37,208	20,548
	Yield	Kg/kanal	1,560	1,824	1,231
	Selling price	Rs./kg	22		
	<ul style="list-style-type: none"> - Compared to the results in 2020 and 2021, yield is lower but profit is almost same level. Max. yield is largely lower than 2020 (3,119 kg/kanal), and it means that there was no farmer who got very-very good harvest in this year. Prolonged rain and frequent heavy rainfall in this year might cause poor growth and less harvest of cauliflower in this year. - To install drip systems by DOA before cucumber transplanting (before end of March) was precondition to implement this activity. Both district DOA had no budget and installed the drip systems by using subsidy scheme of Horticulture department, and also failed in time installation at several sites; a farmer in Bilaspur withdrew from the activity and hindered the planned cultivation. 				
Note	<ul style="list-style-type: none"> - Detail result of cucumber and cauliflower cultivation in 2022 is shown in Attachment-2.4.28. 				

b) D-2(2): Cultivation of Early Cucumber + Other Crops in Polyhouse (2022)

Target sites, Number of farmers, & Target area	BPMU	Hamirpur	Bilaspur
	Sub-projects / Villages (nos. of farmers)	LIS Jamli (2) LIS Ghodi (1) LIS Amned (1) Dhangota (1)	Kalthun (1)
	Nos. of farmers (repeating & newcomer)	5 (1 +4)	1 (0 + 1)
	Nos. of polyhouse	7	1
	Field area (total, m ²)	1,718	500
Aim	<p>Prime target is to market cucumber in mid-March to end-April. To achieve it, farmers should adapt following technique.</p> <ul style="list-style-type: none"> - Seedling production with poly-pots and low poly-tunnel with bamboo frame inside of polyhouse - Fertilizing by liquid fertilizer with drip system - Improvement of staking method 		

Contents of support	Provide materials and on-site guidance
Period of activity	Dec. 2021 – September 2022
Progress situation	Works done from Dec. 2021 to April 2022: Procurement and distribution of items to farmers for seedling production and low poly-tunnel (by JICA TCP) On-site guidance on “how to make low poly-tunnel” and “seedling production with poly-pot”; JICA TCP to EOs and EOs to farmers in Dec. 2021 and Jan. 2022 Monitoring of cucumber growth and on-site guidance Works done from May to Sep. 2022: Monitoring and on-site guidance on succeeding crop such as tomato.
Results	- Five farmers out of six got good results in early cucumber cultivation. Farmers’ selling prices in March - April were Rs.30 to 45/kg (similar to 2021).
Note	- Succeeding crop selected by farmers were tomato (3 farmers), cauliflower/ broccoli (2 farmers) and spinach (1 farmer).

c) D-1(2)-6: Trial - Cucumber + Early Cauliflower Cultivation in Paddy Area by Use of Mulching Sheet, Furrow Irrigation and Underground Drain

Sub-project (number of farmer)	BPMU Baijnath – FIS Ragloo (1), FIS Makruhal Kuhl (1)															
Background & Aim	To harvest cauliflower in October, transplanting of seedlings should be done in early August; in the midst of rain season. As a matter of course, it is difficult to apply in paddy field which is designed to impound in rainy season. In Japan, underground drain is widely used to improve drainage in paddy field to cultivate vegetables, etc. However, it is not seen in paddy fields (mostly terraced paddy fields) in the project area. This trial aims to test the applicability of Cucumber + Early cauliflower cropping system in terraced paddy fields by use of underground drain made by locally available materials.															
Outline of the trial	Technique to apply to improve drainage: - Surface drain by shallow ditch; in proper layout - Underground drain made by locally available materials Test plots: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 25%;">Site</th> <th style="width: 25%;">Field area</th> <th style="width: 25%;">Technique to apply</th> <th style="width: 25%;">Remarks</th> </tr> </thead> <tbody> <tr> <td>FIS Ragloo</td> <td>Approx. 85m²</td> <td>Surface drain & Underground drain</td> <td>No comparison (with/without underground drain)</td> </tr> <tr> <td rowspan="2">FIS Makruhal Kuhl</td> <td>70 - 75 m²</td> <td>Surface drain & Underground drain</td> <td>Upper field</td> </tr> <tr> <td>70 - 75 m²</td> <td>Surface drain</td> <td>Lower field</td> </tr> </tbody> </table> Watering method : FIS Ragloo : Drip irrigation, FIS Makruhal Kuhl : Furrow irrigation	Site	Field area	Technique to apply	Remarks	FIS Ragloo	Approx. 85m ²	Surface drain & Underground drain	No comparison (with/without underground drain)	FIS Makruhal Kuhl	70 - 75 m ²	Surface drain & Underground drain	Upper field	70 - 75 m ²	Surface drain	Lower field
Site	Field area	Technique to apply	Remarks													
FIS Ragloo	Approx. 85m ²	Surface drain & Underground drain	No comparison (with/without underground drain)													
FIS Makruhal Kuhl	70 - 75 m ²	Surface drain & Underground drain	Upper field													
	70 - 75 m ²	Surface drain	Lower field													
Period of activity	April to Nov. 2022															
Progress situation	Works done from March to April 2022: Procurement of items by JICA TCP Arrangement of local materials/labour at the site Preparation of cucumber seedlings															

	<p>Installation of underground drain by JICA TCP/farmers/BPMU/DOA (April)</p> <p>Bed making and set mulching sheet, bamboo staking</p> <p>Works done after transplanting cucumber in middle of May:</p> <p>Monitoring of cucumber growth and on-site guidance</p> <p>Procurement of materials for cauliflower cultivation</p> <p>Monitoring of field condition/cauliflower growth in rainy season and on-site guidance on drainage management</p> <p>Preparation of a manual for making of underground drain</p> <p>Works to be made by DOA in October - November</p> <p>Monitoring of cauliflower growth/harvest</p>
Results	<p>Underground drain surely worked to reduce soil wetness/impound; there were no water pools on the surface and no muddy after rain. However, survival rate of cauliflower plants was low and growth also not good as compared to the seedlings planted at sub-projects in Hamirpur at similar time. Not only soil wetness but also frequent strong rains and attack by snail/cricket affected the survival rate and growth.</p> <p>Based on the state of growth till late September, it is considered that for beginner farmers it is hard to start cauliflower cultivation in early/mid-August in paddy field even with the use of underground drain.</p>
Note	<ul style="list-style-type: none"> - Plan of trial activity is shown in Attachment-2.4.31 - Manual on installation of underground drain is shown in Attachment-2.4.32

d) Trial - Anaerobic/Biological Soil Disinfestation inside Polyhouse

Sub-projects	Advanced farmer in Hamirpur (Badhera village near Kangoo, Nadaun tehsie)
Background & Aim	<p>Mini-tomato production by the farmer in Minji Gram was supported in 2019 under B2-3-a) and the result was unsuccessful mainly because of soil borne disease in polyhouse. Without countermeasure against soil borne disease, it is impossible to grow tomato. Therefore, soil sterilization in hot season (April to May) by using locally available materials is planned to experiment.</p> <p>It is said that many polyhouses are contaminated by soil borne disease. If this trial proves successful, it must have a positive effect to promote tomato and other vegetables production in polyhouse.</p>
Contents of activity	<ol style="list-style-type: none"> 1. Preparation of the trial 2. Implementation of soil treatment (in May; for 3 weeks period) 3. Technical transfer to DOA/BPMU through participation in the trail 4. Growth test (comparison test) by tomato seedlings (June to Aug.) 5. Making of manual
Outline of the trial	<p>Materials to use : wheat bran, wheat straw (chopped), cow manure compost</p> <p>10 tons of water/100m², plastic sheets</p> <p>Period of soil treatment : 3 weeks</p> <p>(1) 1st trial:</p> <p style="padding-left: 20px;">Nos. of polyhouse : 1 unit (105m²)</p> <p style="padding-left: 20px;">Plot setting : Leave about 1/4 area un-treated; for comparison test</p> <p style="padding-left: 20px;">Watering method : by drip tubes</p> <p>(2) 2nd trial:</p> <p style="padding-left: 20px;">Nos. of polyhouse : 1 unit (105m²)</p> <p style="padding-left: 20px;">Plot setting : Leave about 1/4 area un-treated; for comparison test</p> <p style="padding-left: 20px;">4 lines of beds were prepared, then pour water between beds by hose pipes</p>
Period of activity	April to August 2022

Progress situation	<p>Works done from April to May 2022:</p> <ul style="list-style-type: none"> Preparation of work instruction manual Preparation of materials Implementation of 2 times of soil treatments in early-May <p>Works done from June to August 2022:</p> <ul style="list-style-type: none"> Growth test (comparison test) by tomato & cucumber Revise the instruction manual
Results	<ul style="list-style-type: none"> - Two kinds of watering methods (by drip tubes, by hose pipe in between beds) were tested. Initially it was planned to treat only one polyhouse. Due to low discharge rate of pump caused by power fall, it took time to water over the area by drip tubes and state of submerged condition could be inadequate. Therefore, 2nd test with another watering method (prepare beds and pour water between beds; and bring water from hydrant by pipes) was carried out. It came out that beds should be lower & narrow (i.e. twice the number of beds) to assure the submerged condition. - Necessary quantity of water must be at least 15-20 tons/100m² in case to treat in April-May in very dry time. (10-15 tons/100m² is usual cases in Japan). - It was confirmed that the required materials were easy to get in villages and not expensive. - Success of the soil treatment was confirmed by the change in soil color brought by reductive reaction. But succeeding comparative cultivation test with cucumber/tomato did not take place properly. One of polyhouses got roof film broken soon after the treatment, and another poly-house was judged that no polluted by soil-borne disease after starting cultivation of cucumbers and tomatoes.
Note	<ul style="list-style-type: none"> - Manual on Anaerobic/Biological Soil Disinfestation inside poly house is shown in Attachment-2.4.33

2.4.5 Conduct Monitoring and Evaluation of Progress and Achievement of Activities Undertaken [3.5]

(1) Evaluation of Activities Implemented in Stage 1 and 2

1) Overall Evaluation

Output and indicator in the PDM are comprehended as follows:

Original in PDM:

Output : Effective marketing activities for farm produce are identified.

Indicator : Recommendations for effective activities to improve marketing of farm produce are made.

After supplement with actor of activity:

Output : Effective marketing activities (to be practiced by farmers) for farm produce are identified.

Indicator : Recommendations for effective (supportive) activities (to be carried out by PMU/DOA) to improve marketing of farm produce are made.

* Farm produce = vegetables

In accordance with the PDM, JICA TCP evaluated the implemented activities from a perspective of degree of effectiveness as a tool for promoting vegetable production by DOA. Achievement of aim/purpose of the activity, appropriateness of applied assistances; applied technical level, continuation by target farmers, and feasibility for DOA are reviewed and usefulness as a tool is judged.

Implemented activities in stage 1 and stage 2 are listed together with the result of evaluation in the next

table. Effective/recommended activities are marked with ☉, and recommended activities; although aim/purpose of the activity was not attained through the implementation are marked with ○.

Some of the listed activities (such as trial to develop a time-shifted cultivation method, assistance on planning & production to target a particular customer) are case examples, and it does not mean to do an exact duplication.

Table 2.4.23 Supportive Activities Implemented in Stage 1 and 2

Category	Marketing activities to be practiced by farmers	Case example of Supportive activities carried out by PMU & JICA TCP	Evaluation results
A. Promotion of market-oriented production planning by farmers	To meet potential buyers and get information about demand/ buying intension.	Assistance on production planning: - Make a production plan for poly-house; for open field with drip irrigation system; for whole farm	☉
	To make a production plan to target a particular retailer/customer; to sell at time of higher-price	Assistance on production planning to target a particular customer: - Start up a mini-tomato production to sell to Green Leaf - Planned production of Pak-choi in poly-house to sell to Tibetan monastery	○
B. Promotion of direct sales to local consumers/retailers	To setup an own shop to sell directly to consumers	- Support the installation of simplified roofed stall (mobile cart type, permanent type)	
	To start a collective marketing	- Support the installation of collection point	○
	To set a target buyer, prepare a production plan and carry out a plan	Assistance to put a farmer-made market-oriented production plan into practice: - Start up a mini-tomato production to sell to Green Leaf (2019) - Planned production of Pak-choi in poly-house to sell to Tibetan monastery (2019)	○
	To adopt a cultivation method	- Support the very beginner farmer for starting a commercial production (2020) (2021)	
	-----	Fact-finding survey (project formulation) - Study on introducing exotic vegetables production in sub-projects in Nurpur (2018-2019)	☉
C. Promotion of collective shipment to APMC market yards	To meet potential buyers and gather information about requirements	- Support for linkage building with wholesalers (C/A) who deal with exotic vegetables in Chandigarh (2018)	○
D. Promotion of vegetable production aim to sell at time of higher-price	To adopt a time-shifted cultivation method.	Developing time-shifted cultivation method: - Trial- Early cultivation of okra and cucumber to harvest in April – June (2018) - Trial - Early cultivation of cole crops by use of mulching sheet (2018) - Trial-cum-Extension - Cucumber & Early cauliflower cultivation by use of mulching sheet (2019) - Trial - Coriander cultivation in Jul-Aug under poly-sheet roof (2018) (2019) - Trial - Cucumber + Early cauliflower cultivation in paddy area by use of mulching sheet, furrow irrigation and underground drain (2022)	☉
		Promotion of developed time-shifted cultivation method:	☉

Category	Marketing activities to be practiced by farmers	Case example of Supportive activities carried out by PMU & JICA TCP	Evaluation results
		- Promotion of Cucumber & Early cauliflower cultivation by use of mulching sheet & drip irrigation (2020) (2021) (2022)	
		Assistance to put a farmer-made market-oriented production plan into practice: - Cultivation of early cucumber + other crops in poly house (2020) (2021)(2022)	⊙
F. Promotion of challenge to entry into niche market in big city	To gather information on distributors and their requirements	- Support of market survey in Delhi by commercial farmer who seek new outlet (2018)	
Others	----	- Trial - Anaerobic/Biological Soil Disinfestation inside poly house (2021) (2022)	○

Note: Activities which were planned but did not implemented/completed are not shown in the table.

Source: JICA TCP Experts Team

2) Evaluation Results of Each Supportive Activity

i) A. Promotion of Market-Oriented Production Planning by Farmers

This activity aimed at planting a mindset of market-oriented production in farmers through the exercise of production planning with support from EOs and JICA TCP. Production plans focus on market opportunity (predictable price trend or customer demand) were prepared. Target time of harvest was set as a first step, and then sowing time was determined. As it is obvious, this exercise of planning is effective to teach farmers a concept of market-oriented production.

To introduce a time-shifted cultivation to sell at a time of higher-price, new cultivation methods (unknown methods for farmers) were often necessary. In such cases, technical assistance was planned together with production plan, and new cultivation methods should not exceed current farmer's skill/knowledge level. Output-3 carried out the "Planned production of Pak-choi in poly-house to sell to Tibetan monastery" to create a case example of exotic vegetable production to target a niche demand, and production plan of rotation system was prepared in line with JICA TCP's suggestion. As the result, Pak-choi production did not go according to plan mainly due to skill/knowledge shortage of participated farmers.

ii) B. Promotion of Direct Sales to Local Consumers/Retailers

a) Support the Installation of Simplified Roofed Stall

Retailing vegetables at roadside is commonly practiced in the target area, and it is one of selling methods for small-scale vegetable growers. To promote direct sales to local consumers, JICA TCP assisted farmers interested in starting or upgrading the roadside retailing by providing equipment for simplified roofed stall; of mobile cart type or permanent type. In conclusion, having an own roadside shop promoted the direct sales but it is hard to say that it promoted the vegetable production.

In the interviews to the users of mobile cart type stall, some users said that having own shop made them commit to vegetables production but no plan to increase field area for vegetable production due to limited landholding and to maintain food/feed crop production. In addition, two users who did retailing at good location devoted themselves to retail business by purchasing vegetables and fruits at APMC market yard; not to vegetable production.

Mobile cart type stall was designed and manufactured by JICA TCP to deal with the requirement given

by future users; that was we cannot leave a stall and vegetables at roadside in the night. However, mobility is judged as unnecessary based on the actual state of cart usage.

b) Support the Installation of Collection Point

Initially four farmers showed the willingness of vegetable production and group sales to retailers in nearby town. To push their attempt, simple facility for temporary storage and postharvest works was built by PMU budget. However, only one farmer did commercial vegetable production seriously. It was expected that support on collection point (facility) would enhance farmers' commitment to a serious vegetable production. However, there was no such effect.

Collective shipment is theoretically recommended because it must reduce shipment costs and enhance bargaining power. In case a similar support is given to farmers' group, selection criteria for a target group should be (i) Group members have stable vegetable production result for years and (ii) Group already started a collective-mode shipment by themselves, although such farmers' group is very rare in the HPCDP-1 sub-projects; especially in low hill area.

c) Fact-Finding Survey (Project Formulation) and Assistance on Production to Target a Particular Customer

Based on the information obtained in "Study on introducing exotic vegetables production in sub-projects in Nurpur", two activities were formulated and implemented; namely "Start up a mini-tomato production to sell to Green Leaf" and "Production of pak-choi in poly-house to sell to Tibetan monastery".

Both activities were launched under the initiative of JICA TCP to create case examples of exotic vegetable production to target a niche demand. Assistance on production planning and on cultivation such as on-site technical guidance and seeds/seedlings were provided by BPMU/JICA TCP. Both activities ended with disappointing results; failed in production of pak-choi due to skill/knowledge shortage of participated farmers and mini-tomato due to soil-borne-disease.

Exotic vegetables are still new (unknown) to most of farmers and local demand is limited. To promote exotic vegetable production, DOA must work on identifying the buyers, providing technical assistance, and building of linkage with buyers. Target farmers in mid hill area are mostly beginner vegetable grower, and vegetable kind and cultivation method to attempt an introduction should be considered.

iii) C. Promotion of collective shipment to APMC market yards

a) Support for Linkage Building with Wholesalers (C/A) who Deal with Exotic Vegetables in Chandigarh

This activity was initiated on-request (consultation) from the farmer side. It assisted the two sub-projects in high hill area to find buyers of exotic vegetable (broccoli) by means of arranging a meeting between farmers and wholesalers who deal with exotic vegetables in Chandigarh AMPC market yard. Market opportunity of broccoli and potential buyers were confirmed in the meeting, and one sub-project started the production of broccoli. However, it was reported that broccoli was not shipped to Chandigarh.

Although the business with the identified buyer did not materialize, a support for linkage building between farmers and buyers is important assistance and recommended to put into operation. It is foreseeable that the support for linkage building is applicable mainly to sub-projects in high hill area (advanced area of vegetable production) in the immediate future.

- iv) D. Promotion of Vegetable Production Aim to Sell at Time of Higher-Price
- a) Development and Promotion of Cucumber & Early Cauliflower Cultivation by Use of Mulching Sheet & Drip Irrigation

These activities aimed at developing and promoting a profitable time-shifted cultivation method by use of irrigation water; which motivate farmers to start serious vegetable production.

“Cucumber & Early cauliflower cultivation by use of mulching sheet & drip irrigation” for LIS sub-projects in maize + wheat area was developed through the trial cultivation in 2018 and 2019, and the promotion activities were carried out in 2020 and 2021. Based on the result of sales revenue, comments of farmers and continuation of developed cultivation method by farmers in 2020-2021, developed cultivation method is judged as effective to generate and keep farmers’ motivation for vegetable production.

As shown in below table, many of the farmers participated in the promotion activity (2020) continue to use the cultivation method in 2022 without supports from JICA TCP/DOA. The reasons for no cultivation/no use of the method in 2022 are “busy with other business”, “lack of labour”, “health issues” (in order of descending). Distinguished reasons are “returned to tomato cultivation since a lot of damage by peacock in 2021 (Kahali, Bilaspur)”, “no irrigation water due to silt accumulation in dam (Chhiber Ballu, Bilaspur)”.

Table 2.4.24 State of Continuation of the Cultivation Method by the Farmers

BPMU	Indicators	Actual achievement in 2020	Actual achievement in 2022
Hamirpur	Nos. of sub-projects	6	5
	Nos. of farmers	8	7
	Cucumber cultivation (m ²)	2,800	1,850
	Early cauliflower cultivation (m ²)	3,400	1,650
Sarkaghat	Nos. of sub-projects	5	5
	Nos. of farmers	12	11
	Cucumber cultivation (m ²)	2,900	3,950
	Early cauliflower cultivation (m ²)	3,750	2,950
Bilaspur	Nos. of sub-projects	7	4
	Nos. of farmers	17	9
	Cucumber cultivation (m ²)	4,800	5,200
	Early cauliflower cultivation (m ²)	7,700	4,100

Survey was made in Sep. 2022; by phone to all farmers who actually applied the method in 2020.

Include the farmers/areas who replaced cucumber to other cucurbit crops.

Source: JICA TCP Experts Team

Through the promotion activities in 2019/2020, it was judged that a sequence of works; a) Field visiting by farmers of other sub-projects (identifying candidate participants), b) Technical and material support for new participants, c) Assistance to review the results and to make a production plan for next year (encouraging a continuation) is effective method of promotion.

Improvement of drainage in farm fields is considered as necessary to bring the developed cultivation method in Paddy rice + wheat area, and the underground drain made by locally available materials were tested in 2022. Underground drain surly worked to reduce soil wetness/impound; there were no water pools on the surface and no muddy after rain. However, survival rate of cauliflower plants was low and growth also not good as compared to the seedlings planted at sub-projects in Hamirpur at similar time.

Not only soil wetness but also frequent strong rains and attack by snail/cricket affected the survival rate and growth.

In conclusion, the fields with good drainage; such as fields where maize is grown should be selected to introduce the developed cultivation method “Cucumber & Early cauliflower cultivation by use of mulching sheet” in paddy areas. It is not necessary to install underground drain as a prerequisite for the method. First, improve the surface drain and try the early cauliflower cultivation. If it works, no need to spend money and labour to install underground drains. Underground drains should be installed only if the early cauliflower cultivation is failed due to too much soil moisture; only in particular spots/areas in the field. It is advisable to avoid seedling transplanting in August in paddy areas, and [cucumber + cauliflower with mulching sheets] is considered as alternative cropping system, although it has not been tested under JICA TCP.

In 2022 (extension period), the promotion activity was implemented by two district DOA with assistance of JICA TCP. To install drip systems by DOA before cucumber transplanting (before end of March) was precondition to plan and implement this activity. Both district DOA had no budget and installed the drip systems by using subsidy scheme of Horticulture department and failed in time installation at several sites; a farmer withdrew from the activity and hindered the planned cultivation. Biggest challenge in doing this activity by DAO is to allocate budget for drip systems in advance and to supervise the works (layout designing, cost estimation, installation) of service providers seriously. In other words, DOA should not throw all things at service providers to fulfill on time and proper installation at target farmers’ fields.

b) Development of Time-Shifted (Profitable) Cropping System & Cultivation Method

As stated above, early implementation of “Trial - Cucumber + Early cauliflower cultivation in paddy area by use of mulching sheet, furrow irrigation and underground drain” is recommended, since the developed method must contribute the promotion of vegetable production in the sub-projects in paddy-cum-wheat area.

“Cucumber & Early cauliflower cultivation by use of mulching sheet & drip irrigation” was developed at the initiative of JICA TCP, and it took two years. Regarding the cultivation method, new tool/materials such as suitable cucumber/cauliflower varieties, ridger for 2-wheel tiller to reduce labor for bed making, large size poly-pots for cucumber seedlings, and plastic-net to set on vertical posts were introduced through research of locally available items and use tests. Thus, a development of cropping system & cultivation method is not so easy. However, it is recommended to challenge further development of time-shifted (profitable) cropping system & cultivation method; by use of irrigation facility and fit to varied climate and soil condition in HPCDP-1 sub-projects.

v) F. Promotion of Challenge to Entry into Niche Market in Big City

Unlike the high hill area, mid hill area has no significant climatical (temperature) advantage in vegetable production over the lowland area such as Panjab. In addition, looking at the current state of vegetable production in the sub-projects in mid hill area, it is judged that probably there is no farmer who is willing and capable to challenge to entry into niche market in big city (New Delhi) in the foreseeable future.

“Support for the consignment cultivation of vegetables by the farmers at sub-project Kandi Nalah – Mandi (high hill area)” is considered as one possible case to promote the entry into niche New Delhi market, although the activity was called off due to COVID-19. Identification of consigner (buyer) who

has trade outlet in New Delhi is a key point but it is not easy. A suggested method is a participation in trade-fair in New Delhi by DOA. DOA set a booth, prepare advertising materials to distribute, and look for serious buyers in trade-fair.

vi) Others

a) Trial - Anaerobic/Biological Soil Disinfestation inside Poly House

Success in soil treatment was confirmed by the smell and change in soil color brought by reductive reaction in the trial. Unfortunately, treatment effect was not able to check by comparative cultivation test due to problems in the polyhouses. Anaerobic/Biological Soil Disinfestation inside poly house is established/commonly-used technique in Japan, and required materials are easy to get in villages in HP and are not expensive. JICA TCP recommends introducing this technique in HPCDP-1 poly-houses.

Difficult point in application is quantity of water required (at least 10-15 tons/100m²) to submerge area to be treated and method to deliver water over treating area in one day. In the trial, two kinds of watering methods (by drip tubes, by pipe in between low beds) were tested and both methods were workable.

The numbers/field area of polyhouses installed by HPCDP-1 is limited. However, it is said that many polyhouses are contaminated by soil-borne disease in H.P., and introduction of this technique must deliver significance.

(2) Recommended activities

Among various supportive activities carried out in the Stage 1 and Stage 2, ones being evaluated as effective become the recommendations. Based on the evaluation results shown in the above, recommended activities to be operated by DOA to promote commercial vegetable production in the HPCDP-1 sub-projects are as follows:

Core Activity (Market-oriented production)

Target area: Sub-projects at mid hill area

A. Promotion of vegetable production aim to sell at time of higher-price

For Maize+ Wheat field with LIS

A-1: Promotion of Cucumber & Early cauliflower cultivation by use of mulching sheet & drip irrigation

For Paddy rice + Wheat field with FIS

A-2: Development of Cucumber & Early cauliflower cultivation method in paddy field

A-3: Promotion of Cucumber & Early cauliflower cultivation in paddy field

B. Promotion of market-oriented production planning by farmers

For farmers who newly participated in the Activity-A-1/A-3

B-1: Support on production planning by farmers who are newly-participated in Activity-A.

For poly-house owners

B-2: Support on production planning by farmers who own polyhouse

B-3: Introduction of appropriate technique for Soil Disinfestation inside poly house

On-demand Activity (Changing a method of selling)

Target area: All sub-projects

C. Promotion of direct sales to local consumers/retailers

- Support the installation of collection point

- Fact-finding survey (project formulation) and Assistance on production to target a particular customer

D. Promotion of collective shipment to APMC market yards

Support for linkage building with buyers

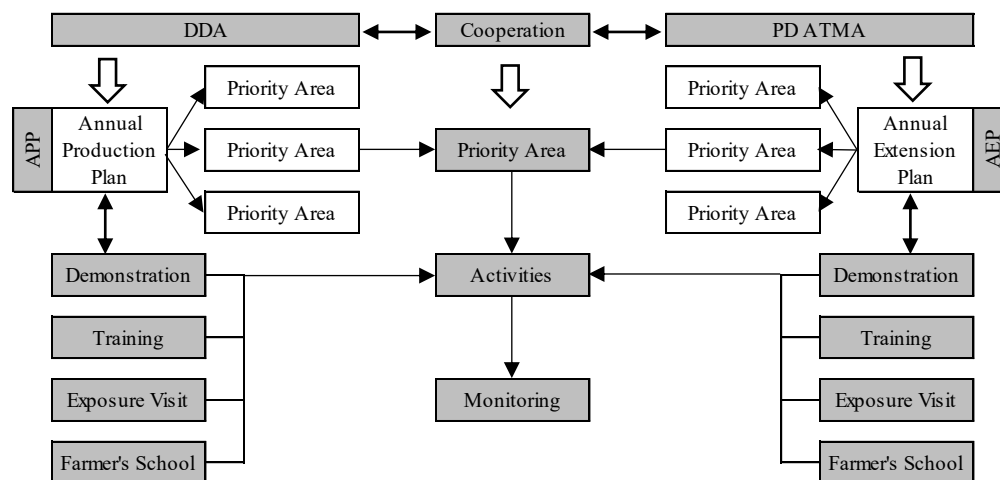
2.5 Activities to Achieve Output-4: Sustainable Plans of DOA to Promote Crop Diversification in The Respective 5 Districts are Formulated Based on achievements of the Project

2.5.1 Make Annual Plans to Promote Crop Diversification in the 5 districts [4.1]

(1) Concept of Formulation of Crop Diversification Plan at Introductory Stage

Presently the DOA in HP is preparing Annual Plan for implementation of the existing schemes, and on the basis of it, season-wise (Kharif and Rabi seasons) production program covering different activities which have been bearing on agricultural development are prepared and targets for each district are fixed. In order to achieve these targets and support the farmers, DOA is implementing number of schemes under which action plans for extension activities for farmers – trainings, demonstration, Exposure visit (EV), etc. are prepared. In addition, targets for distribution of farm inputs like seeds, fertilizers, agricultural chemicals, farm tools and machinery, seed production, soil analysis, etc. are also fixed for each district. At district level these targets are divided to each block and then by SMS to EOs so as to support farmers of different areas and to achieve the stipulated targets.

In DOA Office in each District, it is stated that season-wise annual production plan (APP) be prepared for each block. Meanwhile, in PD ATMA office in each District, annual extension action plan (AEP) is prepared for each block. Further, it is expected that those plans should be synchronized. Namely it is necessary to specify priority areas to apply both plans of production as well as extension. However, no such priority is given on identification of potential areas for vegetables and then specific plan for implementation of production and extension activities are formulated. Ideal concept of implementation of crop diversification is shown as follows.



Source: JICA TCP Expert Team

Figure 2.5.1 Concept of Crop Diversification in Target District

(2) Clarification of Priority Areas for Crop Diversification

It is intimated that priority should be selected for promotion of crop diversification, as shown in the above Figure. Criteria to select priority areas to promote crop diversification is shown in the following table:

Table 2.5.1 Criteria to Select Priority Areas

Source	Social	Environment	Economic
Water, Rain, Soil	Poverty, Agricultural Labor	Agro-ecological zone	With or without market
Assured irrigated area (5 to 10 ha)	Farmers, who cultivate vegetables, are available.	Farmers, who cultivate vegetables, are available.	Farmers should be interested in vegetable cultivation.

Source: JICA TCP Experts Team

(3) Preparation of Production Plan (APP) and Extension Plan (AEP)

It is intimated that DOA has prepared district-wise annual production programmes (APP), while ATMA has prepared annual extension plan (AEP) including demonstrations, Farmers schools, EV etc. and selected priority areas as well as farmers for implementation of their annual activities under extension services under ATMA.

ATMA is an autonomous institution with participation of all the key stakeholders involved in agricultural activities for sustainable agricultural development in the district. It has the flexibility to receive funds directly from Government of India / States.

Activities carried out under ATMA are (i) farmer-oriented activities (training of farmers, demonstration, exposure visit, (ii) farm information and dissemination, and (iii) agriculture technology refinement, validation and adoption such as farmers-scientist interactions, field days, and assessment. Under ATMA, annual action plan is developed, considering current situation as well as needs / requirement of farmers, and extension services are conducted by ATMA's extension staff (BTM and ATM) in cooperation with SMS offices under DDA. Meanwhile, annual production programme (APP) is developed, considering current situation as well as annual target, which is annually indicated by DOA.

Regarding to existing annual production programme prepared by DDAs and action plan prepared by ATMA, purpose, activities, expected outputs and expected outcomes are not so clear. Meanwhile, it is emphasized that action plan for extension activities should be prepared to support production programme.

It is intimated that annual production plan (APP) and extension plan (AEP) should be prepared in order to promote crop diversification, as shown in Attachment-2.5.1 and 2.5.2. As shown in Attachment-2.5.1 mentioned above, cultivated area and production as well of vegetable cultivation are annually planned and monitored through field visit or telephone call. Meanwhile, regarding AEP shown in Attachment-2.5.2, extension activities such as demonstration, training, exposure visit (EV) are annually arranged, considering farmers' needs as well as constraints on vegetable cultivation. Based on the feedback of DDAs as well as PD ATMAs, the format for preparation of APP and AEP was revised and provided to them as shown in Attachment-2.5.3.

Actual procedure of preparation of APP and AEP is shown as follows:

Table 2.5.2 Actual Procedure of Preparation of APP and AEP

Step	Subject	Remarks
Step-1	Clarification of priority areas for vegetable cultivation in each Block	-applying Block Maps -210 sub-projects should be categorized as priority area. -2 priority areas in each Block to be selected as the first step.
Step-2	Clarification of target(s) such as area, yield, and farmers in the priority areas	Target(s) should be selected, depending on the situation.
Step-3	Specification of activities and outputs to attain target (s)	-Packages of activities proposed by JICA TCP (Output-2 and Output-3) should be included.
Step-4	Clarification of the existing schemes to	-Major activities of existing schemes are only to supply farm

Step	Subject	Remarks
	conduct extension activities	inputs.
Step-5	Preparation of APP and AEP	-Season-wise plan -2 priority areas in each Block
Step-6	Monitoring and evaluation	-Confirmation of outputs and outcomes -Clarification of constraints and countermeasures
Step-7	Preparation of APP and AEP for the following season	-repeated from Step-1
Step-8	Selection of priority areas for 5 years <u>1st year (2021/22)</u> - Rabi 2021/22 <u>2nd year (2022/23)</u> - Kharif 2022 - Rabi 2022/23 <u>3rd year (2023/24)</u> - Kharif 2023 - Rabi 2023/24 <u>4th year (2024/25)</u> - Kharif 2024 - Rabi 2024/25 <u>5th year (2025/26)</u> - Kharif 2025 - Rabi 2025/26	-More priority areas in each Block to be selected, if possible -210 sub-projects should be priority areas for 5-year CDP.

Source: JICA TCP Experts Team

In 2018, it is intimated that DOA has proceeded promotion of Zero Budget Natural Farming (currently SPNF: Subhash Palekar Natural Farming). DOA decided to implement extension activities related to SPNF only under ATMA from Kharif season 2019. As a result, 2 types of extension activities have been arranged in DOA, that is extension activities under the existing schemes conducted by SMS office and SPNF conducted by ATMA. Accordingly, extension activities in the priority area were also separately conducted under SMS offices of DOA and ATMA since Rabi 2019/20 as shown in the following table.

Further, preparation of annual plan as well as monitoring the plan were sustained repeatedly, because it is not easy for them to prepare annual plan, applying PDCA circle. So, it is expected that formulation of 5-year plan should be prepared after they become able to formulate annual plan easily, applying PDCA circle. Preparation of annual plan was continued up to Karif 2021.

Progress on preparation of APP and AEP with block maps for priority areas during the period from 2018/19 to 2020/21 is shown as follows:

Table 2.5.3 Priority Areas for Crop Diversification

District	Block	Rabi 2018/19	Kharif 2019	Rabi 2019/20		Kharif 2020		Rabi 2020/21		Kharif 2021	
				DOA	ATMA	DOA	ATMA	DOA	ATMA	DOA	ATMA
Bilaspur	1. Sadar	LIS Gambrolla	LIS Gambrolla	Nai Srali	-	Kothipura LIS	Kothipura LIS	Nalwar, Parohi	Nalwar, Parohi	Nalwar, Parohi	Nalwar, Parohi
	2. Swarghat	LIS Jhaggar	LIS Jhaggar	Jhajjar	Jhajjar	Jhajjar	Jhajjar	Bassi, Tobba	Bassi, Tobba	Bassi, Tobba	Bassi, Tobba
	3. Jhandutta	FIS Amrohha	FIS Amrohha	Amroa	-	Amroha	Amroha	Fagog, BalhSena	Fagog, BalhSena	Fagog, BalhSena	Fagog, BalhSena
	4. Ghumarwin	LIS Takrehra	LIS Takrehra	Takrehra	Takrehra	Nawan	Nawan	Domehar, Chibbar	Domehar, Chibbar	Domehar, Chibbar	Domehar, Chibbar
Hamirpur	1. Hamirpur	LIS Baleta	LIS Baleta	Baleta	Baleta	LIS Neri Kamlah	LIS Neri Kamlah	Neri Kamlah	Neri Kamlah	Neri Kamlah	Neri Kamlah
	2. Nadaun	LIS bharmoti	LIS bharmoti	Bharmoti	Bharmoti	Bharmoti	Bharmoti	Manjra, Guriah	Manjra, Guriah	Manjra, Guriah	Manjra, Guriah
	3. Bhoranj	FIS Bagwar	FIS Bagwar	Bagwar	Bagwar	Bagwar	Bagwar	Bagwar	Bagwar	Bagwar	Bagwar
	4. Bamsan			Hallana G.P. Dhalot	Hallana G.P. Dhalot	Hallana G.P. Dhalot	Hallana G.P. Dhalot	Hallana, Majhot	Hallana, Majhot	Hallana, Majhot	Hallana, Majhot
	5. Bijhari	LIS Baragraon	LIS Baragraon	Baragraon	-	Nalhera	Nalhera				
	6. Sujanpurr	LIS Palahi	LIS Palahi	Palahi	Palahi	Palahi	Palahi	Hallana, Majhot	Hallana, Majhot	Hallana, Majhot	Hallana, Majhot
Kangra	1. Panchrukhi	Duhki	Duhki	-	-	Duhki	Duhki01 Duhki02	Duhki	Duhki	Duhki	Duhki
	2. Dharamshala	Tangroti	Tangroti	Tangroti	Tangroti	Tangroti	Tangroti	Tangroti	Tangroti	Tangroti	Tangroti
	3. Baijnath	Chogan	Chogan	Chaugan	Chaugan	Chogan	Chogan01 Chogan02	Chogan	Chogan	Chogan	Chogan
	4. Nagrota Bagwan	Badri	Badri	Badai	Badai	Badai	Badai			-	-
	5. Fatehpur	Deothi	Deothi	Deothi	Deothi	Deothi Sujjal	Sujjal			-	-
	6. Dehra	Digger	Digger	-	Digger	Digger	Digger01 Digger02	Amb	Amb	Amb	Amb
	7. Indora	Dagla	Dagla	Dagla	Dagla	-	-	-	-	-	-
	8. Nagrota Surian	Jhallaran	Jhallaran	Jhallariyan	Jhallariyan	Jhallariyan	Jhallariyan01 Jhallariyan02	Jhallariyan	Jhallariyan	Jhallariyan	Jhallariyan
	9. Nurpur	Nerna Syggal	Nerna Syggal	Neran Sujjal	Neran Sujjal	Neran Sujjal	-	Thora Panchayat	Thora Panchayat	Thora Panchayat	Thora Panchayat
	10. Lambagaon	Tikkru	Tikkru	Tikkaru	Tikkaru	Tikkaru	Tikkaru	Tikru	Tikru	Tikru	Tikru
	11. Kangra	Sadarpur	Sadarpur	Sadarpur	Sadarpur	Sadarpur	Sohara	Kohla	Kohla	Kohla	Kohla
	12. Bhawarna	Arla Saloh	Arla Saloh	Arla Saloh	Arla Saloh	Deothi	Deothi Arla Saloh	Arla Saloh	Arla Saloh	Arla Saloh	Arla Saloh
	13. Bhedumahadev	Sullah	Sullah	Garla Dei	Garla Dei	Garla Dei	Rakkar	Garla	Garla	Garla	Garla
	14. Pragpur	Jambul	Jambul	Jambal	Jambal	Jambal Bassi	Jambal Bassi	Amroh	Amroh	Amroh	Amroh

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District	Block	Rabi 2018/19	Kharif 2019	Rabi 2019/20		Kharif 2020		Rabi 2020/21		Kharif 2021	
				DOA	ATMA	DOA	ATMA	DOA	ATMA	DOA	ATMA
	15. Rait	Puhara	Puhara	Puhara	Puhara	Puhara	Puhara	Puhara	Puhara	Puhara	Puhara
Mandi	1. Balh	Rakadi	Rakadi	Sayora	Sayora	Sayora	Sayora	Ligri,chid,Ba dhanu	Ligri,chid,Ba dhanu	Ligri,chid,Ba dhanu	Ligri,chid,Ba dhanu
	2. Drang	-	-	Seeh	-	Seeh	-	Patyur, Bagicha	Patyur, Bagicha	Patyur, Bagicha	Patyur, Bagicha
	3. Chauntra	Pasal	Pasal	Tikari Mushera	-	Tikari Mushera	Tikari Mushera	NaganBharol a, Padhain	NaganBharol a, Padhain	NaganBharol a, Padhain	NaganBharola , Padhain
	4. Dharampur	Kalswai	Kalswai	-	Kalswai	Kalswai	Kalswai	Sadhot, Kharoh	Sadhot, Kharoh	Sadhot, Kharoh	Sadhot, Kharoh
	5. Gohar	Shilhanui	Shilhanui	Shillhanu	Shillhanu	Shillhanu	Shillhanu	Jail Khad ,Safe to Bani	Jail Khad ,Safe to Bani	Jail Khad ,Safe to Bani	Jail Khad ,Safe to Bani
	6. Gopalpur	Ukhla Baras	Ukhla Baras	Jukain	-	Jukain	-	Dhamella, Ukhla	Dhamella, Ukhla	Dhamella, Ukhla	Dhamella, Ukhla
	7. Karsog	Nanj	Nanj	Pangna-Mashog	Pangna- Mashog	Pangna- Mashog	Pangna-Ma- shog	Kharkanbalo g, Birnu Masal	Kharkanbalo g, Birnu Masal	Kharkanbalo g, Birnu Masal	Kharkanbalog , Birnu Masal
	8. Sadar	Arnod	Arnod	Kotli	-	Arnod, Sukswal	Arnod, Sukswal	Ghambhar Khad - Randhara, Gad Nallah To Arki	Ghambhar Khad - Randhara, Gad Nallah To Arki	Ghambhar Khad - Randhara, Gad Nallah To Arki	Ghambhar Khad - Randhara, Gad Nallah To Arki
	9. Seraj	Kuthah	Kuthah	Kuthah	Kuthah	Kuthah	Kuthah	-	-	-	-
	10. Sunder Nagar	-	-	FIS Dodwan Kanaid	-	Jughan	Jughan	FIS Trimhi, Takwad	FIS Trimhi, Takwad	FIS Trimhi, Takwad	FIS Trimhi, Takwad
Una	1. Amb	LIS Behar Bhangwal	LIS Behar Bhangwal	Behar Bhangwal	Behar Bhangwal	Behar Bhangwal	Behar Bhangwal	Behar Bhangwalan	Behar Bhangwalan	Behar Bhangwalan	Behar Bhangwalan
	2. Bangana	Dain	Dain	Dain	Dain	Dain, Bangana	Dain, Bangana	Dain	Dain	Dain	Dain
	3. Gagret	Dargoh Khass	Dargoh Khass	Dangoh Khass	Dangoh Khass	Dargoh Khass	Dargoh Khass	-	-	-	-
	4. Haroli	LIS Saloh	LIS Saloh	Saloh	Saloh	Saloh	Saloh	Saloh	Saloh	Saloh	Saloh
	5. Una	Jhalera	Jhalera	Jhalehra	Jhalehra	Jhalehra	Jhalehra	Jhalera	Jhalera	Jhalera	Jhalera

Source: JICA TCP Experts Team

Table 2.5.4 CDP for Crop Diversification in the Priority Area

District	Block	Rabi 2018/19		Kharif 2019		Rabi 2019/20		Kharif 2020		Rabi 2020/21		Kharif 2021	
		APP	AEP	APP	AEP	DOA	ATMA	DOA	ATMA	DOA	ATMA	DOA	ATMA
Bilaspur	1. Sadar	-	-	OK	OK	OK	-	OK	OK	OK	-	-	-
	2. Swarghat	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	-	-
	3. Jhandutta	-	-	OK	OK	OK	-	OK	OK	OK	OK	-	-
	4. Ghumarwin	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	-	-
Hamirpur	1. Sujanpurr	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	-	-
	2. Hamirpur	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	-	-
	3. Bhoranj	OK	OK	-	-	OK	OK	OK	OK	OK	OK	-	-
	4. Bijhari	OK	OK	OK	OK	OK	-	OK	OK	OK	OK	-	-
	5. Nadaun	OK	OK	-	-	OK	OK	OK	OK	-	-	-	-
	6. Bamsan	-	-	OK	OK	OK	OK	OK	OK	OK	OK	-	-
Kangra	1. Panchrukhi	OK	OK	OK	OK	-	-	OK	OK	OK	-	-	-
	2. Dharamshala	OK	OK	OK	OK	OK	OK	OK	OK	OK	-	-	-
	3. Baijnath	OK	OK	OK	OK	OK	OK	OK	OK	OK	-	-	-
	4. Nagrota Bagwan	OK	OK	-	-	OK	OK	OK	OK	OK	-	-	-
	5. Fatehpur	OK	OK	OK	OK	OK	OK	OK	OK	OK	-	-	-
	6. Dehra	OK	OK	OK	OK	-	OK	OK	OK	OK	-	-	-
	7. Indora	OK	OK	OK	OK	OK	OK	-	-	-	-	-	-
	8. Nagrota Surian	OK	OK	OK	OK	OK	OK	OK	OK	OK	-	-	-
	9. Nurpur	OK	OK	OK	OK	OK	OK	OK	-	OK	-	-	-
	10. Lambagaon	OK	OK	OK	OK	OK	OK	OK	OK	OK	-	-	-
	11. Kangra	OK	OK	OK	OK	OK	OK	OK	OK	-	-	-	-
	12. Bhawarna	OK	OK	OK	OK	OK	OK	OK	OK	OK	-	-	-
	13. Bhedumahadev	OK	OK	OK	OK	OK	OK	OK	OK	OK	-	-	-
	14. Pragpur	OK	OK	OK	OK	OK	OK	OK	OK	OK	-	-	-
	15. Rait	OK	OK	OK	OK	OK	OK	OK	OK	-	-	-	-
Mandi	1. Balh	-	-	-	-	OK	OK	OK	OK	OK	-	-	-
	2. Drang	-	-	-	-	OK	-	OK	-	OK	OK	-	-
	3. Chauntra	OK	OK	OK	OK	OK	-	OK	OK	OK	-	-	-

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		APP	AEP	APP	AEP	DOA	ATMA	DOA	ATMA	DOA	ATMA	DOA	ATMA
	4. Dharampur	-	-	-	-	-	OK	OK	OK	OK	OK	-	-
	5. Gohar	-	-	-	-	OK	OK	OK	OK	OK	OK	-	-
	6. Gopalpur	-	-	-	-	OK	-	OK	-	-	-	-	-
	7. Karsog	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	-	-
	8. Sadar	OK	OK	OK	OK	OK	-	OK	OK	OK	OK	-	-
	9. Seraj	OK	OK	-	-	OK	OK	OK	OK	OK	OK	-	-
	10. Sunder Nagar	OK	OK	OK	OK	OK	-	OK	OK	-	-	-	-
Una	1. Amb	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	-	-
	2. Bangana	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	-	-
	3. Gagret	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	-	-
	4. Haroli	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	-	-
	5. Una	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	-	-

Source: JICA TCP Experts Team

2.5.2 Conduct Monitoring and Evaluation of Progress and Achievement of Crop Diversification Plans at the respective sub-projects [4.2]

Progress & achievement of crop diversification plan, which is consisted of APP and AEP, in each sub project was reviewed in the monthly review meeting of the PMU until all sub-projects were handed over to DOA. Monthly review meeting in January 2021 was the final review meeting for crop diversification in each sub-project of PMU. Result of crop diversification in 210 sub-projects of HPCDP-1 is shown as follows:

Table 2.5.5 Achievement of Crop Diversification at 210 Sub-Projects of HPCDP-1

DPMU	CCA (ha.)	Area under diversification (Vege.) before the Project (ha.)	Cultivated Area in Rabi 2020-21			Area Diversification	
			Vegetable	Pulses, oilseeds, fodder etc.	Other commercial crops	Total area diversified (ha)	Area diversified under Vegetables only (%)
Hamirpur	969	8	266	128	3	397	30
Mandi	1,261	60	756	123	1	880	68
Kangra	2,441	87	842	352	7	1202	34
Total	4,671	155	1,864	603	11	2,479	39

Source: PMU

2.5.3 Compile Evaluation Results on Activities Carried out for Output 1, 2 and 3 at the End of Each Activity [4.3]

(1) Output-1

As described in Section 2.2, it is intimated that CEOs, who participated in training programmes, received useful experience as well as knowledge, and other extension officers got chance by sharing knowledge and information as well with CEOs.

Training materials adopted in training programmes shall require to be provided as training materials for the Guidelines, which are updated from the JICA TCP Guidelines handed over from JICA TCP to DOA in 2015, into DOA/PD ATMA and PMU.

(2) Output-2

As described in Section 2.3, certain technical packages have been prepared, and some packages have been verified in different sub-projects. It is expected that technical packages to be set be compiled as extension and training materials and supplied to DOA and PMU. Handouts as well as manuals for cultivation of exotic vegetables and other useful skills as well have been prepared through Stage-1, while parts of TCP Guidelines handed over to DOA / PMU in 2015 have been modified. These materials should be utilized for update of TCP Guidelines to be conducted by DOA/PD ATMA and PMU.

Regarding enhancement of CEOs' skills as well as knowledge, it is expected that they are instructed to actively participate in field activities of JICA TCP, thus capture skills as well as knowledge from JICA TCP in Stage-2. Further those skills as well as knowledges should be shared with other extension officers through training programmes to be arranged in Output-1 of Stage-2 and regular meetings of their offices such as SMS offices of each District, and DPMUs / BPMUs of PMU. Some materials shared in fields should be kept in the offices.

Further these packages should be disseminated through extension activities to be conducted by PMU and DOA/PD ATMA.

Table 2.5.6 Summary of Output-2

Subject	Current Situation	Points proposed	Remarks
Selection of varieties	<ul style="list-style-type: none"> No replacement / renewal varieties 	<ul style="list-style-type: none"> Climatic zone to be considered High yielding Disease tolerant 	<ul style="list-style-type: none"> Demonstration Booklet
<ul style="list-style-type: none"> Proper management of seedlings 	<ul style="list-style-type: none"> No raised bed Broadcasting seeds on bed No pot / plug tray 	<p><u>Nursery bed</u></p> <ul style="list-style-type: none"> Raised bed (10 to 15cm) <p><u>Sowing</u></p> <ul style="list-style-type: none"> Line sowing (5-7 cm between lines, 1cm among seeds) Use of non-woven sheet <p><u>Management of seedlings</u></p> <ul style="list-style-type: none"> Thinning Pot nursery production Plug tray nursery production Portable low poly tunnel Double tunnel 	<ul style="list-style-type: none"> Demonstration Booklet Return analysis
<ul style="list-style-type: none"> Land Preparation 	<ul style="list-style-type: none"> Less activities 	<ul style="list-style-type: none"> Raised high beds preparation for water drainage during rainy season 	<ul style="list-style-type: none">
<ul style="list-style-type: none"> Proper management of seedlings Bed sowing (line sowing) 	<ul style="list-style-type: none"> No raised bed Broadcasting seeds on bed No pot / plug tray 	<ul style="list-style-type: none"> Raised bed (10 to 15cm) Line sowing (5-7 cm between lines, 1cm among seeds) Thinning out Pot nursery production Plug tray nursery production Portable low poly tunnel Double tunnel 	<ul style="list-style-type: none"> Demonstration Booklet Return analysis
<ul style="list-style-type: none"> Plant protection 	<ul style="list-style-type: none"> No proper use of agro-chemicals 	<ul style="list-style-type: none"> Application of fungicide to the nursery bed/ media Proper dilution Proper quantity 	<ul style="list-style-type: none"> Demonstration Booklet
<ul style="list-style-type: none"> Transplanting 	<ul style="list-style-type: none"> no No poly mulch Narrow spacing 	<ul style="list-style-type: none"> Land preparation <ul style="list-style-type: none"> Bed making with ridger Poly-mulch Drip irrigation <ul style="list-style-type: none"> Spacing (80cm⇒50cm) shifting season Line to line and row to row spacing of seedlings Root spreading and earthing up 	<ul style="list-style-type: none"> Demonstration Booklet
<ul style="list-style-type: none"> Application of fertilizer 	<ul style="list-style-type: none"> Dosage not considered Timing not considered 	<ul style="list-style-type: none"> Proper dosage of Basal fertilizer Timing of top dressing 	<ul style="list-style-type: none"> Demonstration Booklet
<ul style="list-style-type: none"> Training- Pruning and Multiplication 	<ul style="list-style-type: none"> No activities 	<ul style="list-style-type: none"> Training on single or double stem 	<ul style="list-style-type: none"> Demonstration Booklet

Subject	Current Situation	Points proposed	Remarks
		<ul style="list-style-type: none"> • Coiling down vines and main stem to ground • Selection of stems and reduction of extra branches • Staking net • Propagation through cuttings and grafting 	

Source: JICA TCP Experts Team

(3) Output-3

As described in Section 2.4, it showed certain results in implementation of Output-3. Marketing activities were compiled as extension and training materials and supplied to DOA and PMU. These materials should be utilized for update of TCP Guidelines to be conducted by DOA / PMU.

Regarding enhancement of CEOs' skills as well as knowledge, it is expected that they are instructed to actively participate in field activities of JICA TCP and capture skills as well knowledge from JICA TCP in Stage-2. Meanwhile, cultivation skills should be disseminated through practical hands-on trainings to be arranged in Output-1 of Stage-2. In this case, through the practical hands-on training in Output-3 of Stage-2, TOT (Training of Trainers) would be conducted, these trainers could train extension officers as well as farmers in hands-on trainings of Output-1.

Further those skills as well as knowledges obtained through the implementation of Output-3 should be also shared with other extension officers through regular meetings of their offices such as SMS offices of each District, and DPMUs / BPMUs of PMU. Further some materials shared in fields should be kept in the offices.

Table 2.5.7 Summary of Output-3

Subject	Current Situation	Points proposed	Remarks
• Nursery raising	• No use of plug trays nor pots for nursery raising	• using plug trays to get healthy seedlings	• to avoid damage after transplanting
•	•	• mulching/poly sheet on the beds	• to make healthy seedlings
•	•	• used the different size (big size) of pots	• to make seedlings bigger
•	•	• double layer tunnels	• to raise temperature • to make plants bigger
• Field preparation (bed preparation)	•	• to use ridger	• to reduce the labour cost • with different models (4-5 models) of power tillers and weeders available
•	•	• mulching/poly sheet on the beds	• to save plough cost f
• Water management	•	• Use of drip irrigation system with different spacing in plant to plant and row to row	• to save time, labour cost and water as well
• Staking	•	• used vertical staking in cucumber to manage crop easily	• helpful to get next crop on time
• Production Planning	•	• keeping view the market price trends	• Operating plan to be prepared

Source: JICA TCP Experts Team

(4) Food Diversification and Nutrition Improvement

It is judged that food diversification is also one of approaches for promotion of crop diversification. Through the implementation of food diversification, various training and extension materials were prepared. These materials should be used as materials for update of TCP Guidelines. Further draft extension guidelines for promotion of food diversification have been prepared. These extension guidelines including booklets should be finalized through field activities as well as awareness campaign for extension officers in Stage-2. And it is expected that these extension guidelines should be included as one volume of the TCP Guidelines to be updated by DOA/PD ATMA and PMU.

Food diversification as well as nutrition improvement could be new topics as a component of extension activities of DOA/PD ATMA and PMU. It is expected that this topic be officially included as one of training subjects in their extension activities of the existing schemes through internal coordination in DOA.

(5) Water Management and O&M

In Stage-1, current situation on operation and maintenance of irrigation facilities were checked, so that constraints as well as problems were specified. Further, points to be improved and modified in water management and O&M of the existing irrigation schemes were fairly specified. Meanwhile essential points on capacity development for extension officers were considerably clarified through some training activities for extension officers. It is expected that certain results obtained in Stage-1 should be compiled as materials for TCP Guidelines. In water management and O&M team, spread sheet for calculation of water requirement as well as check list for MIS, water pump, and solar pump system have been prepared. Currently we are planning to arrange awareness campaign and monitoring activities on Detailed Project Reports (DPRs) for 306 sub-projects, which have been prepared by Egis and supervised by PMU.

Water management and O&M could be new topics as a component of extension activities of DOA/PD ATMA and PMU. It is expected that this topic be officially included as one of training subjects in their extension activities through internal coordination in DOA.

(6) Materials Prepared Based on JICA TCP Activity

Through activities in Outputs-1, 2, 3, food diversification and water management/ O&M, JICA TCP prepared training and extension materials. These materials should be included for update of the Guidelines. The materials are as shown below:

- 1) Output-1: - PPTs and PDFs for training materials in TCP Phase-2
- 2) Output-2:
 - Picture story (5 categories) (Hindi)
 - Booklet on Exotic vegetable cultivation
 - Booklet on 8 Gems for Your Good Health- immunity boost and Chronic Diseases Prevention
 - Booklet on Exotic vegetable cultivation
 - Charts for insect pests and diseases
- 3) Output-3
 - Brief explanation paper
 - Materials for Guidelines
- 4) Food Diversification
 - Flipcharts (7 crops) (English and Hindi)
 - Healthy! Tasty! Recipes for 70 recipes (English and Hindi)
 - Audio visual aids (2 kinds)
 - Step by step pictorial instructions for technical recipes (2 kinds)
 - Standees (English and Hindi)

- Handouts: Soya Delight (English)
- PPTs for FD: 5min. / 10min. / 15min. (English)
- 5) Water Management
 - Check List for MIS, motor pump, and solar pump system
 - Manual of MIS installation
 - Manual for calculation of water requirement
- 6) Others
 - Field Notebook for EOs in 2019
 - Field Notebook for EOs in 2020
- 7) Training materials prepared by JICA/CSKHPKV
 - Organic Certification
 - Weed Management
 - Micro Irrigation system
 - Exotic Vegetables

2.5.4 “Based on the Results of the Evaluation, Revise Crop Diversification Guidelines and Training Materials (prepared in Phase I) where Necessary” [4.4]

It was approved in the 10th Counterpart meeting held on 28th July 2020 approved to constitute a new committee for updating/preparing the standard guidelines keeping in view the existing different guidelines under different schemes. The meeting of this committee needs to be convened regularly.

First meeting of the Committee was arranged in April 2022 at Hamirpur and following points were clarified:

- i. Availability of guidelines in each office.
- ii. Using of guidelines by the EOs and then giving Feedback.
- iii. Ensuring safe keeping of technical material in each office (library) and declaring Person In charge of the material.
- iv. Record of technical material in each office.
- v. Regular discussion on technical points in monthly/ periodical meetings of EO- one complete session.

2nd meeting of the committee was arranged in May 2022 in which stress was given to provide the information highlighted in the 1st meeting.

In the 3rd meeting of the Committee in August 2022 the information regarding pace for technical material, Officer In-charge and dates for monthly meetings in DOA was shared to be confirmed, as shown below.

Table 2.5.8 Status of Keeping of In-Charge Technical Material & Space

(i) DOA

Distt	Block/ Office	In-charge Library	Space for literature
ADA, Dharamshala		SMS	✓
Hamirpur	Hamirpur	Mr Rakesh Gautam, AADO	✓
	Bhoranj	Ms Monika Sharma, ADO	✓
	Bijhari	Mr Ashwani Kumar, ADO	✓
	Nadaun	Mr Vinod Kumar, AEO	✓
	Sujanpur	Mr Deep Kumar, AADO	✓
	Tauni Devi	Dr Arvind Chahal, ADO	✓
	DDA, HQ	Ms Pariyanka Pathania, AEO	✓
Una	Una	Sh Baldev Sharma, AADO	✓
	Bangana	Dr Satpal Dhiman, SMS	✓
	Amb	Ms Piaro Devi, SMS	✓
	Haroli	Dr Lekh Raj Sandhu , SMS	✓

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Distt	Block/ Office	In-charge Library	Space for literature
	Gagret	Dr Navdeep Kaundal, SMS	✓
	DDA HQ	Ms Davender Kaur, ADO	✓
Bilaspur	Sadar	Mr Ravinder Kumar, ADO	✓
	Jhandutta	Mr Vijay Verma, AADO	✓
	Ghumarwin	Mr Kuldeep Singh ,AEO	✓
	Swarghat	Mr Anoop Kumar. AEO	✓
	DDA, HQ		✓
Mandi	Sadar	Dr Ram Chander, SMS	✓
	Darang	Dr Rajinder Thakur, SMS	✓
	Chauntra	Dr Jai Singh, SMS	✓
	Balh	Dr Dharam Chand, SMS	✓
	Sunder Nagar	Dr Shamsher Naik, SMS	✓
	Seraj	Rajesh Kashyap, SMS	✓
	Karsog	Ms Meena, SMS	✓
	Gopalpur	Dr Bhup Singh, SMS	✓
	Dharampur	Dr Ramesh Chand, SMS	✓
	Bali Chowki		✓
	Gohar	Dr Munshi Ram, SMS	✓
	DDA, HQ	Mr Narinder Kumar AEO	✓
Kangra	Baijnath	Ms Kamini, AEO	✓
	Panchrukhi	Mr Lakshit Chaudhari, ADO	✓
	Bhavarna	Dr Ravinder Kumar, SMS	✓
	Lambagaon	Dr Aditya Vikash, SMS	✓
	Bhedu mahadev	Dr Mandeep Dhadwal, ADO	✓
	Nagrota bagwan	Dr Balwinder Walia, ADO	✓
	Dharamshalla	Mr Sanjeev Kapoor, AEO	✓
	Kangra	Dr Ram Chand, SMS	✓
	Dehra	Ms Swati Sharma, AEO	✓
	Pragpur	Mr Ranjan Kalia , AEO	✓
	Rait	Ms Rajika Gupta, AEO	✓
	Fatehpur	Dr Suneel Dutt, SMS	✓
	Indora	Mr Aman Kaul, AEO	✓
	Nurpur	Dr Suneel Dutt, SMS	✓
	Nagrota Surian	Dr Vishakaha Paul, ADO	✓
	DDA, HQ	Ms Sujata Saini, AEO	✓

(ii) PMU

Distt	Block/ Office	In-charge Library	Space for literature
SPMU	PD, HPCDP	Dr Jeet Ram, SMS	✓
Hamirpur	DPMU	Ms Himani Gupta, AE	✓
Hamirpur	BPMU	Ms Nitika Soni, AE	✓
BPMU, Una	BPMU	Ms Pooja Kumari, AE	✓
BPMU, Bilaspur	BPMU	Mr Aruna Sharma, ADO	✓
DPMU, Mandi	DPMU	Ms Kiran Kumari, Office Manager	✓
Mandi	BPMU	Ms Shweta Sharma, AE	✓
S. /Ghat	BPMU	Ms Sunita Thakur, AE	✓
Kangra at Palampur	DPMU	Ms Nidhi Rana, AE	✓
Palampur	BPMU	Ms Kanchan Kumari, AE	✓
Dharamshala	BPMU	Ms Chandresh Rana, Office Manager	✓
Kangra	BPMU	Ms Meenakshi Kaundal, Office Manager	✓

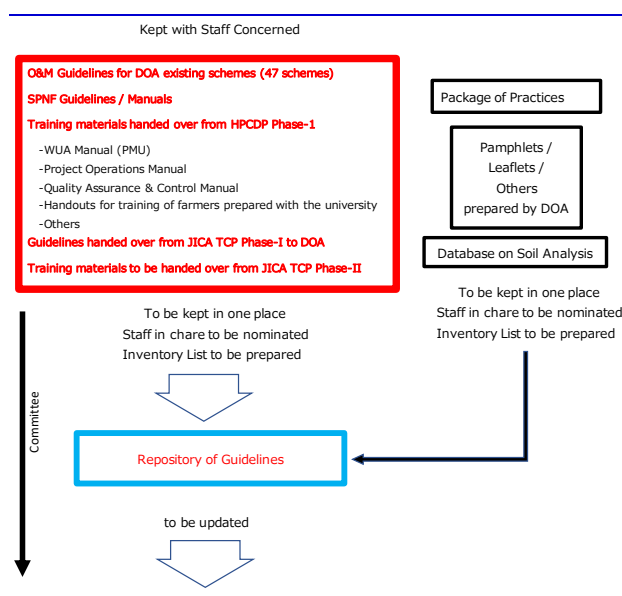
Source: JICA TCP Experts Team

In the 4th meeting of the Committee in September 2022, Office and officer in charge of guidelines in DOA, Shimla, was nominated, in order to conduct updating guidelines, distribution of updated guidelines and monitoring utilization of guidelines.

In the 5th meeting of the Committee to be held, the following points will be discussed, in order to manage maintenance and updating of Guidelines sustainably.

- 1) Enhancement of the committee composition
- 2) Keeping and updating existing guidelines and other materials in DOA → to be requested for 7 Districts
 - Office
 - Officer in charge
- 3) Technical dialogue in regular meetings of DDA / ATMA → to be reminded (refer letter)
- 4) Utilization of the existing guidelines in the existing schemes and sharing findings for updating guidelines and materials → to be promoted / monitored
- 5) Recommendation of guidelines and materials for new scheme → to be reminded
- 6) Future work schedule

Based on the discussion in above Committee meetings, it is expected that the Committee works for updating guidelines as following procedure:



Source: JICA TCP Experts Team

Figure 2.5.2 Sustainable Management and Utilization of Guidelines and Manuals

2.5.5 “Hold Workshops with Stakeholders to Share the Achievement of the Project and Discuss the Way Forward” [4.5]

The workshop to share the achievement of JICA TCP was held on 19th October 2022 as follows:

Table 2.5.9 Outline of Workshop

Date	19th October 2022	
Place	SAMETI, Shimla	
Objective	To share information on TCP activities by TCP Experts Team for further replication.	
Participant	30 stakeholders of the Project	
Output	Awareness of participants about TCP Phase-II activities will be increased.	
Expected Outcomes	1) By sharing of learnings & training materials with other extension officers of DOA and PMU, the awareness will be increased. 2) Learnings and training materials will be applied in extension activities for farmers. 3) Adoption of practices / techniques by the farmers in their fields.	
Time Schedule		
Time	Subjects	Speaker
10:15 -10:20	Briefing about JICA-TCP phase -II	JICA-TCP
10:20 -10:50	Session 1- Activities and results under output-1	JICA-TCP

10:50 -11:20	Session 2- Activities and results under output-2	JICA-TCP (on-line)
11:20 -11:50	Session 3- Activities and results under output-3	JICA-TCP (on-line)
11:50 -12:00	Short Break	
12:00 - 12:20	Session 4- Activities and results under output-4	JICA-TCP
12:20 - 12:40	Session-5Crop diversification through Food diversification and Nutrition	JICA-TCP (on-line)
12:40 - 13:10	Session 6-Operation & management of irrigation systems	JICA-TCP (on-line)
13:10- 13:50	Session7-Dissemination of existing guidelines and training materials	JICA-TCP
13:50 -	Lunch	

Source: JICA TCP Experts Team

2.5.6 “Make Five-Year-Action Plans after the Completion of the Project to Promote Crop Diversification in the 5 Districts” [4.6]

(1) Changing Schemes for Formulation of 5-year Plans under RKVY

As described in Section 2.4.1, annual plans were prepared, considering field activities of the existing schemes in DOA and ATMA. The existing schemes with field activities such as demonstration, exposure visit, etc. under DOA are limited to cereals, but not vegetables. Further it is noted that technical support in farmers’ fields would be more practical and useful rather than interaction in some office space. However, the existing schemes have less field activities, it was not easy to spare some time for technical interaction on vegetable cultivation in farmers’ fields. Meanwhile, ATMA has firm concept as well as strategy for promotion of natural farming, thus it is difficult for them to conduct their activities along with DOA. Considering the current situation of DOA as well as ATMA, it is intimated that implementation of annual plan and formulation of 5-year plan based on APP as well as AEP is not practical under the existing schemes consisting of demonstration and training in DOA as well as ATMA.

As shown in the following table, the limited schemes being implemented by DOA have some extension activities like farmers trainings, demonstrations and that too mainly for cereal crops while for vegetables cultivation, extension activities are almost negligible, and impetus is mainly on supply of seeds on subsidies.

Table 2.5.10 Existing Schemes with Extension Activities

Scheme	Commodities	Activities
National Food Security Mission (NFSM)	Rice, Wheat, Maize, Pulses, Nutri-Cereal	Demonstration Training Seed Distribution
Rashtriya Krishi Vikash Yojana (RKVY)	Vegetables	Seed distribution
National Mission on Sustainable Agriculture (NMSA)	Integrated Farming System	Training Subsidy for farm inputs
SCSP (Scheduled Castes sub plan)	Crops including vegetables.	Training camps Subsidy for farm inputs
BASP (Backward area sub plan)	Crops including vegetables.	Training camps Subsidy for farm inputs
TSP (Tribal sub plan)	Mainly pulses, vegetables.	Training camps Subsidy for farm inputs
SCA to SCSP	Crops, vegetables.	Training camps Subsidy for farm inputs
Mukhya Mantri Nutan Polyhouse Pariyojna	Vegetables	Training Subsidy for Poly house
National Mission on Agriculture Extension & Technology (NMAET) Seed village Programme under SMSP	Wheat	Training Distribution of seeds

Source: DOA

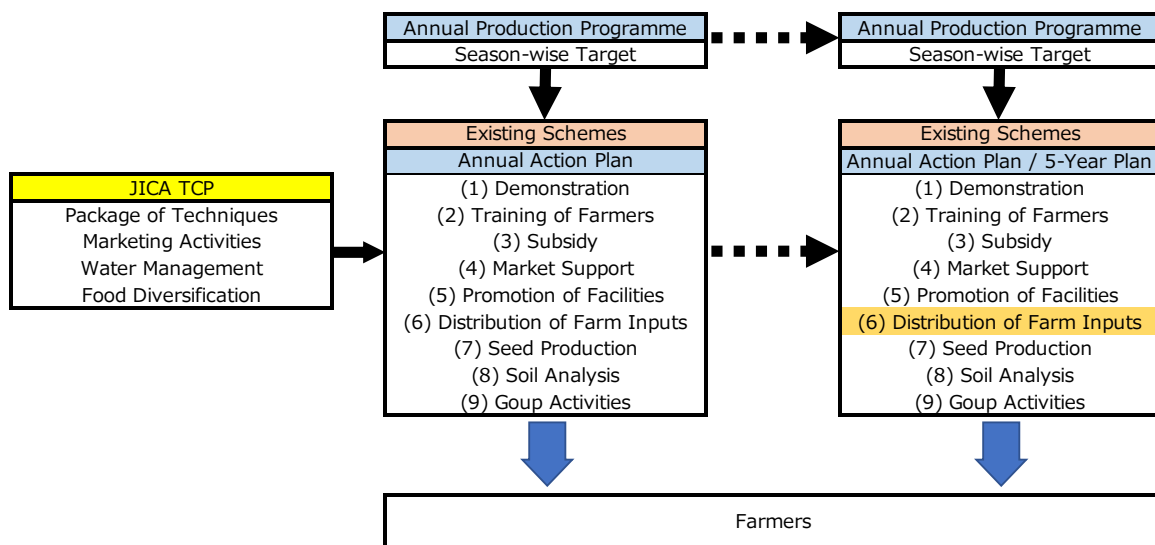
Considering the current situation on extension activities for vegetable cultivation, DOA is implementing a project titled Improved livelihood from diversified agriculture through vegetable cultivation under RKVY_RAFTAAR (RKVY) in which only seeds of open pollinated and hybrid varieties of vegetables are supplied to farmers on 50 per cent subsidy. RKVY is the exclusive scheme for promotion of vegetable cultivation, covering common farmers in the state of HP. However, no budget has been provided for arranging capacity building activities of farmers (trainings) and demonstration on cultivation techniques / practices. Further there are no budget on transportation for field activities to be conducted by EOs.

Meanwhile, as this scheme was expected to continue in future, 5-year plan have been formulated under RKVY since Rabi 2021/22, considering the reasons mentioned above.

(2) Steps for Preparation of 5-year Plan for Crop Diversification

The formats for 5 years plans (Format 1-4) along with block maps were provided to all blocks and the EOs were requested to prepare 5 years action plans. Necessary support to complete information in the format was provided in the monthly meeting of DOA in each district. It was also emphasized that 210 sub projects of HPCDP-1 may be given top priority while making 5 years plans.

JICA-TCP is also supporting the DOA to formulate 5-year action plan on implementation of extension activities for promotion of crop diversification according to the following workflow.



Source: JICA TCP Experts Team

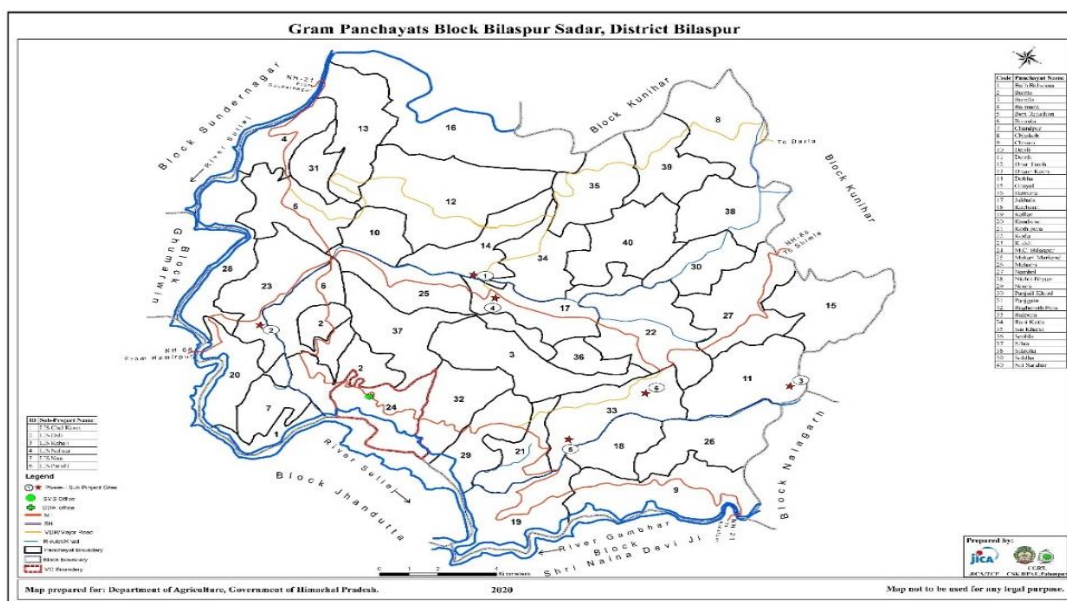
Figure 2.5.3 Transition from Annual Plan to Annual Plan / 5-year Plan for Promotion of Crop Diversification

Keeping in view the existing situations, JICA-TCP has recommended to prepare 5-year plans following 4 steps on strengthening extension activities for promotion of crop diversification through vegetables cultivation, applying the proposed workflow as shown in below.:

Step-1 Identify 10 potential areas in each development block where irrigation facilities are available, as shown below and farmers are interested to grow vegetables. These areas be marked on the block maps as shown below, which were newly prepared by JICA TCP. For each year (2 crop seasons), it is expected that two areas be selected as priority areas for promotion of vegetables as given below (Format-1):

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1st year												
2nd year												
3rd year												
4th year												
5th year												



Stae-2 On the basis of 1st year (fiscal year 2021-22) targets fixed by DDA for each block under RKVY, the EOs can prepare 5- years action plan covering 2 new areas out of the list of 10 areas selected under step 1, By this way, they can cover all 10 areas in 5 years (Format-2).

Year	Season	No.	Plan				Actual			
			Name of Priority Area	GP	Area (ha) to be covered	No. of Farmers to be covered	Name of Priority Area	GP	Area (ha) covered	No. of Farmers covered
1st	Kharif 2021	1								
		2								
	Rabi 21-22	1								
		2								
2nd	Kharif-2022	1								
		2								
	Rabi 22-23	1								
		2								
3rd	Kharif 2023	1								
		2								
	Rabi 23-24	1								
		2								
4th	Kharif 2024	1								
		2								
	Rabi 24-25	1								
		2								
5th	Kharif-2025	1								
		2								
	Rabi 25-26	1								
		2								

Stage-3 Prepare season-wise 5-year plan on the basis of Step-2 using formats given as shown below.

Regarding monitoring on area and production, it is proposed that regularly monitor be conducted by preferably visiting farmers' fields or through Phone calls/ WhatsApp (Format-3).

Season: Kharif / Rabi

Item	1st Year '21		2nd Year '22		3rd Year '23		4th Year '24		5th Year '25	
	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual
Total area under RKVY (ha)										
Priority area in RKVY (ha)										
No. of farmers to be covered in 2 (two) priority areas	OP									
	Hybrid									
Crop-wise Area (ha) in Priority Area										
under OP										
(1)										
(2)										
Sub-total for OP (ha)										
for hybrid										
(1)										
(2)										
Sub-total for hybrid (ha)										
Grand Total (ha)										
Crop-wise Production (q, kg) in Priority Area										
for Open pollinated var.										
(1)										
(2)										
Total for OP (q, kg)										
for hybrid										
(1)										
(2)										
Total for hybrid (q, kg)										
Grand Total (q, kg)										

Note) OP: Open Pollinated varieties, Hybrid: Hybrid varieties

Stage-4 The instructions to be given to farmers be given in the format as shown below (Format-4).

Year	Season	No.	Plan	Actual	Remarks
1st	Kharif '21	1			
		2			
	Rabi '21-22	1			
		2			
2nd	Kharif '22	1			
		2			
	Rabi '22-23	1			
		2			
3rd	Kharif '23	1			
		2			
	Rabi '23-24	1			
		2			
4th	Kharif '24	1			
		2			
	Rabi '24-25	1			
		2			
5th	Kharif '25	1			
		2			
	Rabi 25-26	1			
		2			

Through the implementation of RKVY with the 5-year plan, it is proposed that actual progress is

documented in mid-season and at harvest of the crops. Furthermore, farmers are requested to maintain record of yield at each harvest time so as to calculate total production. It is strongly expected that 210 sub-projects of HPCDP should be taken as priority areas for extension activities under DOA schemes.

Current progress on preparation of 5-year plan for crop diversification in each District under RKVY is shown as follows:

Table 2.5.11 Progress on Preparation of 5-year Plan for Crop Diversification in Each District under RKVY

District	Block	Rabi 2021/22						Kharif 2022					
		No. of Areas	Form 1	Form 2	Form 3	Form 4	Map	No. of Areas	Form 1	Form 2	Form 3	Form 4	Map
Bilaspur	1. Sadar	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
	2. Swarghat	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
	3. Jhandutta	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
	4. Ghumarwin	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
Hamirpur	1. Sujanpurr	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
	2. Hamirpur	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
	3. Bhoranj	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
	4. Bijhari	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
	5. Nadaun	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
	6. Bamsan	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
Kangra	1. Panchrukhi	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
	2. Dharamshala	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
	3. Baijnath	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
	4. Nagrota Bagwan	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
	5. Fatehpur	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
	6. Dehra	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
	7. Indora	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
	8. Nagrota Surian	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
	9. Nurpur	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
	10. Lambagaon	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
	11. Kangra	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
	12. Bhawarna	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
	13. Bhedumahadev	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
	14. Pragpur	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
	15. Rait	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
Mandi	1. Balh	2	OK	OK	OK	OK	OK	-	-	-	-	-	-
	2. Drang	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
	3. Chauntra	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
	4. Dharampur	2	OK	OK	OK	OK	OK	-	-	-	-	-	-
	5. Gohar	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
	6. Gopalpur	2	OK	OK	OK	OK	OK	-	-	-	-	-	-

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District	Block	Rabi 2021/22						Kharif 2022					
		No. of Areas	Form 1	Form 2	Form 3	Form 4	Map	No. of Areas	Form 1	Form 2	Form 3	Form 4	Map
	7. Karsog	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
	8. Sadar	2	OK	OK	OK	OK	OK	-	-	-	-	-	-
	9. Seraj	2	OK	OK	OK	OK	OK	-	-	-	-	-	-
	10. Sunder Nagar	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
	11. Balichokki	-	-	-	-	-	-	-	-	-	-	-	-
Una	1. Amb	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
	2. Bangana	2	OK	OK	OK	OK	OK	-	-	-	-	-	-
	3. Gagret	2	OK	OK	OK	OK	OK	2	OK	OK	OK	OK	OK
	4. Haroli	2	OK	OK	OK	OK	OK	-	-	-	-	-	-
	5. Una	2	OK	OK	OK	OK	OK	-	-	-	-	-	-

Source: JICA TCP Experts Team

(3) Preparation of 5-year Plan for Crop Diversification after Completion of JICA TCP

In agriculture sector the adoption rate of new technologies is very low because the farmers have fear of failure in their mind and they want to continue their time tested methods. For clearing the doubts and bring gradual change extension activities play vital role, DOA is newly planning to launch Cluster based vegetable production scheme under Mukhya Mantri Krishi Samvardhan Yojna (Chief Minister Agriculture Promotion Project) since this fiscal year, and this scheme would be implemented in the entire state of HP. Under the scheme, 500 clusters of 1 acre (4,000Sqm) area of minimum 5 farmers having assured irrigation will be selected per year and will have farmers support programme (demonstration on economically competitive vegetable crops, field day and hand holding support).

It is strongly expected that DOA should focus on preparation of 5- year actions plan as just by implementing the scheme for 1 year will not lead to sustainable promotion of vegetables cultivation. The outcome enlisted in the scheme can be achieved only if sustained technical support is ensured by the EOs for continuous 4 -5 year.

It is herewith, proposed that this 5-year plan is applied in this new scheme after completion of JICA TCP.

2.6 Activities for Food Diversification (Food and Nutrition / Livelihood Improvement / Gender / Social Inclusion)

2.6.1 Background

Crops introduced under the Crop Diversification Plan (CDP) include some new vegetables which farmers have never eaten or even seen. Insufficient farmer's knowledge on new vegetables under the CDP can hinder promotion of crop diversification. For example, broccoli has recently started to be popularized in India, but it is not much known yet in some areas of HP, more or less affecting the extent of its distribution. Furthermore, the CDP includes crops which are traditionally cultivated in some areas such as soybean. However, as farmers generally know only a few variations of consuming the crop and give most of the harvest to their cattle without consuming by themselves.

Furthermore, there are several issues in the State related to food and nutrition outside crop diversification. For example, it is remarkable that in HP, 64% of its population are vegetarians and animal protein consumption is less. However, in rural areas, people take lower energy from vegetables than in urban areas. On the other hand, rural people take higher energy from sugar than urban people. Looking at health facts, there are problems that women with overweight or obese are increasing in HP, more than 50% of children and women in HP have anemia, which are increasing, too. Moreover, male and female populations with hypertension are also higher than the national average.

The following box summarizes issues in HP related to food and nutrition:

Issues in Himachal Pradesh Related to Food and Nutrition

Under Crop Diversification:

- Insufficient knowledge of farmers' on consumption of vegetables newly introduced under CDPs, new vegetables seeds gradually becoming available in markets
- Underestimation of traditional crops such as soybeans for human consumption
- No efforts to transfer knowledge of nutrition in field crop

Food Consumption Facts of the State:

- Higher population of vegetarians (64%, 5th in India) and less animal protein consumption

(National Family Health Survey-3 2005-06)

- Lower energy intake from vegetables in rural areas (lower than the national average)

- Higher energy intake from sugars in rural areas (7th in India)

(National Sample Survey, 2011-2012)



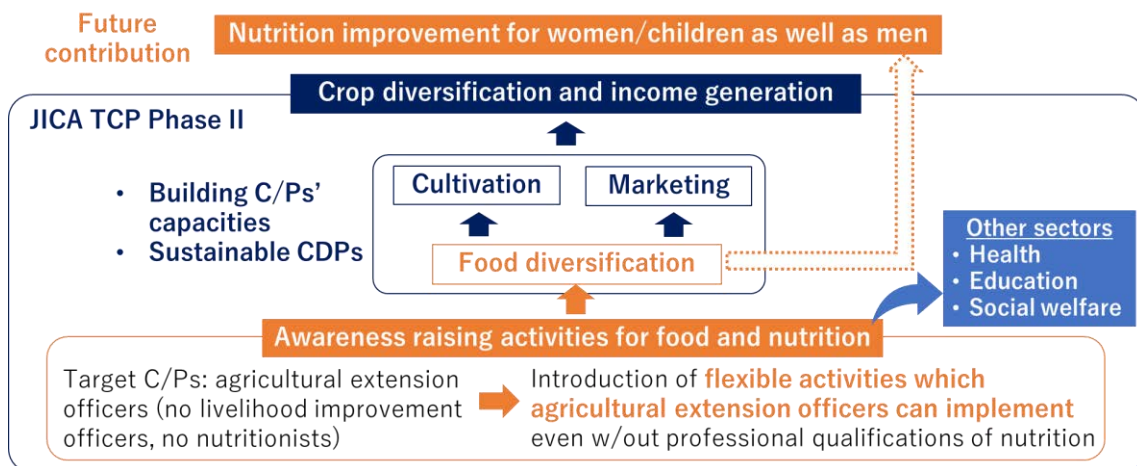
A typical meal and snack in rural areas

Health Facts of the State:

- Increase in female obese populations
- Increase in children & female anemia populations (50% \leq)
- Male and female hypertension populations higher than national average

(National Family Health Survey-4, 2015-2016)

The activities have mainly targeted female farmers, who are the key to go well with home eating. To work with agricultural extension officers, the JICA TCP has suggested flexible activities which they can apply even without technical knowledge of nutrition. Through the awareness raising, it is expected that types of foods and ways of consuming foods will be diversified among beneficiaries, which can supplement the project's key components, cultivation and marketing, eventually to help promotion of crop diversification. In the future, beyond the project, it is expected the food diversification activities will even contribute to nutrition improvement for people in HP. Through a process of extension, there were sometimes chances to spread the food and nutrition works to other sectors of HP such as health, education and social welfare as the issues are cross-sectoral topics.



Source: JICA TCP Experts Team

Figure 2.6.1 Addressing the Food and Nutrition Issues in the JICA TCP

Following box summarizes the outlines of the food diversification activities. The objective is to diversify ways of consuming vegetables to contribute to crop diversification, focusing on new crops and underused crops. Methods are transferring knowledge on target crops in relation to kitchen-garden level cultivation, especially vegetables not included in crop diversification plans such as Swiss chard, kale and amaranth leaves. Knowledge to be transferred includes nutritional information and health effects of the crops, and various ways of cooking and processing in healthy ways which can be explained through cooking demonstration.

Outlines of the Food Diversification Activities

[Objective]

Diversification of ways of consuming vegetables to contribute to crop diversification with a focus on new/underused crops

[Target Beneficiaries]

Mainly women of the JICA TCP's beneficiary households, also welcoming men interested in joining

[Target Crops]

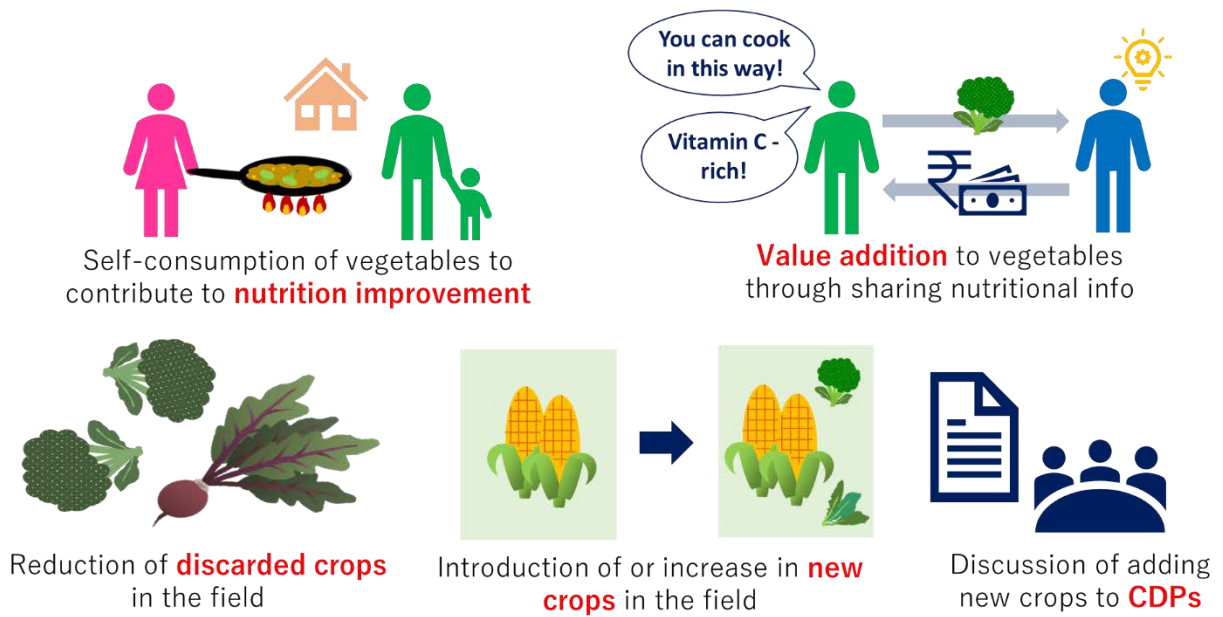
- Crops newly introduced to Himachal such as Swiss chard, kale and amaranth leaves, etc.
- Crops undervalued as food such as soybean and beetroot

[Implementation Methods]

Transferring knowledge on target crops about

- Kitchen-garden level cultivation of rather new crops (**kitchen garden practice**) (optional)
- Nutritional contents and health effects (**lecture**)
- Diversified ways of cooking/processing in healthy ways (**cooking demonstration**)

Through transferring the knowledge about nutrition and consumption of target crops, it is expected that, first, farmers can diversify ways of food consumption at home which can contribute to future nutrition improvement. Then, such knowledge can hopefully help farmers to sell their vegetables by sharing information also useful for buyers. Furthermore, these actions may help reduce crops to be wasted in the field and it may be also helpful for farmers to introduce new vegetables or increase cultivation areas for new vegetables after they realize the importance of consuming the crops. Eventually, all these farmers' actions can hopefully help discussions for CDPs to add new crops to the plans for more effective extension (Figure 2.6.2).

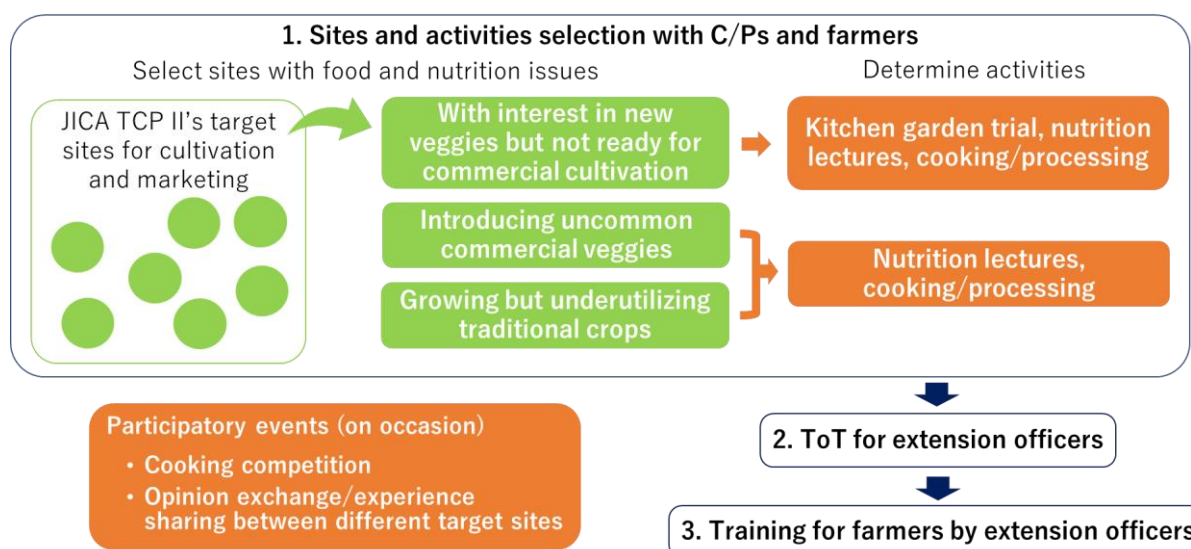


Source: JICA TCP Experts Team

Figure 2.6.2 Expected Changes through New Knowledge on Food Diversification

2.6.2 Target Sites

Flow of extension is summarized in the following figure. First, the JICA TCP discussed with counterparts and farmers to select sites and activities. Some sites with food and nutrition issues were picked up among existing target sites of the JICA TCP. Activities depended on necessity in sites. For example, sites with farmers interested in new vegetables but deciding if they start commercial cultivation, kitchen garden trials were introduced so that they can first enjoy the new vegetables at home and also make sure how the vegetables perform in their field. For other sites which had already introduced uncommon vegetables, or sites growing traditional crops like soybeans but underutilizing them, nutrition lectures and cooking demonstrations about those crops were simply selected as main activities. After selecting sites and activities, training for extension officers were implemented so that they were able to do training for farmers by themselves. In addition to such basic training, events were occasionally implemented, too; cooking competition among farmers and opinion exchange meetings between different target sites.



Source: JICA TCP Experts Team

Figure 2.6.3 Flow of Extension

Following table summarizes the target sites and progress of the activities. During the 1st implementation period (September 2017-January 2019), activities were implemented in two sub-projects of BPMU Sarkaghat and BPMU Una as trials. Since April 2019, activities have been extended to three other target BPMUs Bilaspur, Nurpur and Hamirpur. Although no new activities have been implemented since 2020 due to the pandemic, it was still possible to continue to support beet powder activities in Bilaspur.

Table 2.6.1 Target Sites and Activities

Implementation period	BPMUs	Sub-projects	Activities
Direct support by the JICA TCP			
1 September 2017 – January 2019	Una	Badhera Lower	Kitchen garden trials
	Sarkaghat	Sandral	Promotion of underutilized/unknown crops (Soybean)
2 April 2019 – January 2020	Bilaspur	Balh Seena	Promotion of underutilized/unknown crops (Soybean)
	Nurpur	Dehri Kuhal	Promotion of underutilized/unknown crops (Soybean)
	Hamirpur	Manjhot	Kitchen garden trials
3 April 2019 – January 2022	Bilaspur	Chibberballu, Balh seena, Noa, Ghandhir Jhamrarhian, Domehar and Dhali	Promotion of underutilized/unknown crops (Beetroots/Promotion of dried vegetables)
Activities spontaneously implemented by the C/Ps			
2 April 2019 – 2020	Una	Upper Basol	Kitchen garden trials
	Sarkaghat	Patti, Ukhla	Promotion of underutilized/unknown crops (Soybean)

Source: JICA TCP Experts Team

2.6.3 Implementation of Training

(1) Contents of Training

Training has been implemented by extension officers for target farmers in target sub-projects. In addition, to know the extent of acceptability of the training contents by farmers, cooking/processing competitions can be optionally conducted, and joint sessions can be optionally organized for experience sharing among sub-projects. Major training contents is summarized in the following table:

Table 2.6.2 Major Training Contents for the Food Diversification Activities

Types of training	Activities	
	Promotion of underutilized/unknown crops	Kitchen garden trials
Cultivation of Iron-rich Leafy Vegetables in Kitchen Gardens (practice)	-	Cultivation of green leafy vegetables with higher nutritional values (for example, leafy vegetables rich in iron such as amaranths leaves, Swiss chard and kale)
Healthy! Tasty! Cooking (practice)	Cooking of underutilized/unknown crops (beetroots, soybean, broccoli, etc.)	Cooking of the vegetables introduced in kitchen gardens
Healthy! Tasty! Processing (practice)	Soybean processing Preparation of dried vegetables/vegetable powders	-
Cooking competition	Competition for healthy tasty recipes suggested by target farmers	

Source: JICA TCP Experts Team

(2) Training of Trainers and Farmer Training

Training of trainers (ToT) has been implemented targeting extension officers prior to every Farmer Training. Number of the participants in the ToT is presented in the following table.

Table 2.6.3 Number of Participants in the ToT

BPMUs	Sub-projects	Topics	Date	Extension officers		
				BPMU	DOA	Total
Una	Badhera Lpwer	Kitchen garden (kale, Swiss chard, etc.)	2017-2018	2	1	3
Sarkaghat	Sandral	Soya processing	2017-2018	2	1	3
Bilaspur	Nalwar Kotul	Soya processing	10/09/2019	1-	-	1
	Noa	Beetroot processing/selling	2019	3	1	4
Nurpur	-	-	-	-	-	-
Hamirpur	Manjhot	Kitchen garden (kale)	1/10/2019	2	-	2
		Kitchen garden (kale)	16/10/2019	2	-	2

Source: JICA TCP Experts Team

As for the Farmer Training, number of the participants is presented in the following table.

Table 2.6.4 Number of Participants in the Farmer Training

BPMUs	Sub-projects	Topics	Date	Extension officers			Target beneficiaries		
				BPMU	DOA	Total	Female	Male	Total
Una	Badhera Lower	broccoli cooking	17-2018	-	-	-	-	-	14
		radish cooking		-	-	-	-	-	14
		turnip cooking		-	-	-	-	-	14
	Upper Basoli	kitchen garden	06/01/20	1	-	1	12	1	13
		kitchen garden	06/01/20	2	-	2	12	1	13
Sarkaghat	Sandral	broccoli cooking	19/03/20	-	-	-	-	-	19
		broccoli cooking	17-2018	-	-	-	-	-	19
		chinese cabbage cooking		-	-	-	-	-	19
		soya cooking/processing		2	-	2	13	1	14
	Ukhla	soya cooking/processing	20/01/20	-	-	-	-	-	14
Bilaspur	Nalwar Kotlu	lamame cooking	19/09/19	2	-	2	10	2	12
		soya cooking/processing	22/01/20	1	-	1	12	3	15
	Noa	beetroot powder preparation	26/02/20	1	-	1	-	6	6
Nurpur	Dehri Kuhal	soya cooking/processing	09/09/19	2	-	2	15	-	15
		lamame cooking	08/11/19	1	-	1	14	-	14
		dried vegetables	09/09/19	1	-	1	17	-	17
		soya cooking/processing	12/12/19	2	-	2	26	2	28
		soya cooking/processing	21/01/20	2	-	2	14	-	14
	school garden preparation for	03/03/20	1	-	1	-	2	2	

BPMUs	Sub-projects	Topics	Date	Extension officers			Target beneficiaries		
				BPMU	DOA	Total	Female	Male	Total
		Volunteer farmers							
Hamirpur	Manjhot	Kitchen garden	08/10/19	1	-	1	3	6	9
		Kitchen garden	01/03/20	1	-	1	8	2	10
		Kitchen garden	18/03/20	1	-	1	4	12	16
		Kitchen garden (cooking)	20/07/20	1	-	1	7	1	8

Source: JICA TCP Experts Team

Since 2020, due to the coronavirus pandemic, only few training has been newly done in the target sites whereas national staff for the food diversification activities have mainly concentrated on occasional monitoring/follow-up visits, review and improvement of the works in the past such as kitchen gardens and development/revisions of “Healthy! Tasty! Recipes”, which are explained later.

As for kitchen garden activities, limitation of cultivation spaces of individual houses or school grounds or menaces of destructive animals such as monkeys sometimes become a barrier to smoothly implement the activities. To improve the situation, application of a sack garden method is currently explored for easier monitoring of vegetables to grow within houses/school properties. This method can be also effective for more casual implementation by women and children. Under the limitation in implementing field activities, a trial is done by national staff using kale and broccoli for future application in the field. Planning finally started with two primary schools in BPMU Nurpur and BPMU Hamirpur in February 2021 after the long school closure period. However, in April 2021, the discussion eventually stopped due to the second wave of coronavirus in whole India and the JICA TCP decided to cancel the plan.

Following photos show how the farmer trainings were implemented:





Learning recommended daily intake of vegetables, oil, sugar and salt

Learning proper sowing methods in kitchen gardens



Learning how to treat green soybeans, which they had never consumed before

Tasting after cooking demonstration



Evaluation of farmers' recipes at the cooking competition

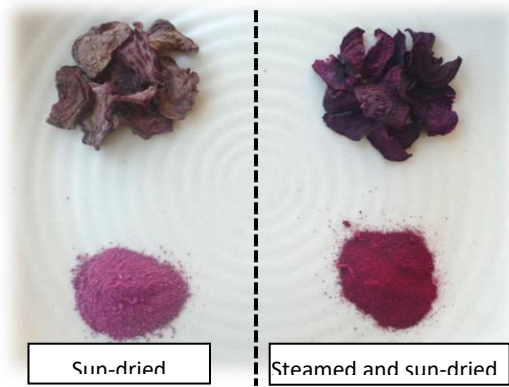
Source: JICA TCP Experts Team

Figure 2.6.4 Farmer Training

(3) Highlighted Activity: Beetroot Powder Production and Selling

The activity had reached a selling stage as of October 2020, undergoing the following process:

- Optimization of methods of beetroot powder preparation including nutrition analysis (February-August 2019)
- Development of recipes using the beetroot powder (February 2019 ~ present)
- Implementation of farmers training of various dried vegetables for self-consumption (May 2019)
- Selling samples of beetroot powder to a potential buyer (local sweets shop), trial sales of traditional sweets using the powder by the sweets shop and negotiation with the shop (May 2019 – February 2020)
- Follow-ups of beetroot cultivation (August 2019 – March 2020)
- Discussion with BPMU Bilaspur and technical support for procurement of an electrical drier with a budget of HPCDP-1 including a test of using an existing solar drier in BPMU Dehla (August 2019 – February 2020)
- Farmers training for preparation and quality control of beetroot powder (February 2020)
- Introductory meeting for the farmers and the sweets shop (February 2020)
- Preparation and selling of beetroot powder by the farmers (March 2020 ~ October 2020)
- Support for selling the powder to individual consumers (November 2020 ~ February 2021)
- Preparation for reimplementing of the second nutrition analysis (March 2021 ~ April 2021)
- Nutrition analysis (dehydrating vs. sun-drying) (January 2022)



Optimization of preparation methods (February-August 2019)



Farmers training of various dried vegetables for self-consumption (May 2019)



Trial sales of traditional sweets using the beetroot powder sample prepared by JICA TCP (white one on the upper shelf is the plain one without using the powder) (June 2019)



Follow-ups of beetroot cultivation (August 2019 – March 2020)



Powder preparation/quality control training (February 2020)



Introductory meeting for the farmers and the sweets shop (February 2020)

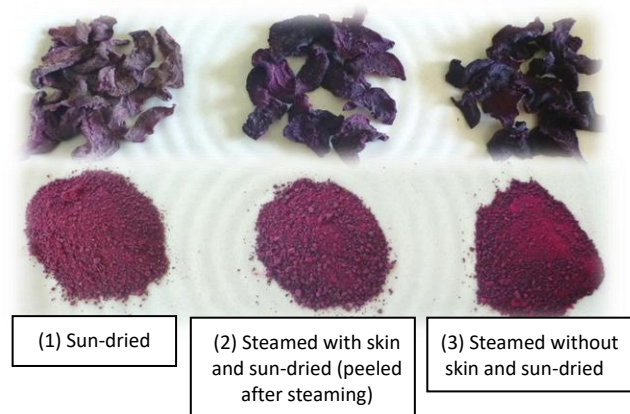
Source: JICA TCP Experts Team

Figure 2.6.5 Beetroot Powder Activity (1)

Optimization of Methods of Beetroot Powder Preparation

Colors of the Powder

Beetroot powder is prepared by drying beetroot and grind the dried materials. To optimize methods of beetroot powder preparation, three types of beetroot powder were compared for their colors as well as fineness and meltability for cooking; (1) Sun-dried, (2) Steamed with skin and sun-dried (peeled after steaming), (3) Steamed without skin and sun-dried. It was confirmed that “(3) Steamed without skin and sun-dried” beetroot can have the darkest and most vivid color and can be most easily cooked due to its fineness and meltability.



Nutrition Contents of the Powder

Next, nutrition analysis test was done to compare nutrient contents (calcium, potassium, iron, magnesium, manganese, folate, vitamin C and sugar) among the three powders as well as raw beetroot at Punjab Biotechnology Incubator (PBTI) (June 2019). In addition, to grasp a general view of microbiological safety of the powders, aerobic plate count analysis was done to evaluate the level of bacteria in the powders. As a result, following points were confirmed:

- A) Nutrients were not concentrated in dried beetroot as the ratio of fresh weight and dry weight (10:1, approx.), which was observed in all the samples (1)(2)(3). Whereas 100g of raw beetroot becomes 10g of dried beetroot, nutrient contents per unit in the dried beetroot were less than 10 times those in the fresh beetroot).
- B) “(3) Steamed without skin and sun-dried” beetroot had higher nutrient contents than (1) and (2) in most cases.
- C) Percent daily value (%DV) per 100g of the nutrients of the method (3) powder ranged from 7.6% to 152.9%.
- D) The aerobic plate count (CFU/g) of the powders were less than 1,000 per gram, respectively.

Remark: Samples used in the analysis test were the beetroots provided by a beetroot farmer in BPMU Bilaspur. Since the test targets only the beetroots of one farmer without replication, its results are treated only as reference values.

The result B) can positively support the idea of promoting the method (3) above for the darkest color and easiness in using. On the other hand, beetroot processing can decrease some extent of nutrients after as indicated in the result A), possibly due to leaching or destruction of nutrients during steaming, drying or grinding. Furthermore, health effects by taking the powder may be very small considering that the powder cannot be taken that much at once under usual conditions. Suppose, for instance, one person takes a teaspoon of the powder (5g) on a daily basis, %DV of the nutrients of the method (3) powder will range from 0.4% to 7.6%, which can be evaluated only as “smaller quantity is included” or even “scarce”.

As for the result D), according to PBTI, the samples tested are safe enough in terms of the level of general viable bacteria, which is a satisfactory result at this stage of the activity. Future possibilities of extending the activity on a commercial scale still suggest us assessment of other necessary parameters to more rigorously evaluate safeness of the powder.

Conclusion

To conclude, the JICA TCP decided to promote the beetroot powder prepared through the method (3), highlighting its function as “natural colorant made from vegetable” rather than emphasizing its nutritive values.

Nutrition Contents of the Powder (Sun-Dried vs. Electrical-Dried)

As of April 2021, the JICA TCP currently plans another nutrition analysis to compare nutrition contents between sun-dried and electrical-dried beetroot powder, considering that use of an electrical drier has started in BPMU Bilaspur in 2020 for effective mass production. Since electrical-dried products generally retain more nutrients than sun-dried ones, results of the analysis may add some extent of value to the powder.



Beetroot powder cake

2.6.4 Training Materials

(1) Flipcharts

Considering the EOs' opinions, a form of flipcharts has been adopted to instruct farmers 1) nutrition values of vegetables, 2) simple cultivation methods in kitchen gardens, 3) purposes of processing and 4) postharvest handling and consumption for higher nutrition intake. Under the use of the flipcharts, it is expected that even EOs who have little knowledge about the contents can rather easily teach farmers simply by reading backsides which contain points of instruction. The materials are also handy tools in rural villages, according to EOs, especially because they do not need to worry about power blackout which can sometimes happen during use of a projector. Following table and figure summarize the titles of the flipcharts prepared and examples of the flipcharts, respectively.

Table 2.6.5 Flipcharts Introduced in the Farmer Training

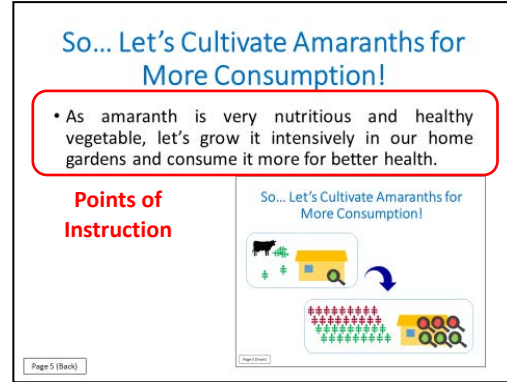
No.	Titles	Main contents	Attachment
1	Let's Grow and Eat! (Amaranths)	Introduction of amaranths leaves as a "vegetable" instead of a weed Nutritive effects of amaranths leaves Cultivation of amaranths leaves	Attachment-2.6.1
2	Let's Grow and Eat! (Swiss Chard)	Introduction of Swiss chard as an alternative of spinach during <i>kharif</i> and summer seasons Nutritive effects of Swiss chard Cultivation of Swiss chard	Attachment-2.6.2
3	Let's Grow and Eat! (Kale)	Introduction of kale as an important vitamin/iron source in addition to spinach Nutritive effects of kale Cultivation of kale	Attachment-2.6.3
4	Let's Process and Eat! (Soybean)	Introduction of soybean as an important protein source instead of animal feed Nutritive effects of soybean Advantages of processing soybean	Attachment-2.6.4
5	Let's Grow and Eat! (Green Soybean: <i>Edamame</i>)	Introduction of green soybean (<i>edamame</i>) as another way of consuming soybean Nutritive effects of green soybean Effective ways of harvesting and eating green soybean for higher nutrition intake	Attachment-2.6.5
6	Let's Grow and Eat! (Beetroots)	Introduction of beetroots with more ways of consumption Nutritive effects of beetroots Advantages of drying beetroots	Attachment-2.6.6
7	Let's Grow and Eat! (<i>Pakchoi</i>)	Introduction of <i>pakchoi</i> with more ways of consumption Nutritive effects of <i>pakchoi</i> and cooking tips	Attachment-2.6.7
8	Let's Dry Vegetables!	Effectiveness of drying vegetables Methods of drying vegetables	Attachment-2.6.8
9	Beetroot Powder Preparation	Income calculation from beetroot powder preparation and selling	Attachment-2.6.9
10	Let's Review What You Have Learnt!	Reviewing tips of kitchen garden preparation and healthy cooking methods through quizzes	See the extension guidelines

Remark: All the flipcharts have both English and Hindi versions although this report is attaching only the English version.

Source: JICA TCP Experts Team

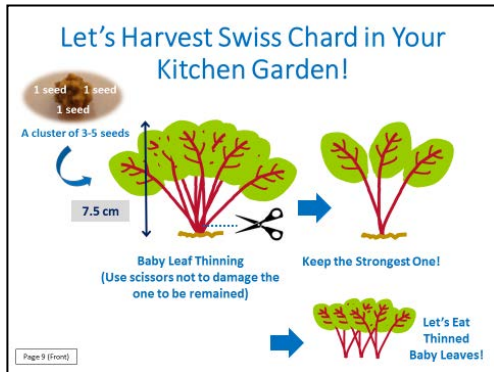


Front Page (for Trainees)

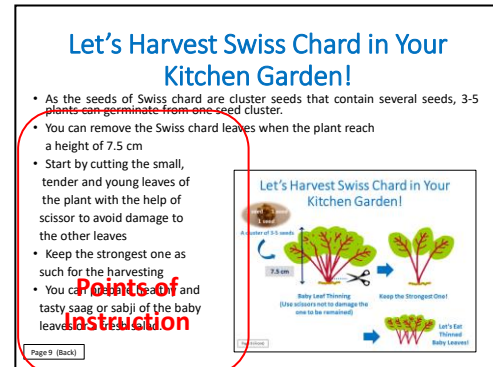


Back Page (for Trainers)

“Let's Grow and Eat Amaranthus!”

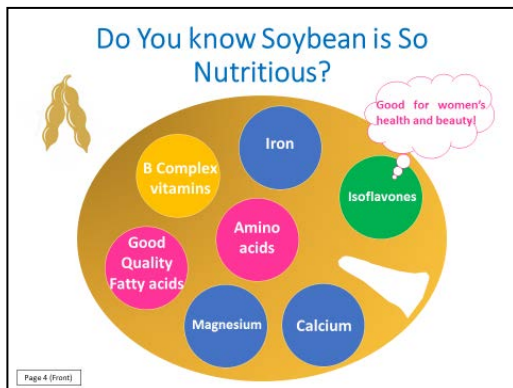


Front Page (for Trainees)

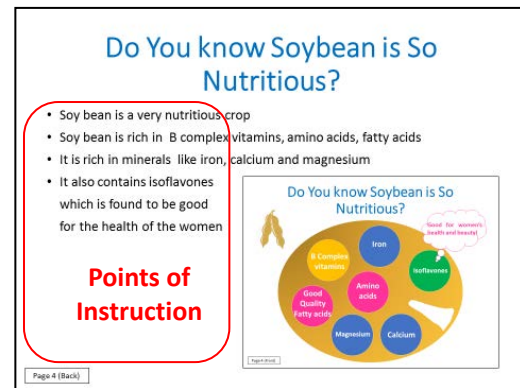


Back Page (for Trainers)

“Let's Grow and Eat Swiss Chard!”

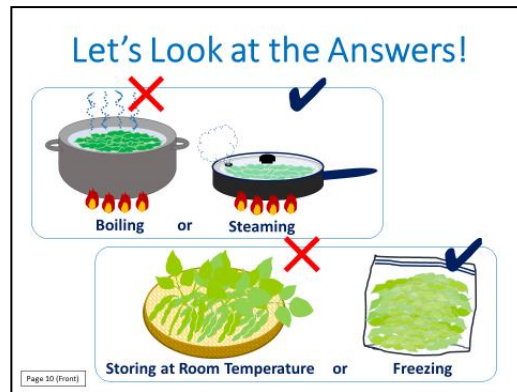
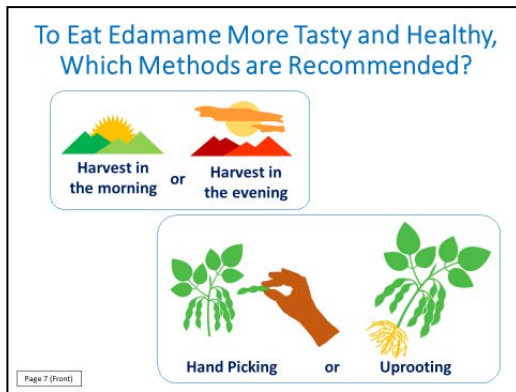


Front Page (for Trainees)

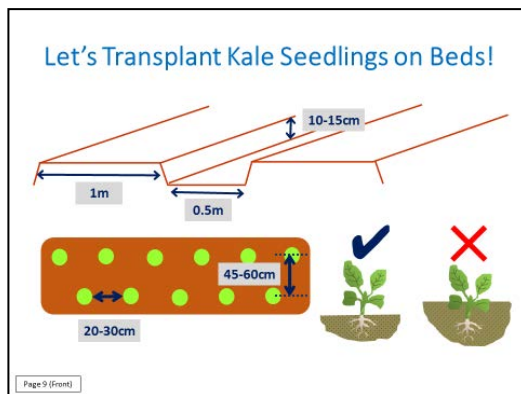


Back Page (for Trainers)

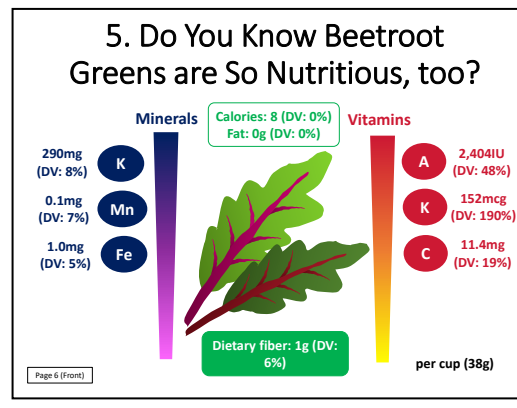
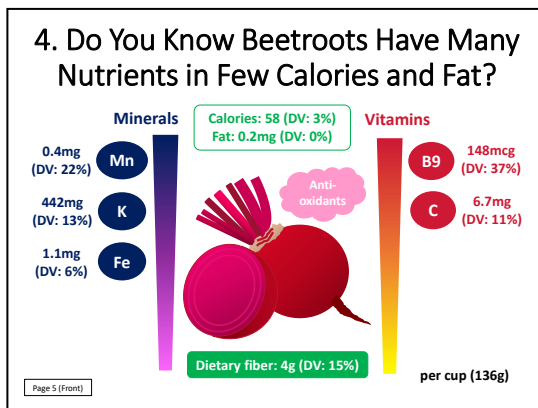
“Let's Process and Eat Soybean!”



“Let’s Grow and Eat Green Soybean (*Edamame*)!”



“Let’s Grow and Eat Kale!”



“Let’s Grow and Eat Beetroots!”

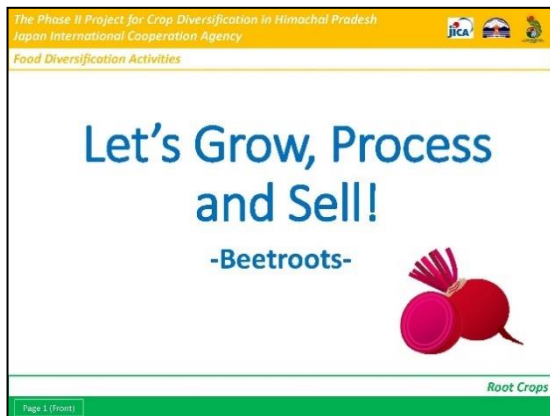
Source: JICA TCP Experts Team

Figure 2.6.6 Contents of the Flipcharts (Samples of the English Versions)

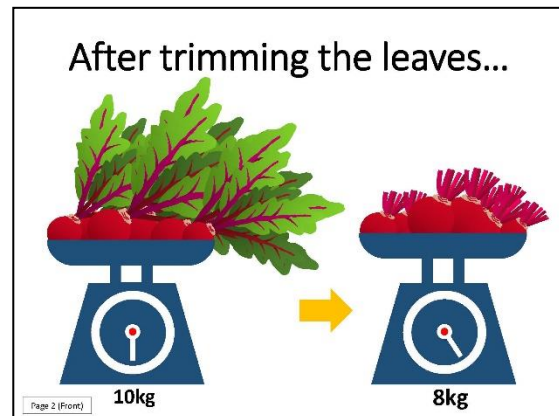
As for beetroot powder preparation and selling, following flipchart was prepared specifically for the farmers in BPMU Bilaspur to explain expected amount of powder produced from fresh beetroot³ and expected income from beetroot powder sales. Situations of selling the powder such as prices can be

³ Amount of the beetroot powder is 5% ~ 5.5% of fresh beetroot at maximum, meaning that 50g ~ 55g of powder can be prepared from a kilogram of fresh beetroot. In this activity, we have recommended the farmers to scrub beetroot with a knife or a peeler to avoid excess loss of processable part of beetroot. By scrubbing, it is possible to retain 0.5mm extra thickness of beets and 20% more weight can be added to the final product, rather than peeling with a knife. As the process of removing skin affects final weight of the powder and consequently final sales, this point should be fully instructed to the farmers.

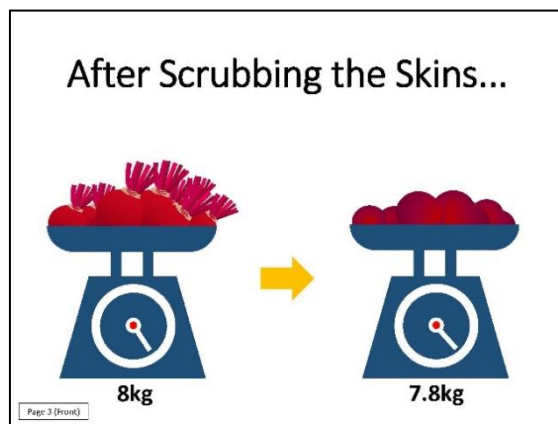
different in different areas but this flipchart apply cased of the city Bilaspur.



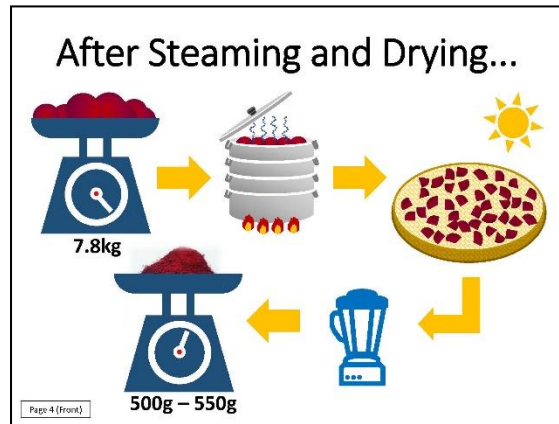
Page 1



Page 2



Page 3



Page 4



Page 5



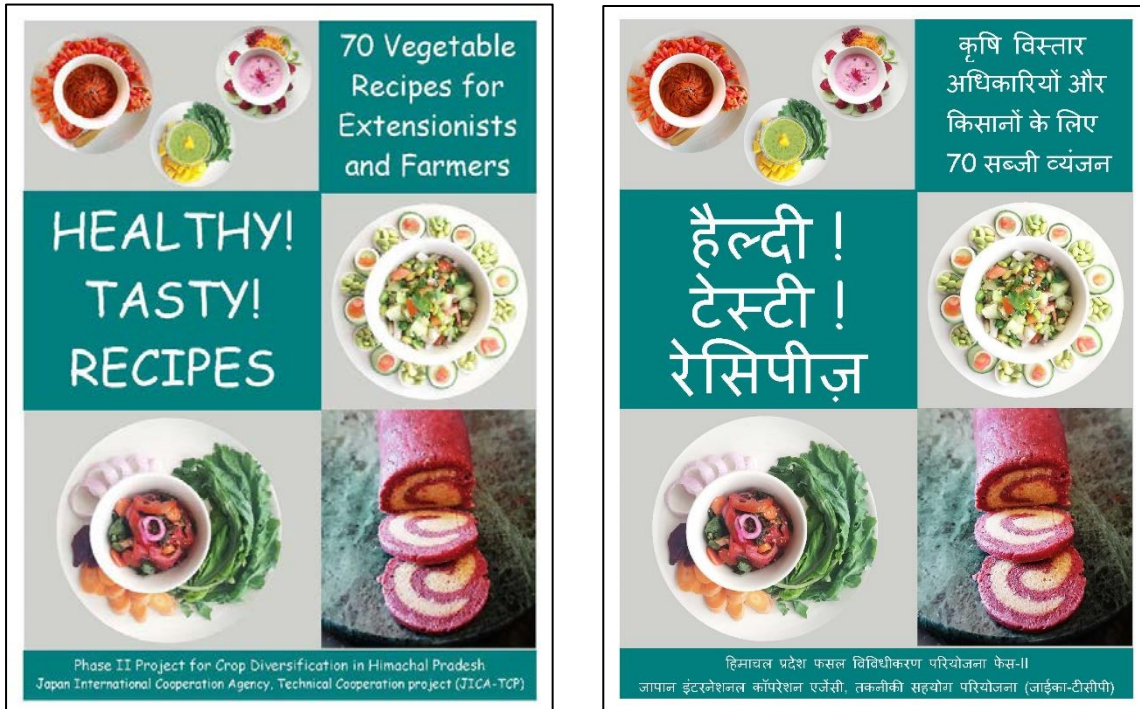
Page 6

Source: JICA TCP Experts Team

Figure 2.6.7 Contents of the Flipcharts (Income Generation through Beetroot Powder Sales)

(2) Healthy! Tasty! Recipes

To promote consumption of newly introduced vegetables by farmers themselves, recipes were developed as “Healthy! Tasty! Recipes” (refer to Attachment-2.6.10 for brief explanation of the booklet).



Source: JICA TCP Experts Team

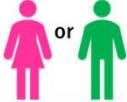





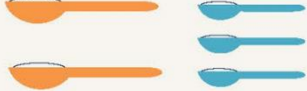




Figure 2.6.8 Cover of the Recipe Booklet (Left: English Version/Right: Hindi Version)

Points to concern for “Healthy Tasty Recipes” are as follows:

- a) Application of Healthy Cooking Methods: Considering the majority of the population in the target sites, especially the women, were found to be suffering from overweight (as shown in the statistical data of the States), efforts are being made to prepare recipes with low fat and low salt, following the WHO’s Recommended Daily Intake (RDI) as explained in Figure 2.6.9. Therefore, the method used for cooking is mostly boiling and stir fry instead of the traditionally used methods such as deep fry. Nutrition information is then explained in every recipe as shown in Figure 2.6.10.
- b) Maximization of Value of Traditional Recipes and Use of Ingredients Locally Available: For the new vegetables to be accepted by local residents, it is important to cook them with traditional Indian tastes. Efforts are being made to use ingredients which can be procured in the rural villages and combining the vegetables in the existing Indian dishes such as *sabji*. As for the newly introduced foods such as soy paneer (*tofu*) and soy pulp (*okara*), the foods were prepared in local style to make them more familiar for rural farmers.
- c) Adoption of Recipes Suggested from the Field: In addition to the recipes suggested by JICA TCP, extension officers or farmers can suggest their own recipes, which are further improved by JICA TCP under the healthy tasty concept. Through this process, recipe providers can also learn how to apply the concept to their usual cooking better.
- d) Use of the Cookpad India Application for Extension through Smartphones: Considering that number of smartphone users is recently increasing in rural areas, all the recipes are registered to a recipe sharing service Cookpad India to extend them through smartphones. Extension officers and farmers are

encouraged to run its application on their smartphones to easily access the recipes.

e) Suggestion of immunity boosting recipes: In the immunity boosting recipes, vitamin-C rich vegetables are focused with consideration of the spread of COVID-19 infection in India.

	WHO's Recommended Daily Intake	Healthy! Tasty! Recipes' Recommendation
For	One adult/day (2,000kcal diet) 	Minimum 3 dishes 
Salt 	Less than 5g 	Maximum 1 teaspoon 
Sugar 	Less than 25g-50g 	Maximum 1 tablespoon 
Oil 	Less than 5-6 teaspoons 	Maximum 1 teaspoon 


Source: JICA TCP Experts Team

Figure 2.6.9 WHO's RDI and Healthy! Tasty! Recipes' Standards Based on the RDI

LEAFY AND STEM VEGETABLES

PAK CHOI PAKORU

Pak choi pakoru is a tasty shallow fried snack prepared with *pak choi* and gram flour. This dish is a good source of protein, dietary fiber, vitamin C and vitamin K. and rich source of vitamin A and folate. *Pak choi pakoru* can be enjoyed as an evening-teatime-snack with sauce or chutney.



©2020 HEALTHY! TASTY! RECIPES

INGREDIENTS:

- Pak choi (chopped) : 1 1/2 cups
- Cabbage (chopped) : 1 cup
- Gram flour : 2 cups (200g-300g)
- Onion (chopped) : 1 tbsp
- Green chilies : 1 tsp
- Ginger (paste) : 1 tsp
- Mustard oil : 2 tsp
- Salt : 1/2 tsp
- Water : 1.2 cups (approx. 300ml)


(for 30 pieces: 9cm-diameter in size for each piece)

Nutritional Information per Serving (5 pieces):		
	Amount	%DV
Calories	132.5kcal	6.6
Protein	7.3g	14.7
Fat	2.9g	3.8
Carbohydrates	19.1g	6.9
Dietary fiber	3.7g	13.3
Vitamin A	203.7mcg	22.6
Vitamin C	10.7mg	11.9
Vitamin K	21.0mcg	17.5
Folate	144.0mcg	36.0

METHODS OF PREPARATION:

1. Mix the pak choi, cabbage, onion, green chilies, ginger and salt with the gram flour, then add water till the desired semi-liquid consistency of the paste is acquired.
2. Mix the paste thoroughly so that no gram flour clots remain in the paste.
3. On a griddle greased with oil, add the paste with the help of the ladle like small pan cakes and shallow fry from both the sides till light brown colour.
4. Serve warm with sauce or chutney.

(Preparation time: 20-30 min.)



Let's eat!

Nutritional Information per Serving (5 pieces):

	Amount	%DV
Calories	132.5kcal	6.6
Protein	7.3g	14.7
Fat	2.9g	3.8
Carbohydrates	19.1g	6.9
Dietary fiber	3.7g	13.3
Vitamin A	203.7mcg	22.6
Vitamin C	10.7mg	11.9
Vitamin K	21.0mcg	17.5
Folate	144.0mcg	36.0

Nutritional information
Nutrient content and %Daily value (DV)
per serving of...

- **Calories & macronutrients**
- **Micronutrients with %DV higher than 10.0 (higher than moderate)**

Source: JICA TCP Experts Team

Figure 2.6.10 Recipe Page (Example)

Following table and figure compile Healthy! Tasty! Recipes, respectively. In total, 70 recipes were developed.

Table 2.6.6 Healthy! Tasty! Recipes

Category	Target crops	Recipe names	Suggested by
Leafy vegetables	Swiss chard	Swiss chard with Bengal gram <i>daal</i>	JICA TCP
		Swiss chard <i>sambhar</i>	JICA TCP
		Swiss chard salad	JICA TCP
	Amaranthus leaves (green)	Amaranthus leaves in green gram	JICA TCP
		Amaranthus rolls	BPMU Una (2017)
	Amaranthus leaves (red)	Red amaranth in assorted lentils, beans and grain sprouts	JICA TCP
	Kale	Fresh kale salad	JICA TCP
		Kale clear soup	JICA TCP
		Kale <i>kabab</i>	JICA TCP
	Broccoli	Broccoli <i>paneer masala sabji</i>	JICA TCP
		Broccoli refreshing salad	JICA TCP
		Broccoli creamy soup	JICA TCP
	Iceberg lettuce	Lettuce wrap	Extension officer (Sarkaghat, 2017)
	Chinese cabbage	Chinese cabbage and carrot stir fry	JICA TCP
		Chinese cabbage rolls	JICA TCP
	Pakchoi	Pakchoi <i>sabji</i>	JICA TCP
		Pakchoi with black gram <i>daal</i>	JICA TCP
Pakchoi <i>pakoru</i>		JICA TCP	
Pakchoi hot sour soup		JICA TCP	
Spinach	Spinach nuggets	JICA TCP	
Beetroot leaves	Beet green <i>saag</i>	Farmer (Bilaspur, 2020)	
Colocasia leaves	<i>Patode</i>	ADO of BPMU Bilaspur (2021)	
Fruit vegetables	Tomato	Tomato chutney	JICA TCP
	Brinjal	Brinjal chutney	JICA TCP
	Capsicum	Capsicum <i>sabji</i>	JICA TCP
	Bitter gourd	Stuffed bitter gourd	JICA TCP
	Lady finger	Lady finger with curd	JICA TCP
	French bean	French bean stir fry	JICA TCP
	Green chili	Stuffed green chili	JICA TCP
	Bottle gourd	Bottle gourd <i>halwa</i>	JICA TCP
	Zucchini	Zucchini and carrot pancake	JICA TCP
	Pumpkin	Pumpkin stir fry	JICA TCP
	Green peas	Green peas <i>masala</i>	JICA TCP
Root crops	Beetroots	Beetroots chutney	JICA TCP
		Beetroots tomato soup	JICA TCP
		Beetroots powder	JICA TCP
		Beetroots pressure cooker cake	JICA TCP
		Beetroot <i>kheer</i>	ADO of DOA Bilaspur (2020)
		Beetroot nuggets	Farmer (Nurpur, 2020)
		Beetroot cheesecake	JICA TCP
		Beetroot decoration cake	JICA TCP
		Beetroot cookies	JICA TCP
		Beetroot swirl cookies	JICA TCP
	Beetroot latte	JICA TCP	
	Turnip	Turnip and turnip green leaves <i>sabji</i>	JICA TCP
	Radish	Radish <i>raita</i>	JICA TCP
	Colocasia	Steamed colocasia <i>sabji</i>	JICA TCP
	Yam	Yummy yam slices	JICA TCP
Sweet potatoes	Sweet potato <i>chaat</i>	JICA TCP	
Soybean	Soya products	Soya <i>paneer (tofu)</i>	JICA TCP
		Soya milk	JICA TCP
		Soya flour (<i>kinako</i>)	JICA TCP
		Soya bar	JICA TCP
		Soya nuggets (soya <i>bariyan</i>)	JICA TCP
	Soya dishes	Soya pressure cooker cake	JICA TCP
		<i>Okara</i> cutlet (<i>aloo tikki</i> mixed with	JICA TCP

Category	Target crops	Recipe names	Suggested by
Immunity boosting recipes		<i>okara</i>	
		Soya veggie scramble (<i>paneer bhurji</i>)	JICA TCP
		Soya chunk salad	Agriculture Expert of PMU
	Green soybean dishes	Green soybean creamy soup	JICA TCP
		Green soybean stir fry	JICA TCP
		Green soybean fresh salad	JICA TCP
		Mix vegetable <i>raita</i>	JICA TCP
		Wake-up green smoothie	JICA TCP
		Cabbage, beetroot and carrot stir fry	JICA TCP
Immunity boosting recipes	Cauliflower <i>sabji</i>	JICA TCP	
	Immunity boosting salad	JICA TCP	
	Rhododendron <i>chatney</i>	AEO of DOA Hamirpur (2021)	
	Beetroot smoothie	JICA TCP	
	Smiley fruits smoothie	JICA TCP	
	Papaya <i>barfi</i>	Agriculture Officer of BPMU Bilaspur (2021)	

Source: JICA TCP Experts Team



Swiss chard with Bengal gram *daal*



Broccoli *paneer masala sabji*



Beetroots *chutney*



Lettuce Wrap
(Recipe suggested by an EO)





Immunity boosting salad



Mix vegetable raita



Cabbage, beetroot and carrot stir fry



Breakfast green smoothie



Beetroot swirl cookies

Source: JICA TCP Experts Team



Rhododendron chutney

Figure 2.6.11 Healthy! Tasty! Recipes (examples)

Specifically for the rather complicated and uncommon recipes such as soya paneer (tofu) and the beetroot powder, following pictorial instruction was prepared considering the method is rather

⁴ Although *tofu* is not so common in the rural areas, it was confirmed that *tofu* is being produced and sold in small quantities as "soya paneer" in a nearby town of Sandral, a sub-project where soybean is produced. The JICA TCP Expert team then decided to incorporate *tofu* into the food diversification activities. As a result, *tofu* has been favorably accepted by farmers and counterparts and has become one of the most popular recipes (for details, please refer to "2.6.5 Results of the Activities in the Target Sub-Projects").

unfamiliar with rural farmers and meeting continuous demands for training implementation from the field.

Let's Learn Soya Paneer Preparation Visually!

1. Wash the soybean into a thick paste along with all the water used for soaking and soy hull removed during soaking. Grind the paste till it gets white and creamy but without unground particles.
2. Soak the soybean in 8 cups of water for a night (8-9 hours in summer, 15 hours in spring and autumn, 20 hours in winter).
3. Grind the soybean into a thick paste along with all the water used for soaking and soy hull removed during soaking. Grind the paste till it gets white and creamy but without unground particles.
4. Boil 8 cups of water in a pan.
5. Add the paste to water after getting boiled and warm for 8 minutes, stirring to avoid burning.
6. Remove the froth on the surface till it stops collecting on the surface of the milk.
7. With the muslin cloth and a sieve, separate the soymilk from the solid fibrous part of the paste.

End

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Let's Learn Soya Paneer Preparation Visually!

8. Squeeze out liquid part (soya milk) from the solid fibrous part using tongs, etc.
9. Warm the soya milk on low flame till small bubbles appear.
10. Add a cup of vinegar and a low flame for curdling and keep it warm on low flame till curdling occurs.
11. With the help of the muslin cloth, separate the liquid from the curd/curdled part.
12. Tie all the edges of the muslin cloth from the top to prevent the curd from spilling.
13. Press it with a heavy object in a container with the holes for the escape of the excess water for 20 minutes.

End

72 Healthy! Tasty! Recipes

Tofu preparation

Let's Learn Beetroot Powder Preparation Visually!

1. Take fresh beetroots and wash them properly. Remove the heads with the help of knife.
2. Scrub the skin of the beetroots with a knife. Keep using gloves/headgears for hygiene purposes.
3. Slice the beetroots into two equal pieces.
4. Transfer the beetroots into a steamer and steam it for 15 minutes to produce a vivid colour.
5. Slice the steamed beetroots as thin as possible.
6. Place the slices on a clean plastic sheet or a cotton cloth for drying.
7. Dry the steamed beetroot slices under sunlight for a few days till they get crunchy.
8. After proper drying, grind the dried beetroots by using a mixer grinder.
9. Sieve the grounded beetroots to obtain powder.

End

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Let's Learn Beetroot Swirl Cookies Preparation Visually!

1. First of all, melt the butter in a bowl. Now add honey in the melted butter and stir for a while. In a separate bowl, take 10ml of warm milk and dissolve the beetroot powder in it.
2. Now, add this milk, wheat flour, and mix it properly. Make a dough of it and keep it aside.
3. In another bowl, prepare another dough by repeating the same process without adding beetroot powder. Refrigerate both the dough separately for 1-2 hours.
4. Roll both the dough in a 1.2 cm thick and 9-12 inch rectangular sheet.
5. Lay the plain dough over the colored dough. Walk a roll of it and refrigerate for 1 hour.
6. Cut into 6 mm thick cookies.
7. Take a kadai/ Skillet. Cover and preheat it for 10 minutes on low flame.
8. While preheating, take a steel plate and grease it properly with ghee. Dust the greased plate with flour and keep it aside. Place cookies on the plate.
9. Now, carefully place the plate with cookies in the preheated kadai and bake for 10-15 minutes on a low flame. Cool and serve.

End

76 Healthy! Tasty! Recipes

Beetroot powder preparation

Beetroot swirl cookies

Source: JICA TCP Experts Team

Figure 2.6.12 Pictorial Instructions

The recipes booklet was printed and distributed to district DOA offices, SMS offices and each sales center. In addition, JICA TCP introduced the booklet at monthly meeting of district DOA office and conducted promotion to extension officers.

(3) Use of an Online Recipe Sharing Service for Effective Extension of the Recipes

Furthermore, all the recipes are registered to Cookpad India (Japan’s largest recipe sharing service) in English and Hindi, respectively, for effective and sustainable extension of the recipes through smartphones. Following figures compile screenshots of Healthy! Tasty! Recipes presented in the cookpad sites.



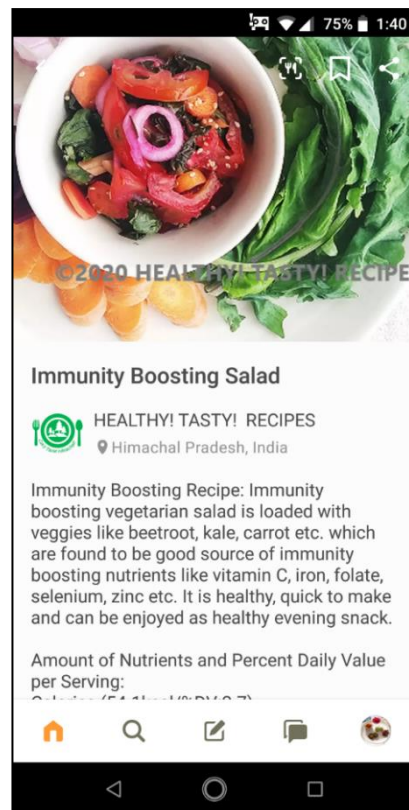
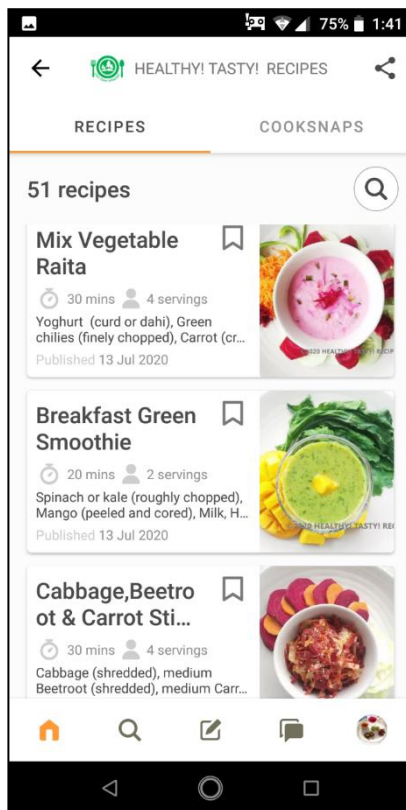
Introduction page

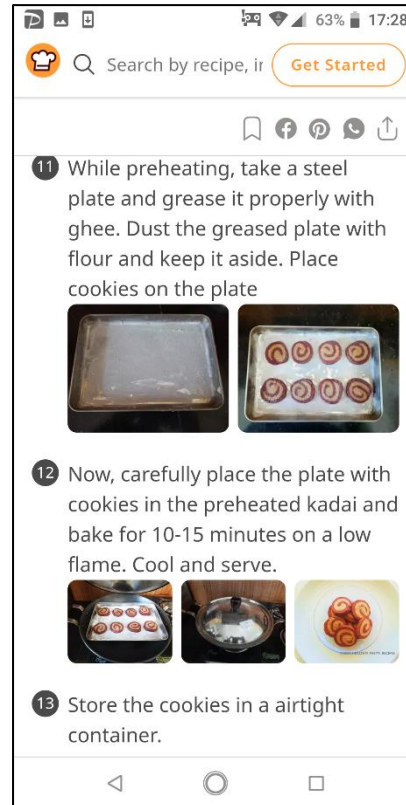
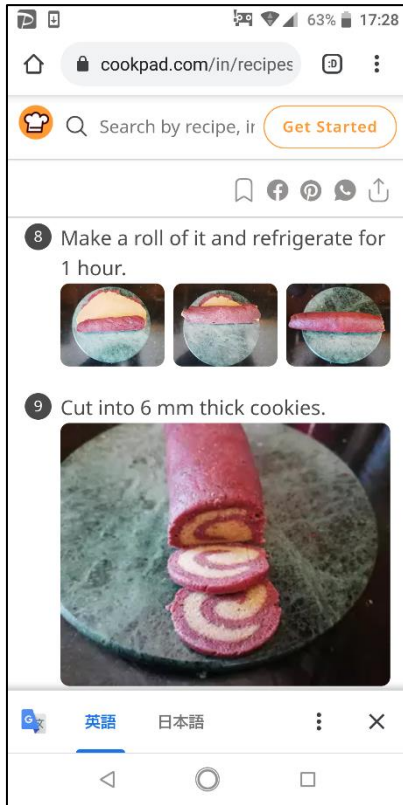


Logo used at the cookpad sites

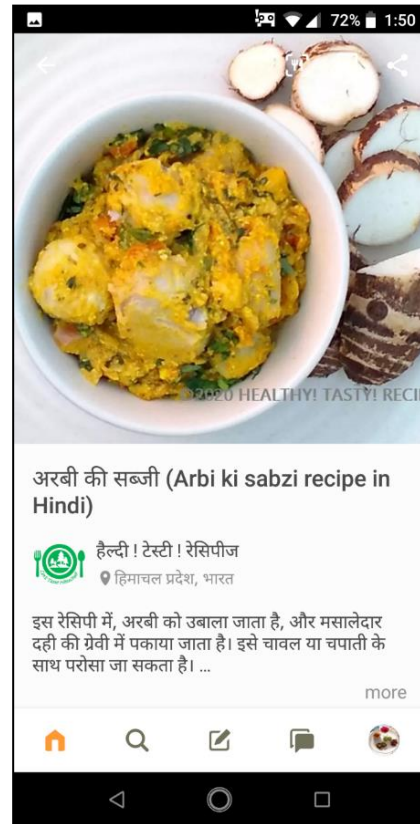
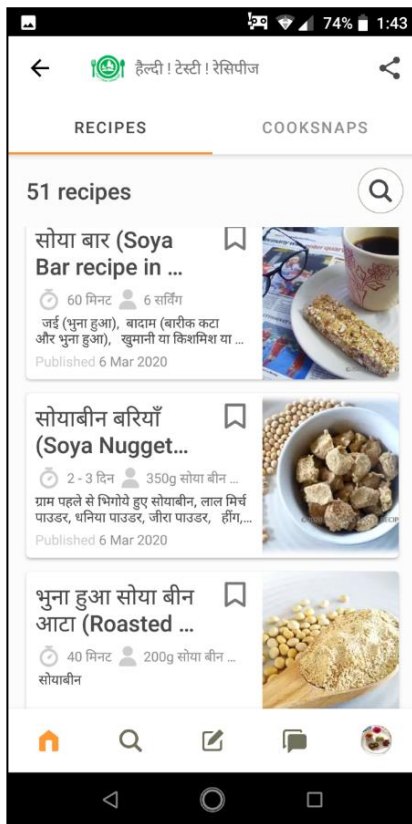
Source: JICA TCP Experts Team

Figure 2.6.13 Introduction Page and Logo of Healthy! Tasty! Recipes in the Cookpad Sites





English version (examples)



Hindi version (examples)

Source: JICA TCP Experts Team

Figure 2.6.14 Screenshots of Healthy! Tasty! Recipes in the Cookpad Sites (Smartphones)

2.6.5 Results of the Activities in the Target Sub-Projects

As results of implementing the activities since 2017, positive results have been observed, indicating that the idea of food diversification is taking root in the target sites with higher interests.

Results of the Food Diversification Activities (Examples)

Counterparts (PMU, DOA)

- Extension of the activities in new villages
- Introduction of the soybean to the crop diversification plan
- Application of the activities such as flipcharts in existing programmes
- Active suggestion of their own Healthy! Tasty! Recipes

Farmers

- Increases in frequencies of consuming the target vegetables at more than half of the target households and sometimes at all the households
- Gradual adoption of the cooking and processing methods instructed
- Introduction of soybean cultivation by some trainees' households
- Promotion of vegetables sales by some trainees applying nutrition info to promotion
- Income generation through sales of beetroot powder to a local sweet shop
- Active suggestion of their own Healthy! Tasty! Recipes

(1) Enhancement of Extension Officers' Abilities to Instruct Farmers

ToTs implemented prior to every farmers' training for the extension officers and introduction of the flipcharts have helped enhance trainers' abilities to instruct the nutrition-related contents to farmers in the field. Through discussion with extension officers over the contents of the training and materials in advance at the ToTs, the extension officers became more confident with a stronger sense of ownership over farmers training. The materials have been then provided to the District BPMUs or ATMA upon their request for continuous extension in their existing schemes.



Furthermore, the extension officers also enjoyed joining cooking demonstration without hesitating as cooking is not something unfamiliar for them but part of their life.

(2) Changes in Consumption

As a whole, crops introduced to the target sites with the recipes have been favorably accepted by most beneficiary households, including new vegetables such as broccoli, pakchoi and Swiss chard.

For example, according to interviews implemented 3 months after a series of training in Badhera Lower and Sandral, the first two target sub-projects, more than two thirds of the households answered they had continuously consumed all the target crops, broccoli, radish, turnip, pakchoi and Chinese cabbage, 1-2 times a week ~ 1-2 times a month. All the households then answered that they want to continue taking the vegetables at home and around 85% households answered so for Chinese cabbage. Furthermore, most target households increased frequencies of consuming the target vegetables after introducing them

in kitchen gardens (Table 2.6.7) and most of households who attended soybeans trainings adopted many of the new recipes as their regular dishes (Table 2.6.8).

Table 2.6.7 Changes in Consumption of New Vegetables Introduced to Kitchen Gardens (Badhera Lower)

Vegetables	No. of households	
	Before training	After training
Red Amaranths	0/13	13/13
Green Amaranths	3/13	13/13
Swiss Chard	0/13	13/13

Remark (1): Interviewed in June 2018 (before the training) and September 2018 (after the training)
Remark (2): Numerator and denominator of a fraction indicate “No. of HH s regularly consuming on weekly/monthly basis” and “No. of HHs which received the training”, respectively.
Source: JICA TCP Experts Team

Table 2.6.8 Changes in Consumption of Soybean Dishes (Sandral)

Soybean dishes	No. of households	
	Before training	After training
Soy paneer (<i>tofu</i>)	0/22	19/22
Soybean pulp (<i>okara</i>)	0/22	16/22
Soy flour pressure cooker cake	0/28	22/28
Soy nuggets	0/28	22/28
Soy paneer <i>bhurji</i>	0/28	22/28
Green soybean salad	0/21	21/21
Green soybean stir fry	0/21	13/21

Remark (1): Interviewed in June 2018 (before the training) and September 2018 (after the training)
Remark (2): Numerator and denominator of a fraction indicate “No. of HH s regularly consuming on weekly/monthly basis” and “No. of HHs which received the training”, respectively.
Source: JICA TCP Experts Team



The quantitative results of the first two target sites indicated that the food diversification activities would be generally accepted and go well also in other sites once target crops and activities are selected properly to meet food and nutrition issues in the field. Considering the awareness raising nature of the food diversification activities, these initial results have been roughly taken as general conclusion to be true for subsequent works in other target sites but no similar quantitative interviews were implemented.

Although soybean dishes and products are less common in rural areas, they have been well accepted by the beneficiaries. Among the recipes introduced, it seems soya paneer (tofu) is one of the popular recipes and was sometimes prepared by farmers even after implementation of trainings. In addition, considering that a JOCV member belonging to the BPMU Hamirpur even partly follow the activity and implement tofu training under a request by BPM Hamirpur, it is expected that the product will be an effective tool for food diversification.

Furthermore, implementation of the cooking competition in the first two sub-projects among farmers with their original recipes using the targeted vegetables (amaranthus leaves or Swiss chard) in Badhera Lower and soybeans in Sandral) was a good opportunity to evaluate if the healthy concept of the food diversification activities had been well understood in the field. All the recipes were evaluated by the BPMs and extension officers for their tastiness, texture, healthiness and appearance. As a result, it was recognized that the participants had fully understood the concept of the training and started to prepare foods based on the idea introduced. Especially in Sandral, it was impressive that all the participants managed to process soybeans into tofu, okara or soy nuggets and were even able to apply them to create healthy tasty recipes by themselves (e.g. Okara halwa). It is also remarkable that a male participant was selected as the first prize winner in Badhera Lower, indicating higher interests can be shown by men to

health or cooking even in rural areas.

Table 2.6.9 Winners' Recipes at the Cooking Competition

	Badhera Lower		Sandral	
	Recipes	Points evaluated	Recipes	Points evaluated
1 st prize	Swiss chard and green gram soup (presented with potato)	<ul style="list-style-type: none"> • No use of oil and fat • Low salt • Creative use of Swiss chard with green gram soup • Good presentation • Good taste 	<i>Okara halwa</i> (presented with <i>tofu</i>)	<ul style="list-style-type: none"> • Low fat and sugar in comparison to traditional halwa • Creative use of the <i>okara</i> in a traditional recipe • Good flavour and taste
				
2 nd prize	<i>Palak paneer</i>	<ul style="list-style-type: none"> • Low fat and salt • Good taste Remark: As the participant was not able to obtain the targeted vegetables, she used spinach instead.	<ul style="list-style-type: none"> • <i>Tofu chilli</i> • Soybean patroda • <i>Tofu scramble</i> 	<ul style="list-style-type: none"> • Low fat and salt • No overcooking • Creative use of tofu with chilli • Creative use of soybean in the traditional recipe
				

Source: JICA TCP Experts Team

(3) Changes in Crop Production

Some spontaneous actions by the beneficiaries were observed in the field. For example, farmers harvested seeds of new vegetables grown in the kitchen gardens such as red amaranths and Swiss chard to continuously cultivate in following seasons. Other farmers doubled an area of soybean field to harvest more for self-consumption, but not only for cattle feeding, after they realized the importance of soybean as a nutritious food.



Harvest of seeds of read amaranths (left) and Swiss chard (right)



Expanded areas for soybean cultivation (left) to be able to “feed both cattle and people” (right)

Source: JICA TCP Experts Team

Figure 2.6.15 Actions towards Increase in Production

(4) Actions towards Income Generation

It is also remarkable that some farmers started making use of knowledge on food and nutrition they obtained through the food diversification trainings for income generation as follows. For example, farmers in Badhera Lower actively started to sell Swiss chard grown in kitchen gardens on daily basis (10-15 rupees per bunch), also preparing a small poster and put it on a stall to present nutrition information on the new vegetable. Other farmers managed to prepare and sell soy bars as a self-help group (SHG) after learning the recipe in the training.



Selling vegetables sharing nutritional information to buyers



Soy bars prepared by a SHG to sell

Source: JICA TCP Experts Team

Figure 2.6.16 Application of the Food Diversification Activities to Income Generation

(5) Support for Selling the Beetroot Powder

As for the beetroot powder sales activities, detailed progress is explained in the following box. As of October 2020, due to the coronavirus pandemic, the activity was making slower progress as the target sweets shop had been under the recovery process from the suspension of operation. Cultivation season of beetroot started in September and some of the target farmers increased sowing areas of beetroot for powder production in the coming season. Some farmers have even prepared the powder already by themselves. Furthermore, an agriculture expert of BPMU Hamirpur started promoting beetroot production to farmers for powder preparation on her own initiative, which the JICA TCP will supervise. These results can be considered positive even under the current difficult situation and JICA TCP will keep guiding them for continuous income generation, also exploring new potential buyers at the same time.



Drying beetroot in the drier in the collection center



Adjusting the grinder in the collection center

installed for the activity (August 2020, SP Chibbar Ballu, BPMU Bilaspur)



Beetroot powder prepared by the farmers in the collection center (August 2020)

installed for the activity (August 2020)



Plastic airtight bag procured by a farmer on her own initiative to store the beetroot powder (August 2020)



Farmers and an extension officer measuring the beetroot powder they prepared in the collection center (August 2020)



Sales of traditional sweets using the beetroot powder prepared by the farmers (November 2020)



Packed beetroot powder for selling at the HAVI outlet in Hamirpur (December 2020)

Merry Christmas from the JICA TCP Food Diversification Team

BEETROOT POWDER LATTE

Sugar free!

Ingredients (1 cup)		Methods
Milk	1 cup	1. Warm the milk.
Beetroot powder	1 tsp	2. Blend all the ingredients with warm milk in a high-speed blender.
Honey	1 tsp	
Cinnamon	¼ tsp	
Vanilla essence	¼ tsp	

This is a healthy version of latte, consisting of beetroot powder with nutrients like calcium, iron, dietary fibre and potassium. Enjoy with almond milk, coconut milk or cow's whole milk!

With joint efforts of JICA TCP and IICDP, JICA ODA, HAVI, etc.

A recipe of the beetroot powder developed for individual customers (Latte) (December 2020)

Figure 2.6.17 Beetroot powder activity (2)

Selling Beetroot Powder

Kamdhenu Sweets, a sweets shop in Bilaspur City first made *barfi*, mixing a beetroot powder sample prepared by the JICA TCP and managed to sell out of the product within a target period (May 2019). As the shop decided to continuously buy the powder from farmers working with the JICA TCP, increase in beetroot production for beetroot powder preparation is being planned. Such sweets shops are seen here and there inside/outside production areas and this practice may become an extendable case of farmers' livelihood improvement.



Beetroot barfi

Use of the Beetroot Powder as Natural Colorant

Kamdhenu Sweets currently uses the beetroot powder as natural colorant for *barfi*. The shop named it "Beetroot Herbal Barfi" in Hindi to present a positive image to consumers by using the word "herbal", meaning "natural". The shop also sells other colorful products with pink or green but using artificial colorants. It could be recommended, too, to use the powder as natural alternative sweetener.

Selling Price of The Beetroot Powder

Around 50g of powder can be produced from a kilogram of fresh beetroot. Considering that farmers price of fresh beetroot is around Rs. 20-60/kg, the JICA TCP and the sweets shop agreed that farmers sell the powder at Rs. 150/100g to the shop. If beetroot is processed into the powder especially when price of fresh beetroot is lower, farmers can make a certain profit. Considering time and labor for powder production, it will be more reasonable to sell fresh beetroot when its farmers price is higher. Shop price of the beetroot *barfi* is Rs. 350/kg whereas the shop price of the original *barfi* without beetroot powder is Rs. 300-320/kg. The shop can then make Rs. 30-50 profit from the sale of a kilogram of the sweets. As 100g of the powder was used for 8kg of the beetroot *barfi*, the shop gains additional Rs. 240-400. Profit of the sweets shop is then Rs. 90-250 in total after deducting the cost to buy 100g powder (Rs. 150).

Achievements of the Farmers'

To start supplying the beets powder to Kamdhenu Sweets, training of beetroot powder preparation and quality control was conducted for several motivated farmers who originally cultivate beetroot under the CDP. Two representative farmers were then directly connected to the shop (February 2020). As of November 2020, four additional farmers have individually managed to dry beetroot and prepare a certain amount of powder on their own initiative. Among all the farmers, two farmers have so far managed to sell a few kilograms of the powder to the sweets shop and one earned Rs.2,900 for 2kg of the powder (Rs.100 was deducted due to the shop's sales decline under the coronavirus pandemic).

As mentioned above, four additional farmers started the activity, concerning that fresh beetroot could not be sold as usual during the lockdown. One of them learned the idea from an extension officer of BPMU Bilaspur whereas the other one, who is KVA president of Sub-Project Chibbar Ballu, started to prepare the powder from memory of the JICA TCP's dried vegetables training in 2019. The KVA president then disseminated the preparation methods to two other farmers in the area. The spontaneous occurrence of the extension officer-to-farmer extension and the farmer-to-farmer extension can be considered as a welcome development achieved by the initial training. Furthermore, it is interesting that one of the farmers used beetroot in her kitchen garden, suggesting that the activity can be rather easily generated from self-consumption activities while self-consumption activities can be rather easily developed to livelihood improvement activities in reverse.

Use of Common Equipment for Beetroot Powder Preparation

To prepare the powder in larger quantities, BPMU Bilaspur procured an electrical drier and an electrical grinder with a HPCDP-1 budget and installed them in the collection center of Sub-Project Chibbar Ballu, which are already used by the farmers. The machineries are currently managed by BPMU Bilaspur and by KVA in the future. Concrete rules shall be established for sharing them if the number of farmers working on powder preparation increases in the future. In addition, a steaming pan will be equipped for common use. As the pan can steam beetroot in larger numbers at once, use of the tool is recommended for powder preparation on a commercial basis rather than pressure cookers for household use.



Farmers, EOs and the drier

Promotion of the Beetroot Powder to New Potential Buyers

As of November 2020, Kamdhenu Sweets had been unfortunately limiting procurement of the powder to smaller quantities due to the challenges for sales and unsold powder had been generated. Also considering that preparation quantities may be increased in near future in BPMU Hamirpur, the JICA TCP started exploring promotion to new potential buyers. After agreeing with PMU, the powder started to be sold at the PMU's farmers' market (HAVI-FPO) targeting individual consumers. Since their interest rather differed from the sweets shop, more recipes were developed for consumers to prepare at their kitchens such as Christmas cake for children, cheesecake and latte. As of November 2021, 16 packets (50g/packet) were sold although the coronavirus pandemic had limited promotion directly to consumers such as tasting events and it was difficult to increase the number of individual consumers. Currently, BPMU Bilaspur has taken over the sales activity, improving ways of selling for example by exploring lower-cost packages. Generally positive comments were heard from the customers who bought the powder, suggesting future possibilities for widening range of customers without limiting to the sweets shop (December 2021).



Packets of the powder displayed at HAVi-FPO and a sales lady to deliver a customer who ordered a packet

(6) Cookpad

As of December 2021, there are 156 followers for the English version and 127 followers for the Hindi version. Among them, 90 English version followers and 84 Hindi version followers are those who are related to JICA TCP and HPCDP-1 as indicated in the following table. Due to the coronavirus pandemic, extension of the sites has not fully covered all the BPMUs yet. Anganwadi and schools in the target sites are additionally responding to their requests.

Table 2.6.10 Number of Cookpad Followers

Titles	English version	Hindi version
PMU	1	1
DPMUs	2	2
BPMUs	8	8
PMC	4	4
DOA	2	2
Agriculture Experts	7	8
Extension Officers	14	10
ADO	10	6
Agriculture Officers	2	1
Block Technical Manager of ATMA (DOA)	1	1
Farmers	24	24
Self Help Groups	10	10
Primary/Secondary schools	3	3
Anganwadi officers	4	3
JICA TCP	7	7
Sub-total (JICA TCP/HPCDP-related)	99	90
Others	58	38
Total	156	127

Source: JICA TCP Experts Team

There were some positive feedbacks from the field who found the cookpad application quite interesting and useful. For example, a DDA and an ADO of DOA Mandi say that people know how to prepare only sabji (stir-fried vegetables) using new vegetables, which can affect their actual taste, and it is meaningful to know diversified recipes through the tool with acceptability and familiarity. They started disseminating the site through their existing WhatsApp group. Furthermore, female farmers of the Nalwar Kotlu, BPMU Bilaspur liked the application as they were already sharing their own prepared recipes on WhatsApp statuses, groups etc. and now they can use this platform for sharing those recipes. Some SHG officers in BPMU Nurpur say that they can now refer to the soybean processing step-by-

step method from the site.



Extension officer explaining the cookpad site to farmers using his smartphone (March 2021)

Farmers learning the cookpad site over their smartphones (March 2021)

Figure 2.6.18 Cookpad Extension

2.6.6 Extension Guidelines for the Food Diversification Activities

Activities conducted through the project implementation period were compiled as extension guidelines after sorting out extendable practices. The extension guidelines for the food diversification activities have been then compiled separately, including the materials for extension officers such as flipcharts and Healthy! Tasty! Recipes.

As for the recipe booklet, in addition to the existing counterparts, its hard copies have been distributed to other sectors such as anganwadi centres and Palampur agricultural university (department of agricultural extension and department of nutrition) with instructions, expecting wider use.

2.6.7 Public Relation Activities of Food Diversification

(1) Participation in a SHG-Related Event

In an event organized by the DOA Mandi for the Afghanistan Delegates, a presentation was made by the food diversification team targeting around 156 members (148 females) of 21 SHGs at the women forum (Mahilla Gosthi) of the SHGs. Also observing that some of the SHGs had presented packed soy paneer (tofu) in their stalls, our soy paneer activity could further extended as an income source, too (26/02/2018, Mandi).

(2) Participation in a State event: Next Generation Programme

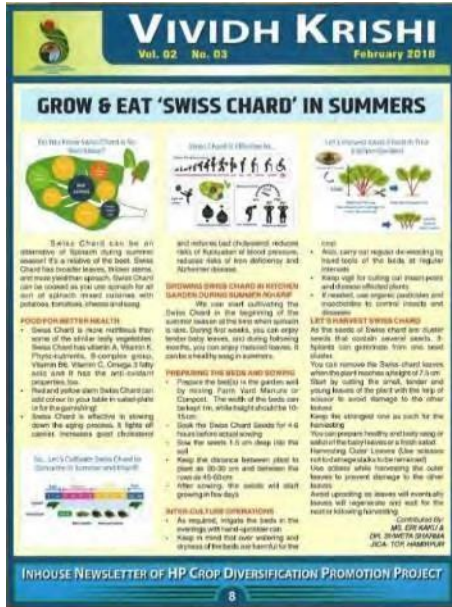
In the Next Generation Programme, organized by the Ministry of Education/Agriculture and PMU, targeting high school students in the State, a presentation “Why Food Diversification?” was made by the food diversification team targeting 37 students (23 females and 14 males) to make them acquainted with the activities. As the presentation included nutrition quiz, tasting of soy flour pressure cooker cake and free discussion, this helped enhance the participants’ understanding and increase the students’ awareness of participation in the programme (29/07/2018 and July 2019, Palampur).



Participants tasting soy flour pressure cooker cake

(3) Contribution of Articles to the HPCDP-1's In-House Newsletter

The activities have been published in the in-house newsletter of the HPCDP-1, "VIVIDH KRISHI" (vol.02/No.3, February 2018 and vol.02/No.06, August 2018), especially focusing on nutritive effects and cultivation methods of Swiss chard in vol.02/No.3 and the Farmers' Joint Session in vol. 02/No.06, August 2018. It is expected that the contents will be widely disseminated among counterparts and other stakeholders.



Vol.02/No.3, February 2018



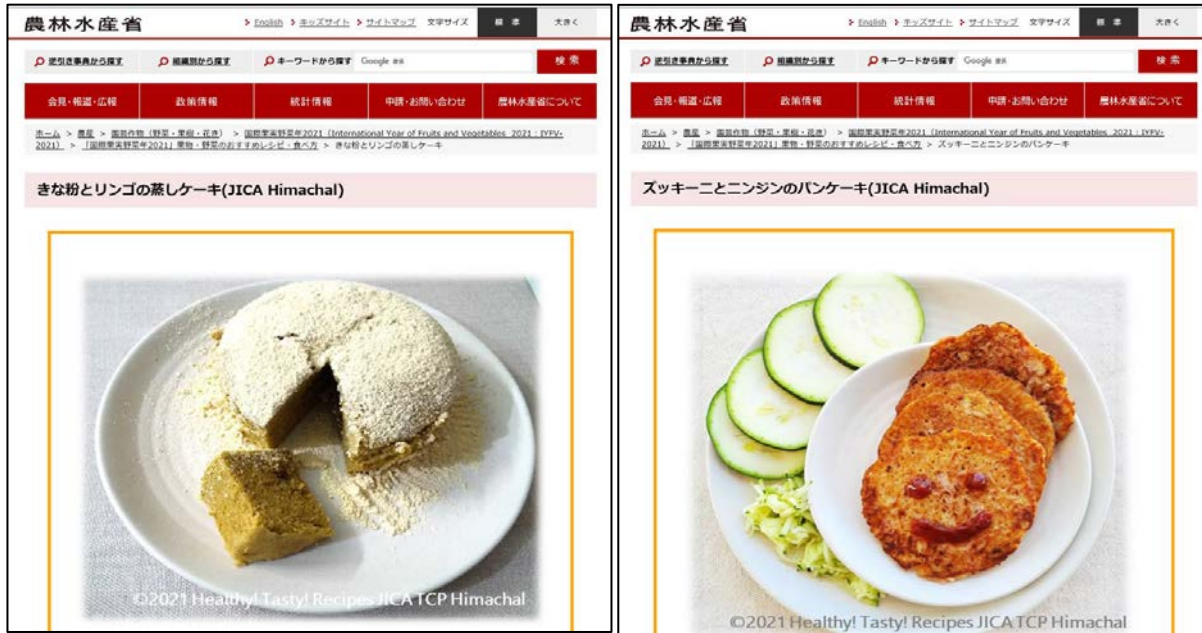
Vol.02/No.06, August 2018

Source: Cited from the HPCDP-1's In-house Newsletter

Figure 2.6.19 Articles about the Food Diversification Activities in HPCDP-1's In-House Newsletter

(4) Participation in a Recipe Sharing Event by the Ministry of Agriculture, Forestry and Fisheries

Seven "Healthy! Tasty! Recipes" were introduced in the Japanese website of the Ministry of Agriculture, Forestry and Fisheries, with the name of "JICA TCP, Himachal", participating in a recipe sharing event of the International Year of Fruits and Vegetables 2021 (A United Nations initiative designed to increase global awareness of the nutritional and health benefits of consuming fruits and vegetables). It was a good opportunity to widely disseminate the recipes and the food diversification activities also in Japan.



Source: Cited from the Ministry of Agriculture, Forestry and Fisheries' website

Figure 2.6.20 Recipe Sharing Event of the International Year of Fruits and Vegetables 2021

2.7 Activities for Water Management and O&M

2.7.1 Background

Water management and O&M (hereinafter called WM) are a part of major components for promotion of crop diversification. It is assured that crop diversification would be promoted under certain condition, in which irrigation water is available. And irrigation schemes are required to be maintained properly and operated sustainably. Accordingly, it is expected that current issue on irrigation facilities and water management in all sub-projects would be clarified, and countermeasures for sustainable operation and maintenance of irrigation facilities would be suggested.

2.7.2 HDCDP-1

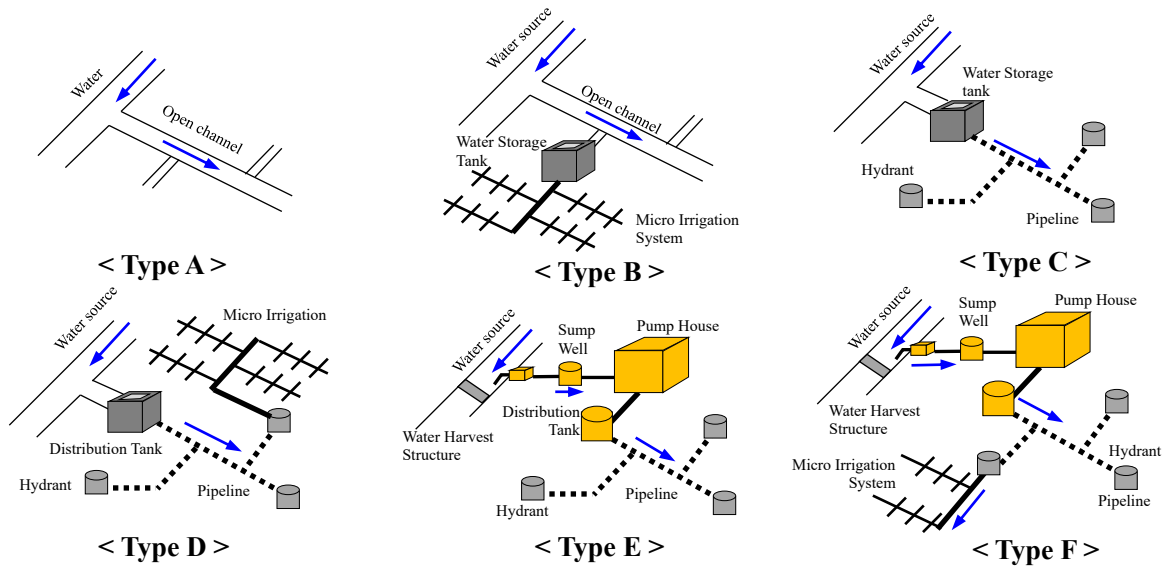
(1) Classification of Each Sub-Project

Since there are 210 sub-projects under target 8 BPMU, they have wide variety of irrigation schemes. All sub projects are classified as follows.

Table 2.7.1 Classification of Sub-Projects

Type of scheme	Type of channel	Micro irrigation	Type
FIS	Open channel	Not apply	Type A
		Apply	Type B
	Pipelines (or plus Open channel)	Not apply	Type C
		Apply	Type D
LIS, STW	Pipelines	Not apply	Type E
		Apply	Type F

Source: JICA TCP Experts Team



Source: JICA TCP Experts Team

Figure 2.7.1 Type of Irrigation Schemes

(2) Constructed Irrigation Facilities and Distributed Items

1) Summary of subprojects in each District

The following tables show representative information of sub-projects.

Table 2.7.2 Table of Basic Information of Representative Sub-Projects

No.	BPMU	Type of Irrigation			Way of Water Distribution	CCA (ha)
		FIS	LIS	STW/DTW		
1	Hamirpur	-	33	-	Pipelines	474.88
2	Bilaspur	1	17	-	Pipelines/ Open channel	298.86
3	Una	-	14	5	Pipelines	194.84
4	Mandi	33	-	-	Open channel /Pipelines	872.02
5	Sarkaghat	17	12	-	Mainly Pipelines/Open channel	389.44
6	Dehra	11	10	-	LIS: Pipelines / FIS: Open channel	598.00
7	Nurpur	20	5	-	LIS: Pipelines / FIS: Open channel	790.35
8	Bajnath	31	1	-	LIS: Pipelines / FIS: Open channel	1052.71
	Total	113	92	5	-	4671.10

Source: JICA TCP Experts Team

2) Micro Irrigation Systems (MIS)

CCA and No. of sub-projects using Micro Irrigation Systems (hereinafter called MIS) are shown in the below table. Here, MIS means the irrigation which is using Sprinkler or Drip tube for water distribution in the field.

Table 2.7.3 Table of MIS, CCA and Numbers in Each BPMU

No.	BPMU	CCA (ha)		No. of Sub-projects which were provided MIS from BPMU (No.)	
		MIS*1	Total	MIS	Total
1	Hamirpur	25.82	474.88	17	33
2	Bilaspur	27.86	298.86	12	18
3	Una	13.55	194.84	11	19

No.	BPMU	CCA (ha)		No. of Sub-projects which were provided MIS from BPMU (No.)	
		MIS*1	Total	MIS	Total
4	Mandi	230.94	872.02	33	33
5	Sarkaghat	94.21	389.44	29	29
6	Dehra	31.18	598.00	19	21
7	Nurpur	28.56	790.35	9	25
8	Bajjnath	36.35	1052.71	3	32
	Total	488.47	4671.10	133	210

note: *1 Area of Poly house is contained in this CCA
Source: JICA TCP Experts Team

3) Solar Panel

Solar Panel were installed by BPMU. Following table shows the result of installation.

Table 2.7.4 Number of Sub-Projects, which have Solar Panel

No.	BPMU	No. of Sub-project which have installed Solar Panel	No. of all KVAs
1	Hamirpur	12	33
2	Bilaspur	12	18
3	Una	11	19
4	Mandi	0	33
5	Sarkaghat	12	29
6	Dehra	9	21
7	Nurpur	3	25
8	Bajjnath	1	32
	Total	60	210

Source: JICA TCP Experts Team

4) Mulching Sheet

Mulching sheet were distributed by BPMU. Following table shows the result of distribution

Table 2.7.5 Number of Sub-Projects which have Mulching sheet

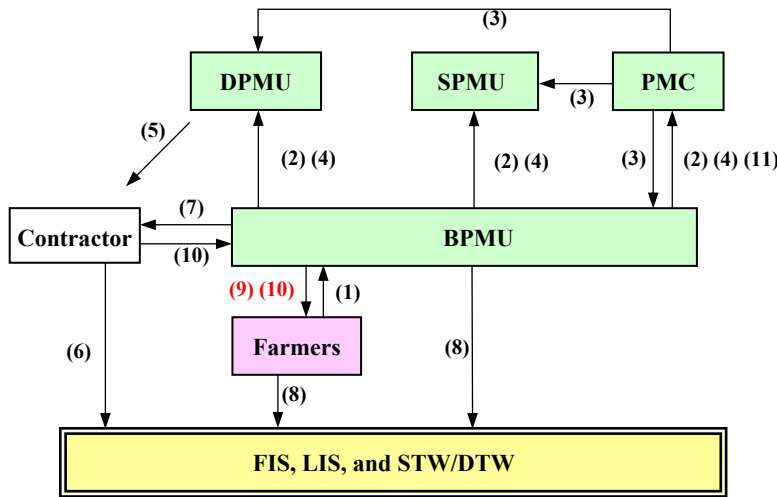
No.	BPMU	No. of Sub-project which have Mulching sheet	No. of all KVAs in the BPMU
1	Hamirpur	13	33
2	Bilaspur	12	18
3	Una	11	19
4	Mandi	6	33
5	Sarkaghat	3	29
6	Dehra	9	21
7	Nurpur	6	25
8	Bajjnath	4	32
	Total	64	210

Source: JICA TCP Experts Team

(3) Procedure of Handing over of Irrigation Facilities by BPMU

1) FIS, LIS, and STW/DTW

Irrigation Facilities (FIS, LIS, and STW/DTW) were handed over to famers through below procedures. In the figure, procedure No.9 and No.10 should be done by Extension Officers (sometimes with Engineers).



< Paper Procedures >

- (1) Application Form
- (2) Minimum Project Report (MPR)
- (3) Feasibility Report
- (4) Detailed Project Report (DPR)
- (5) Award Letter (work order)
: Items, rate, and total amount, construction deadline etc. are included
- (11) Project Completion Report (PCR)

< Handover Procedures >

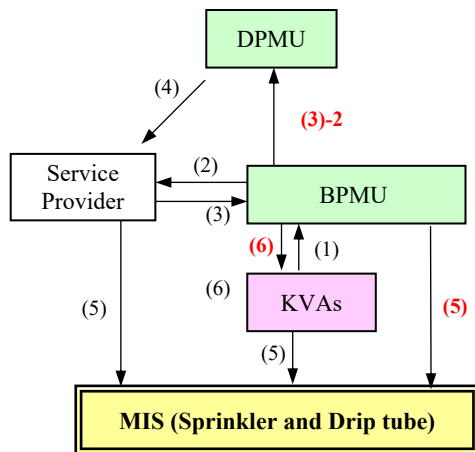
- (6) Construction Works
- (7) Supervision and Inspection
- (8) Verification (by Engineer)
- (9) Instruction of O&M (by Extension Offices)
- (10) Hand Over (by Extension Officers)
: Irrigation system is warranted by contractor for 6 months

Source: JICA TCP Expert Team

Figure 2.7.2 Procedure of Handover of Irrigation System (FIS, LIS, DTW)

2) MIS

Irrigation Facilities (MIS) are handed over to Famers through below procedures. In the figure, procedure No.3, No.5 and No.6 shall be done by Extension Officers (Sometimes with Engineer).



< Paper and Handover Procedures >

- (1) Application Form
: Farmers who apply MIS are selected by KVA
- (2) Selection of Service Provider
- (3) Required documents
: Estimate, plan, Feasibility Report, Agreement between Farmers and Service Provider. Checked extension officers.
- (4) Award Letter (Work Order)
- (5) MIS are put into, tested, and verified by EOs, with Service provider, and farmers in the field
- (6) Handover
- Farmers make agreement on the Handover
- Service Provider have responsibility to care the MIS for 5years

Source: JICA TCP Expert Team

Figure 2.7.3 Procedure of Handover of Micro Irrigation System (MIS) Under HPCDP-1

(4) The Guidelines

Since the Guidelines of WM are prepared under JICA TCP-1, extension officers (hereinafter called EOs) can refer to the Guidelines for their extension works. The below table shows contents of the Guidelines of WM.

Table 2.7.6 Contents of the Guidelines (WM)

Code	Subject	Code	Subject
WM-01	Water Management by Water Users' Association	WM-07	Conflict Management
WM-02	Establishment of WUA	WM-08	Micro Irrigation – Sprinkler
WM-03	Water Distribution	WM-09	Micro Irrigation – Drip Irrigation
WM-04	Operation of Irrigation Facilities	WM-10	Crop Budgeting for Irrigation Scheme

Code	Subject	Code	Subject
		(Only for EOs)	
WM-05	Maintenance of Irrigation Facilities	WM-11 (Only for EOs)	Irrigation Scheduling
WM-06	Leadership Development	WM-12 (Only for EOs)	Soil Conservation

Source: JICA TCP Experts Team

(5) Job Profile

It is stipulated that the Job profile of EOs; Agricultural Development Officers (ADOs), Agricultural Extension Officers (AEOs), Sub-Divisional Soil Conservation Officers (SOSDO), and Junior Engineers (JEs) in HPCDP-1 as follows:

Table 2.7.7 Current Job Profile of Relevant Staff in HPCDP-1

Position	Job profile
Agricultural Development Officers (ADOs)	<ul style="list-style-type: none"> · Guide Agricultural Extension Officers (AEOs) in all agricultural development and extension activities providing latest technological know-how and solutions to the field problems. · Preparation of Agriculture Extension Officers wise Agriculture Production Program. · Arranging and stocking all the inputs at all the points in the BPMU timely and adequately. · Coordinate stocking of fertilizer/plant protection measures at various sale points in the block with Himachal Pradesh State Co-operative Marketing & Consumers Federation Ltd.(HIMFED)/Cooperative Societies, Himachal Pradesh Horticultural Produce Marketing and Processing Corporation Ltd.(HPMC), HP Agro-Industries Corporation. · Organize farmers training camps at sub project level with the help of concerned AEO. · Report shortage of seed, fertilizer etc., if any, immediately to the BPMU Manager. · Undertake intensive touring during the campaign period. · Ensure full utilization of irrigation potential. · Report the achievement every month to the BPMU Manager.
Agricultural Extension Officers (AEOs)	<ul style="list-style-type: none"> · Conduct field survey. · Assess technological and input requirements of farmer/farmers organizations. · Arrange inputs and other demonstration material. · Organization and capacity building of farmers groups. · Identification of farmer groups need for training, demonstration and exposure visit etc. and organization of training, demonstration and exposure visits, etc. · Collection of soil samples representing village, panchayat and submission to District Laboratory and ensure distribution of soil health cards. · Coordination with Panchayats and linkages with other institutions. · Maintenance of proper records, accounts and submission of periodical reports as required by BPMU
Junior Engineers (JEs)	<ul style="list-style-type: none"> · Prepare sub- project wise development plans · Prepare estimates of minor irrigation schemes, water harvesting structure (WHS), access roads etc. · Prepare survey maps and tender documents · Execute and record measurement of works · Maintain proper records, accounts and submission of reports · Technical scrutiny of estimates · Supervision and quality control of construction works · Ensure full utilization of created irrigation potential · Attend to any work that may be assigned from time to time.

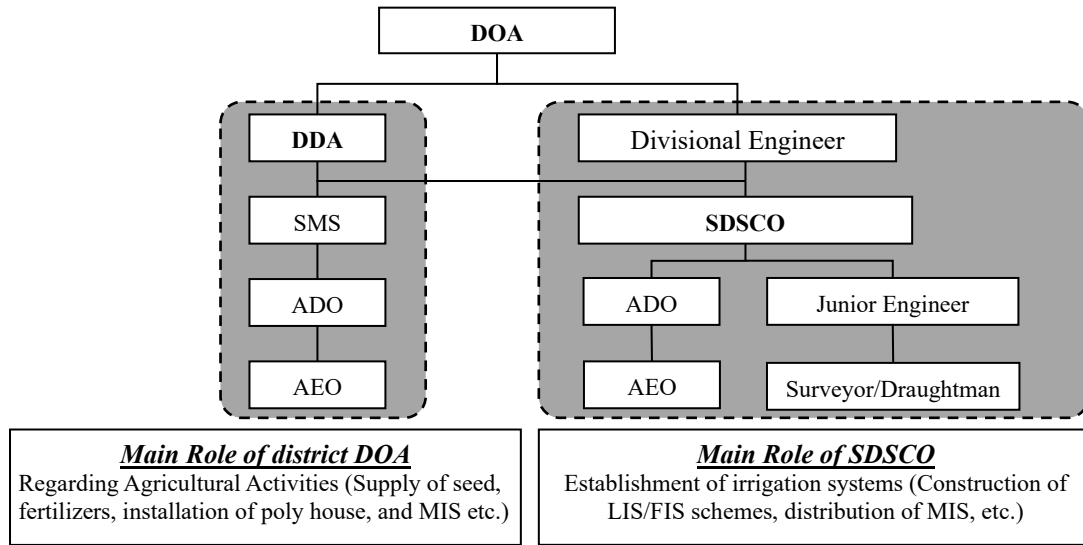
Source: Project Operation Manual of PMU in HPCDP-1

2.7.3 DOA (Standard Operation)

(1) Role of DOA and SDSCO

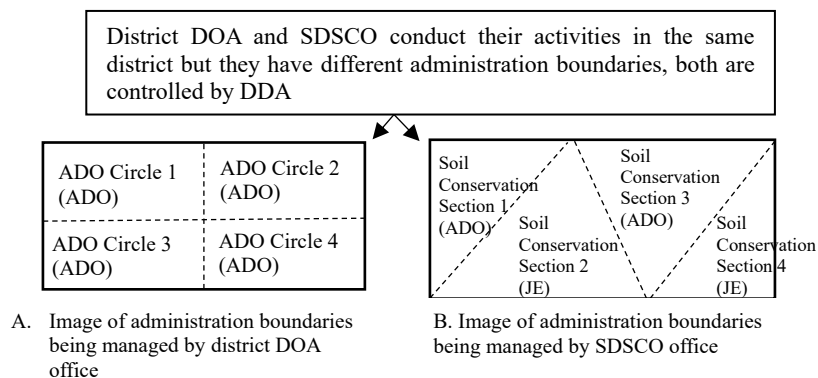
Though PMU have several roles on WM; survey, design, construction supervision, distribution of micro

irrigation facilities etc., including training of operation and maintenance, DOA's staff (district DOA and SDSCO) have individual roll and control area. When it comes to WM, district DOA have responsibility for agricultural activities, and SDSCO have responsibility for establishment of irrigation systems as shown in Figure 2.7.4 and Figure 2.7.5.



Source: JICA TCP Experts Team

Figure 2.7.4 Existing Structure of DOA on WM



Source: JICA TCP Experts Team

Figure 2.7.5 Images of Boundaries Being Managed by DOA and SDSCO

(2) Subsidy Scheme

Farmer can apply DOA subsidy schemes to develop their facilities and repair malfunction facilities. Because these schemes support almost all cost of applying farmers who apply them, EOs must judge the effectiveness of those schemes and farmers should use the schemes effectively. DOA have two kind of WM related schemes: DOA schemes and SDSCO schemes as shown below.

Table 2.7.8 List of Subsidy Schemes by DOA

No.	Name of Scheme	Objective	Target	Resource of the Fund
1	National Food Security Mission (NFSM)	a) Increasing production of Wheat, maize, rice and pulses through area expansion and productivity enhancement in a sustainable manner. b) Restoring soil fertility and productivity at the individual farm level. c) Creation of employment opportunities. d) Enhancing farm level economy i.e. farm profits to restore the confidence among the farmers.	Individual farmers/ Farmers Group	Centre: 90 % State: 10 %

Source: JICA TCP Experts Team

Table 2.7.9 List of Subsidy Schemes by SDSCO

No.	Name of Scheme	Objective	Target	Resource of the Fund
1	Lift irrigation, Water Storage Tank and & Bore well (Budget Assurance)	For new development of Lift irrigation, Water Storage Tank and Bore well	Individual farmer	Centre: 0 % State: 100 %
2	Pradhan Mantri Krishi Sinchai Yojna (PMKSY)	For new development of irrigation bore well and water storage tank for personal. For new development of WHS, Water storage tank, and Ponds for Farmer's group.	Individual farmer / Farmer's group	Centre: 90% State: 10%
3	Rastrya Krishi Vikas Yojna (RKVY_RAFTAR)	For new development of Flow irrigation (Open channel or Pipeline) and water storage structure	Farmer's group	Centre: 90% State: 10%
4	Kishan Bagwan Samridhi Yojna (Agriculture Farmer, Horticulture farmer, Development Scheme)	For new development of Lift irrigation, Water Storage Tank and Bore well	Individual farmer	Centre: 0 % State: 100 %
5	Jal Se krishi ko Bal Yojna (Support to Agriculture through Water)	For new Development of Water Harvesting Dams, Ponds, Minor Irrigation Schemes, Contour Trenches, Silt Retention Dams.	Farmer's Group	Centre: 0 % State: 100 %
6	Flow Irrigation Scheme (FIS)	1. For renovating the source location of Flow Irrigation Schemes and strengthening of old defunct Flow Irrigation Schemes in Common areas. 2. New Schemes such as Flow Irrigation, Micro Irrigation, Solar Lift Irrigation Scheme.	Farmer's Group	Centre: 0 % State: 100 %
7	Efficient Irrigation Through Micro Irrigation Scheme	For New Development of Micro Irrigation System (Sprinkler & Drip)	Individual farmer	Centre: 0 % State: 100 %
8	Saur Sinchayee Yojna	To increase incomes dramatically, particularly for remote producers/ Farmers field with inconsistent access to electricity or fuel	Individual farmer / Farmer's group	Centre: 90 % State: 10 %
9	Soil and Water Conservation Basis & Maintenance of existing Scheme (Shivalik Hills)	To repair and maintenance of existing Soil Conservation Structure for sustainability of scheme	Farmer's Group	Centre: 0 %, State : 100%
10	Assistance to Small & Marginal Farmers (SMF) for increasing Agriculture Production	To assist Small and Marginal Farmers through construction of small irrigation schemes (FIS & WST) for increasing Agriculture Production	Farmer's Group	Centre: 0 %, State : 100%
11	On Farm Water Management through Tanks Irrigation	To assist farmers through construction of water storage tank for irrigation to schedule caste category.	Individual farmer	Centre: 0 %, State : 100%

Source: JICA TCP Experts Team

(3) Job Profile

The Job profile of EOs in DOA; Agricultural Development Officers (ADOs), Agricultural Extension Officers (AEOs), Sub-Divisional Soil Conservation Officers (SOSDO), and Junior Engineers (JEs) are as follows. Monitoring and any support for irrigation facilities after handing over are not included in it.

Table 2.7.10 Current Job Profile of Relevant Staff in DOA

Position	Job profile
Agricultural Development Officers (ADOs)	<ol style="list-style-type: none"> 1. Preparation of Agriculture Extension Officer circle-wise Agriculture Production Programme 2. Arranging and stocking all the inputs at all the sale points in the block timely and adequately. 3. To coordinate stocking of fertilizer/plant protection measures at various sale points in the block with HIMFED / Coop. Societies, HPMC, HP Agro-Industries Corporation. 4. To organize farmers training camps at village level. 5. To report shortage of seed, fertilizer etc. if any, immediately, to the SMS of DOA. 6. Intensive touring during the campaign period. 7. To ensure full utilization of irrigation potential. 8. Reporting the achievement every month to the DDA's / DAO's.

Position	Job profile
Agricultural Extension Officers (AEOs)	<ol style="list-style-type: none"> 1. Arranging supply of Agricultural inputs from District Head Quarter. 2. Organize the training camps for farmers. 3. Contacting the farmers for supply of Agriculture inputs. 4. Organize field days. 5. Collection of soil samples representing Village, Panchayats and submission to District laboratory and ensure distribution of Soil Health Cards. 6. Coordination with Panchayats (PRI's)
Sub-Divisional Soil Conservation Officers (SDSCO)	<ol style="list-style-type: none"> 1. To be responsible for the planning / execution of soil conservation minor irrigation works in their respective jurisdiction under the overall control of Deputy Director of Agriculture
Junior Engineers (JEs)	<ol style="list-style-type: none"> 1. Designing and execution of Soil Conservation schemes and recording of measurement of works execution of Soil Conservation estimate of const of works and preparation of original map of the land to be benefited the schemes.

Source: JICA TCP Experts Team

2.7.4 Methodology of TCP WM Team

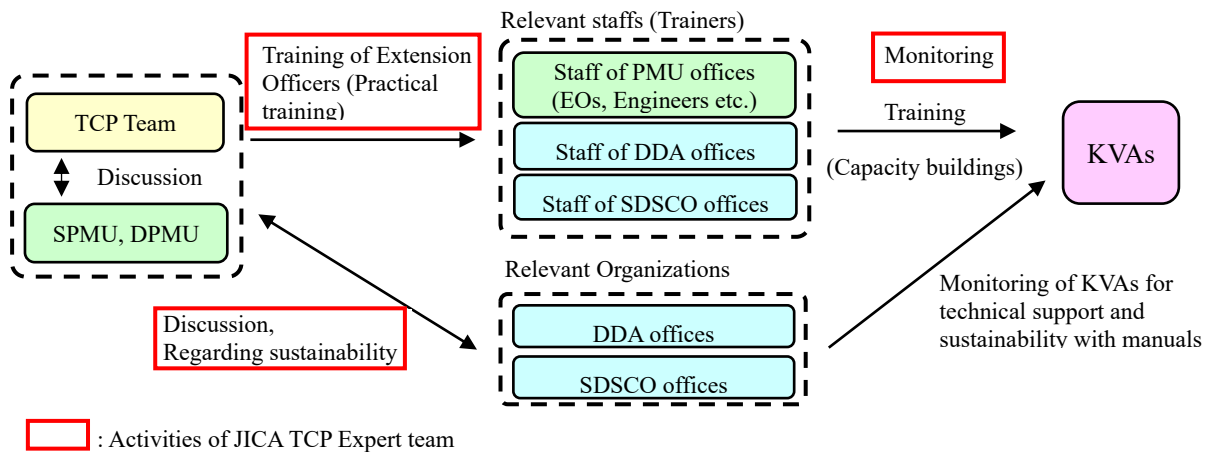
(1) Procedure

Following activities were planned for WM team of JICA TCP.

- Step 1: To Grasp Current Situations on WM
- Step 2: To Raise Issues
- Step 3: To Train Extension Officers including monitoring of EOs training
- Step 4: To Update the Guidelines for WM.
- Step 5: To Share the Guidelines with PMU, DOA, and SDSCO.

(2) Framework of the Activities

To solve current issues of WM, capacity buildings of EOs of PMU were required from the beginning of JICA TCP-1. Furthermore, it was assumed that many facilities will be required to be repaired after the project completion, so training of EOs in DOA was planned for sustainability of those schemes and update of the Guideline also included in the plan. JICA TCP supports the activities of those organization and enhances capacity of in-charge officers (mainly AEO).



Source: JICA TCP Experts Team

Figure 2.7.6 Framework of Training

KVA members (farmers in sub-projects) was trained by EOs of “PMU” and PMU was in charge of the KVAs until June 2021. On the other hand, EOs in “DOA” and “SDSCO” became in charge of those KVAs after July 2021. Thus, all related staff should participate in JICA TCP trainings and be strengthen their ability (WM knowledge and practical experiences).

**Table 2.7.11 Person in Charge of KVAs Under HPCDP-1
and Expected Trainees of JICA TCP Trainings**

Person in charge of KVAs	
Until June 2021	After July 2021
Staff of PMU offices	Staff of DOA (district DOA and SDSCO offices)

↓

Expected Trainees of TCP Trainings
Staff of PMU and DOA and SDSCO offices

Source: JICA TCP Experts Team

2.7.5 Issues in Current Situation and Prioritization

To find out issues in current situation, JICA TCP team conducted following surveys. The Primary survey were implemented in December 2017 and the purpose was finding of comprehensive issues on water management in the fields. The second field survey were implemented in May 2018 and the purpose was finding of MIS issues.

(1) Primary Survey on General Issues

Through field survey as well as questionnaire survey in the selected sub-projects (12 sub-projects in 8 Blocks of HPCDP-1), current situation on activities of extension officers to Water Users' Groups (KVAs) was confirmed. Besides, current situation on operation and maintenance of irrigation facilities such as record keeping, collection of water charge and member fees, etc. which are conducted by KVAs also confirmed. Target subprojects were as follows:

1) Dec. 13, 2017	Block Sarkaghat	FIS Kukain
2) Dec. 14, 2017	Block Nurpur	FIS Minjgram
3) Dec. 16, 2017	Block Baijnath	FIS Talloti, FIS Sapruhal
4) Dec. 18, 2017	Block Dehra	LIS Bandol
5) Dec. 19, 2017	Block Una	STW Badsala, LIS Thanakhas
6) Dec. 21, 2017	Block Mandi	FIS Padhiun
7) Dec. 22, 2017	Block Hamirpur	LIS Deoth 1, LIS Samlog
8) Dec. 23, 2017	Block Bilaspur	LIS Noa, LIS Swara-Jarora

Note: FIS: Flow Irrigation Scheme, LIS: Lift Irrigation Scheme, STW: Shallow Tube Well Scheme.

(2) Secondary Field Survey on MIS Issues

After construction of irrigation facilities, some micro irrigation facilities (sprinkler, drip tube and HDPE pipes etc.) was provided to some sub-project by BPMU. Though the total beneficiary area was not so extensive, it was crucial to promote crop diversification and save limited water. Therefore, we conducted second field survey focusing on Micro irrigation systems (MIS) in May 2018.

1) May. 11, 2018	Block Dehra	LIS Lower Sunhet, FIS DaduKuhhal
2) May. 15, 2018	Block Sarkaghat	LIS- KaradiKandyol, LIS Khanot
3) May. 16, 2018	Block Hamirpur	LIS Dharnasi, LIS- Deot-I
4) May. 18, 2018	Block Una	DTW- Badera Lower, LIS Berian
5) May. 22, 2018	Block Bilaspur	LIS BalhSeena, LIS Chhiber-Ballu
6) May. 24, 2018	Block Nurpur	WHS cum LIS Kumbh
7) May. 25, 2018	Block Mandi	FIS- Jail Khad -Dhunji Dhar, FIS- Badli to Bag
8) May. 29, 2018	Block Baijnath	FIS Nag Naguli, FIS Gunehar

Note) FIS: Flow Irrigation Scheme, LIS: Lift Irrigation Scheme, STW: Shallow Tube Well Scheme.

(3) Result of Field Survey

As the result of field survey in December 2017 and May 2018, the JICA TCP summarized current issues





in Table 2.7.12 and the photos of field survey are shown in Table 2.7.13.





Table 2.7.12 Issues in Current Situation (Field Survey in Dec 2017 and May 2018)

Contents		Result of Hearing
1	General	<ul style="list-style-type: none"> - EOs don't share information with KVA about O&M. (Regarding crop diversification plan (CDP), they share some information with KVA.) - The condition of facilities is not recorded (some facilities have been malfunctioned). Some KVAs have record of 1) Meeting, 2) Monthly contribution, 3) Receipt Book, 4) Cash Book etc. under LIS. However, some KVAs in LIS and almost all KVAs under FIS don't have any records.
2	Organization	<ul style="list-style-type: none"> - Mostly KVAs don't held General Body meetings, which is the meeting for all KVA members. - Some farmers don't attend Meeting. - Under FIS, KVA don't have responsibility and they don't collect contribution for KVA members.
3	Operation	<ul style="list-style-type: none"> - KVA operate irrigation facilities by their own regulation. - Pump Operation trainings have not been conducted sufficiently - MIS are distributed without accurate commissioning and instruction (Validation of proper work of facilities have been conducted by service provider but there are some pressure problems: farmers and EOs don't know suitable location for MIS and additional facilities such as Water Storage Tank and booster pump are not installed).
4	Maintenance	<ul style="list-style-type: none"> - Most KVAs collect contribution from each farmer (mainly 20 Rs./month) under LIS. - Pump maintenance trainings have not been conducted sufficiently - Some distribution pipes stuck by silt or leakage from joints in FIS. - Some intakes have been filled up with silt sediment. - Almost all KVAs don't have future plan for maintenance.
5	Others	<ul style="list-style-type: none"> - Installation of Micro Irrigation Systems (MIS): Leakage from joint, lack of necessary parts. - There are some facilities of malfunction.

Source: JICA TCP Experts Team

Table 2.7.13 Photos of Field Survey (Dec. 2017 and May 2018)

1. General	2. Organization
	
No.1 Farmer keep some memo, but they don't keep record of income and expense.	No.2 LIS have already constructed but they were not used, A-1112 LIS Khanot, Sarkagat
3. Operation	4. Maintenance
	
No.3 There is only one pump operator. (motivator is keeping record, organize meeting, and operates pump by himself)	No.4 Control board of pump machinery doesn't work properly, A-1112 LIS Khanot, Sarkagat

5.1 Others (Leakage from MIS)	5.2 Others (Malfunction of MIS)
	
<p>No.5 Leakage from a joint of mini sprinkler system, H-1053 LIS Dharnasi, Hamirpur</p>	<p>No.6 Distribution pipe for MIS and Drip tube was not used because of facility troubles, S-1193 LIS Karadi-Kandyol, Sarkaghat</p>
5.3 Others (Leakage in FIS)	5.4 Others (Leakage in FIS)
	
<p>No.7 Sluice valve and hydrant don't work because of some leakage problems, M-1025 FIS Jail Khand to Dhanghar</p>	<p>No.8 Leakage from HDPE pipe. KVA was requesting for repair to BPMU.M-1025 FIS Jail Khand to Dhanghar</p>

Source: JICA TCP Experts Team

(4) Prioritization of the Current Issues to be Addressed

Almost all current issues are attributed to lack of farmers and EOs' experiences of usage of the irrigation facilities, especially MIS and Motor Pump experiences. Hence, JICA TCP selected below issues to be addressed through the discussion with PMU.

➤ Selected Issues to be Addressed Preferentially

- ✓ **Micro Irrigation System**
- ✓ **Motor Pump**
- ✓ **Solar Pump System**

* Issues on O&M of Solar pumping system was raised in DC meeting in 2021 by BPMU Bilaspur, thus JICA TCP prepared manual and guideline of it.

2.7.6 Planning of Training for EOs

(1) Objective of the Trainings

Capacity building of EOs in PMU and DOA (district DOA and SDSCO) offices on Water Management; appropriate operation and maintenance of irrigation facilities.

(2) Contents of Trainings to EOs

There were many issues in the current situation because of less experiences of farmers and EOs as mentioned in the Clause 2.7.5. According to the observation of current situation and discussion with PMU, JICA TCP selected issues regarding "MIS" and "Pump O&M" as priority issues. Moreover, at a DC meeting in 2021, it was made a point by BPMU Bilaspur that O&M manual of solar pumping system also shall be prepared for sustainability of those facilities.

Table 2.7.14 Contents of Training to EOs

No.	Contents of Trainings to EOs	Programs
1	Micro Irrigation System	<ul style="list-style-type: none"> • Demonstration Training to EOs in some Subprojects • Support of EOs with joining of their training to KVAs and adding supplemental comments for their instruction • Preparation of support tool such as checklist, monitoring sheet
2	Motor Pump	<ul style="list-style-type: none"> • Demonstration Training in some Subprojects • Support of EOs with joining of their training to KVAs and adding supplemental comments for their instruction • Preparation of Support tool such as checklist, Monitoring Sheet
3	Solar Pump	<ul style="list-style-type: none"> • Preparation of Support tool such as checklist, Monitoring Sheet

Source: JICA TCP Experts Team

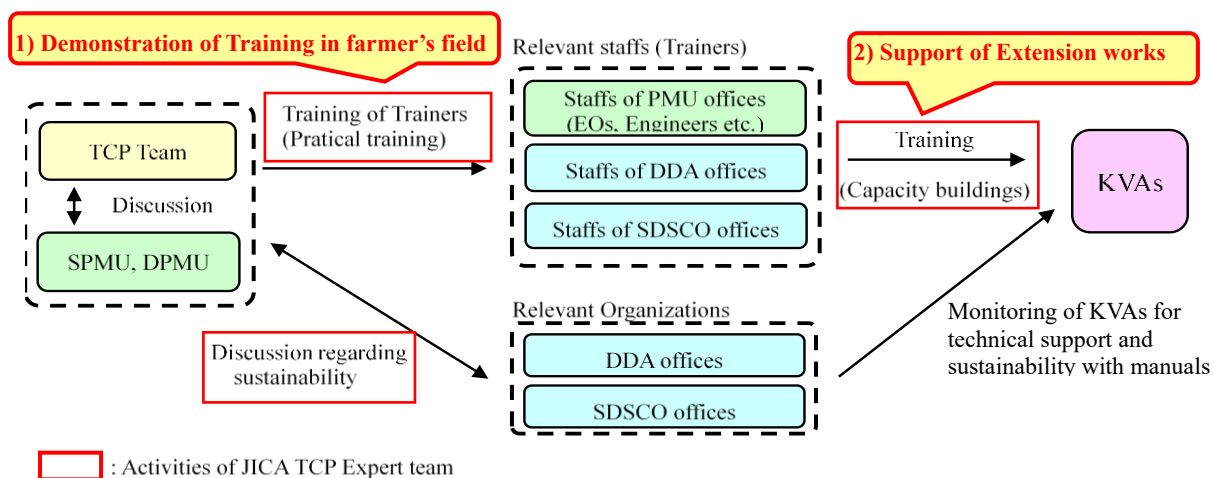
(3) Method of the Trainings

1) Demonstration of Training in subprojects

JICA TCP conducted demonstration trainings for EOs to instruct all process from planning of installation to O&M in the subprojects which BPMU selected.

2) Support of Extension Works

After the demonstration Training, EOs are expected to spread the trainings to the other sub-projects. However, since EOs have many works (not only WM training but also farming support such as distribution of seeds and materials etc.), it seemed difficult to fulfill the trainings to all related subprojects. Therefore, JICA TCP supported EOs' extension works as follows:



Source: JICA TCP Experts Team

Figure 2.7.7 Position of the Training of EOs in the Activities of JICA TCP (WM)

(4) Numbers of Target Sub-Projects

Sub-projects which have MIS were selected for MIS trainings and the number of target sub-projects was 133 in total as shown in Table 2.7.15. The number of subprojects which has LIS and tube-well was 97 in total.

Table 2.7.15 Number of Target Sub-Projects for MIS and Pump O&M Training

No	BPMU	No. of Sub-project			Target Sub-project for MIS Training	Target Sub-project for Pump Training
		Total	LIS, STW, DTW	FIS		
1	Hamirpur	33	33	0	17	33
2	Bilaspur	18	17	1	12	17
3	Una	19	19	0	11	19
4	Mandi	33	0	33	33	0

No	BPMU	No. of Sub-project			Target Sub-project for MIS Training	Target Sub-project for Pump Training
		Total	LIS, STW, DTW	FIS		
5	Sarkaghat	29	12	17	29	12
6	Dehra	21	10	11	19	10
7	Nurpur	25	5	20	9	5
8	Baijnath	32	1	31	3	1
Total		210	97	113	133	97

Source: JICA TCP Experts Team

2.7.7 MIS Training

(1) Procedure and Expected Outcome of MIS Trainings

JICA TCP arranged MIS trainings in three steps as shown below. The purpose and expected outcome in each step are show in Table 2.7.16. JICA TCP conducted demonstration training with in-charge EOs and the EOs conducted training to KVA after the demonstration training as mentioned in the item (2) and (3) in this Clause.

- **Step 1 Discussion:** Instruction to farmers and EOs for the Training and Confirmation of current issue,
- **Step 2 Installation:** Field survey and installation of MIS with service provider,
- **Step 3 Field Training :** Demonstration in a field for EOs including staff of DOA and SDSCO.

Table 2.7.16 Contents and Expected Output of MIS Trainings

Step	Contents of Training	Expected Output	Expected Outcome
1	Discussion	<ul style="list-style-type: none"> • EOs understand the purpose and procedure of training • EOs understand the points of discussion (Current situation, Training field, needed materials, etc.) 	<ul style="list-style-type: none"> • EOs will disseminate the MIS trainings to other Sub-projects • Lesson learnt will be added in the guideline
2	Installation	<ul style="list-style-type: none"> • EOs understand appropriate layout planning and checkpoints on installation by Service Providers. 	
3	Field Training	<ul style="list-style-type: none"> • EOs understand appropriate O&M of MIS • EOs find specific issues and solutions 	

Source: JICA TCP Experts Team

(2) Demonstration Training

1) Training Site

5 sub-projects in each District were selected by BPMU as follows.

- ✓ District Kangra : D-U1057 FIS Dadu-Kuhali (Dehra)
- ✓ District Una : U-1036 DTW Badhera Lower (Una)
- ✓ District Hamirpur : H-1002 Panjahlia-Rajputana (Hamirpur)
- ✓ District Bilaspur : G-1005 Balhseena (Bilaspur)
- ✓ District Mandi : S1100 LIS Ukhala (Sarkaghat)

2) Implementation of Training

Implemented dates of discussion, installation, and field training are shown in Table 2.7.17. Through those demonstration trainings, each extension officers learnt how to arrange, implement, and wrap up MIS training to farmers. In addition, not only BPMU staff but also DOA and SDSCO staff were also joined the demonstration trainings and received practical trainings for MIS. The number of those participants were shown in Table 2.7.18.

Table 2.7.17 Schedule of MIS Demonstration Trainings

No	District	BPMU	Adopted subproject	Date			Trained EOs
				Discussion	Installation	Training	
1)	Kangra	Bajjnath, Dehra, Nurpur	D-U1057 FIS Dadu-Kuhhal (Dehra)	14-09-2018	05-10-2018	15-10-2018	A.O Parika Sapahiya (BPMU Dehra)
							A.E Mridul Thakur (BPMU Nurpur)
							A.D.O Jitender Kumar (BPMU Bajjnath)
2)	Una	Una	U1036 DTW Badhera Lower	17-08-2018	24,25-10-2018	28-08-2018	A.E Pooja
3)	Hamirpur	Hamirpur	H-1002 Panjahli-Rajputana	28-09-2018	11-10-2018	16-10-2018	A.E Nitika
4)	Bilaspur	Bilaspur	G-1005 Balhseena	27-9-2018	10-10-2018	12-10-2018	A.E.O Anoop
5)	Mandi	Mandi, Sarkaghat	S1100 LIS Ukhala (Sarkaghat)	19-09-2018	28-09-2018	04-10-2018	A.E Sweta (BPMU Mandi as of May)

Source: JICA TCP Experts Team

Table 2.7.18 Number of Participants of MIS Demonstration Trainings

Participant	MIS Training in Dehra	MIS Training in Una	MIS Training in Hamirpur	MIS Training in Bilaspur	MIS Training in Sarkaghat
SPMU Staff	1	-	-	-	-
DPMU Staff	5		-	2	3
BPMU Staff	19	6	7	5	6
DOA Staff	2	3	-	3	5
SDSCO Staff	6	4	2	4	7
KVA members	38	12	22	16	12
Service provider	5	2	7	4	6
TCP staff	1	2	1	1	1
Total	77	29	39	35	40

Source: JICA TCP Experts Team

JICA TCP found that some points to be checked by EOs were not recognized by them through the demonstration trainings. These points were shared with EOs after the demonstration trainings as focal points to be checked in their own MIS Trainings to KVA. It is summarized in the Table 2.7.19.

Table 2.7.19 Lessons Learnt from a Training (Una)

Subject	Sample of Check Points
Installation	<ul style="list-style-type: none"> ✓ Whether service providers have plan (design drawing) or not, ✓ Whether outlet have required water pressure (1.5kg/cm² for sprinkler, 1.0kg/cm² for Drip in the field) to use the MIS, ✓ Whether jointing of pipes is installed properly or not.
Operation	<ul style="list-style-type: none"> ✓ Whether sand and silt are flashed out before water supply.
Maintenance	<ul style="list-style-type: none"> ✓ Whether distribution valve is installed to remove lateral pipe easily or not.

Source: JICA TCP Experts Team

Table 2.7.20 Photos of MIS Training (Una)

	
<p>No.1 Valves and joining accessories should be installed properly to prevent leakage from jointing.</p>	<p>No.2. Sand and silt should be flashed out before irrigation to prevent clogging in tubes and pipes.</p>
	
<p>No.3 Lateral pipe should not be kept folded.</p>	<p>No.4 All accessories should be laid out properly.</p>

Source: JICA TCP Experts Team

(3) Support to Extension Officers

1) Target Subprojects

Number of candidate subprojects of the MIS training are shown in Table 2.7.15. There were 133 subprojects which had MIS.

2) Implementation of Training

Through those trainings, each extension officers in each BPMU are trained. The status of implementation of trainings are shown in the Table 2.7.21. About 50%, 65 subprojects out of 133 subprojects have been completed MIS trainings.

Table 2.7.21 Numbers of MIS Trainings by EOs

No.	BPMU	No. of Subprojects	MIS (O&M)	
			No. of subprojects having MIS	No. of subprojects training completed
1	Hamirpur	33	17	14
2	Bilaspur	18	12	9
3	Una	19	11	7
4	Mandi	33	33	4
5	Sarkaghat	29	29	15
6	Dehra	21	19	11
7	Nurpur	25	9	3
8	Baijnath	32	3	2
	Total	210	133	65

Source: JICA TCP Experts Team

DOA staff (DOA staff and SDSCO staff) were also trained in the practical trainings. Total number of participants are shown in Table 2.7.22.

Table 2.7.22 Number of Participants of MIS Trainings

Participant	BPMU Hamirpur	BPMU Bilaspur	BPMU Una	BPMU Mandi	BPMU Sarkaghat	BPMU Dehra	BPMU Nurpur	BPMU Baijnath
SPMU Staff	0	0	0	0	0	0	0	0
DPMU Staff	0	0	0	0	0	0	0	0
BPMU Staff	5	4	2	4	2	3	2	3
DOA Staff	1	0	1	0	0	0	0	0
SDSCO Staff	1	0	1	0	0	1	1	0
KVA members	86	51	47	27	54	46	17	15
Service provider	4	2	4	2	3	1	1	0
Total	97	57	55	33	59	44	19	18

Source: JICA TCP Experts Team

At the beginning of the practical trainings, JICA TCP found that some EOs faced issues when they try to conduct trainings because of their less experience and technical knowledge. Issues and proposed solutions for it were summarized in the Table 2.7.23. Hence, it was proposed that “supporting tools” are prepared for better trainings and well understanding of the Guideline which were prepared at the time of JICA TCP-1. Since the Guidelines itself had been prepared and distributed to EOs already, JICA TCP prepared check lists and other documents for EOs as next step, it is introduced in the Clause 2.5.4. Since DOA also have schemes to support farmers to have MIS in existing schemes, the checklist will be essential for their extension works in the future also.

Table 2.7.23 Issues and Proposed Solutions for the Implementation of Extension Works (Trainings)

No.	Items	Issues	Proposed Solutions for Issus
1	Survey, Planning and Designing	<ul style="list-style-type: none"> No selection of needs-based farmer. No preparation of feasibility report 	<ul style="list-style-type: none"> EOs add visit for the field. Guideline should be followed by EOs for procedure. Check list for Installation is prepared for EOs by JICA TCP.
2	Installation	<ul style="list-style-type: none"> No layout plans No flow chart for installation No testing after Installation 	<ul style="list-style-type: none"> Guideline should be followed by EOs. Check list for EOs by JICA TCP.
3	Operation	<ul style="list-style-type: none"> No practical training to farmer No operational manual 	<ul style="list-style-type: none"> More training should be proposed for the famers by EOs Check list will be prepared for EOs by JICATCP
4	Maintenance	<ul style="list-style-type: none"> No practical training No manual for maintenance 	<ul style="list-style-type: none"> Check list will be prepared for EOs by JICA TCP
5	Extension work	<ul style="list-style-type: none"> No practical training to EOs No monitoring of MIS after installation. 	<ul style="list-style-type: none"> More training should be done for the EOs for MIS (O&M) Guideline should be followed by EOs for procedure.

Source: JICA TCP Experts Team

2.7.8 Pump Training

(1) Purpose and Expected Outcome of Pump Trainings

JICA TCP arranged Pump trainings in two steps as shown below. Purpose and Expected Outcome in each step is shown in Table 2.7.24. JICA TCP conducted demonstration training with in-charge EOs and the EOs conduct training to KVAs after the demonstration training.

- Step 1 Discussion: Instruction to farmers and EOs for the Training and Confirmation of current issue
- Step 2 Field Training: Demonstration in a field for EOs and inclusive staff of DOA and SDSCO.

Table 2.7.24 Purpose and Expected Outcome of Pump Trainings

No.	Contents of Training	Expected Output	Expected Outcome
1	Discussion	<ul style="list-style-type: none"> EOs understand the purpose and procedure of training EOs understand the points of discussion (Current situation, needed preparation for training, etc.) 	<ul style="list-style-type: none"> EOs will disseminate the pump trainings to other KVAs
2	Field Training	<ul style="list-style-type: none"> EOs understand what is proper Pump O&M EOs find specific issues and solutions. 	<ul style="list-style-type: none"> Lesson learnt to be added in guideline

Source: JICA TCP Experts Team

(2) Demonstration Training

1) Training Site

5 sub-projects in each District were selected by BPMU as follows.

- ✓ District Kangra : N-D-1008, LIS Bharmada (BPMU Nurpur)
- ✓ District Una : U-1054, LIS Upper Basoli (BPMU Una)
- ✓ District Hamirpur : H-3014, LIS Beha (BPMU Hamirpur)
- ✓ District Bilaspur : G-1042, LIS Swara (BPMU Bilaspur)
- ✓ District Mandi : S-1093, LIS Karadi-Kandyol (BPMU Sarkaghat)

2) Implementation of Training

Implemented dates of discussion and training are shown in Table 2.7.25. Through those demonstration trainings, each extension officers learnt how to arrange, implement, and wrap up the training to farmers. In addition, not only BPMU staff but also DOA and SDSCO staff were also joined the demonstration trainings and received practical trainings for Motor Pump and O&M. The number of participants in the demonstration trainings are shown in Table 2.7.26. The photos in a demonstration training are shown in Table 2.7.27.

Table 2.7.25 Selected Sub-Projects for Pump Demonstration Trainings

No.	District	BPMU	Adopted sub-project	Date		Trained EOs
				Discussion	Training	
1	Kangra	Bajjnath, Dehra, Nurpur	LIS Bharmad (BPMU Nurpur)	24/1/2019	13/2/2019	A.D.O Kishori Lal (BPMU Dehra)
						A.O Vikrant Rana (BPMU Nurpur)
						A.O Suvinka Sharma (BPMU Bajjnath)
2	Una	Una	LIS Upper-Basoli	8/1/2019	23/1/2019	A.E Pooja
3	Hamirpur	Hamirpur	LIS Beha	1/12/2018	16/1/2019	A.E Nitika
4	Bilaspur	Bilaspur	LIS Swara	16/11/2018	10/1/2019	A.E.O Anoop
5	Mandi	Mandi, Sarkaghat	LIS Karari-Kandyol (BPMU Sarkaghat)	20/11/2019	27/11/2018	No LIS in BPMU Mandi A.E Sweta (BPMU Sarkaghat)

* In District Kangra no In charge-EOs were participated in training but, other EOs of BPMUs were participated

Source: JICA TCP Experts Team

Table 2.7.26 Number of Participants of Pump Demonstration Trainings

Participant	BPMU Nurpur	BPMU Una	BPMU Hamirpur	BPMU Bilaspur	BPMU Sarkaghat
SPMU Staff	-	2	-	-	-
DPMU Staff	-	2	-	-	2
BPMU Staff	11	5	5	6	3
DOA Staff	0	4	0	5	3
SDSCO Staff	6	2	2	5	0
KVA members	34	13	15	16	11
Service provider	2	2	2	2	2
TCP staff	4	2	2	1	3
Total	57	32	26	35	24

Source: JICA TCP Experts Team

Table 2.7.27 Photos of Pump Training (Sarkaghat)

	
<p>No.1 Explanation of Pump O&M by JICA TCP using the Guidelines</p>	<p>No.2. Explanation by local technician at booster stage pump.</p>
	
<p>No.3 Explanation by local technician for O&M of sump well</p>	<p>No.4 Practical lesson for pump O&M by local technician in pump house.</p>

Source: JICA TCP Experts Team

(3) Support to Extension Officers

1) Target Subprojects

Number of subprojects with LIS or tube-well which have motor pump are shown in Table 2.7.28. There are 97 sub-projects which have motor pump.

Table 2.7.28 Number of Subproject with LIS/TW

No.	BPMU	No. of subprojects with LIS or TW
1	Hamirpur	33
2	Bilaspur	17
3	Una	19
4	Mandi	0
5	Sarkaghat	12

No.	BPMU	No. of subprojects with LIS or TW
6	Dehra	10
7	Nurpur	5
8	Baijnath	1
Total		97

Source: JICA TCP Experts Team

2) Implementation of Training

Through those trainings, each extension officers in each BPMU are trained. The status of implementation of trainings are shown in the Table 2.7.29. About 66%, 64 sub-projects out of 97 sub-projects completed Pump trainings.

Table 2.7.29 Status of Implementation of Pump Trainings by EOs (as of April 2021)

No.	BPMU	No. of Subprojects	MIS (O&M)	
			No. of subprojects having MIS	No. of subprojects training completed
1	Hamirpur	33	33	16
2	Bilaspur	18	17	9
3	Una	19	19	12
4	Mandi	33	0	0
5	Sarkaghat	29	12	11
6	Dehra	21	10	10
7	Nurpur	25	5	5
8	Baijnath	32	1	1
Total		210	97	64

Source: JICA TCP Experts Team

DOA staff (DOA staff and SDSCO staff) were also trained in the practical trainings. Total number of relevant participants to the trainings are shown in Table 2.7.30.

Table 2.7.30 Number of Participants of Pump Trainings (Support to EOs)

Participant	BPMU Hamirpur	BPMU Bilaspur	BPMU Una	BPMU Mandi	BPMU Sarkaghat	BPMU Dehra	BPMU Nurpur	BPMU Baijnath
SPMU Staff	0	0	0	0	0	0	0	0
DPMU Staff	0	0	0	0	0	1	0	0
BPMU Staff	3	4	3	0	3	3	2	2
DOA Staff	1	2	0	0	0	1	0	0
SDSCO Staff	1	2	0	0	2	2	0	0
KVA members	61	23	51	0	35	45	19	6
Service provider/ Local Technician	0	1	0	0	3	2	1	1
Total	65	30	48	0	40	49	22	9

Source: JICA TCP Experts Team

At the beginning of the practical trainings, JICA TCP found that some EOs faced issues when they try to conduct trainings because of their less experience and technical knowledge. Issue and proposed solutions for it were summarized in the Table 2.7.31. Hence, it was proposed that supporting tools are prepared for better trainings and well understanding of the Guideline which were prepared at the time of JICA TCP-1. Since the Guidelines itself had been prepared and distributed to EOs already, JICA TCP prepared check lists and other documents for EOs as next step, it is introduced in the Clause 2.5.4. Many staff in DOA don't have enough experience and technical knowledge on Motor pump and O&M in the past scheme, the checklist will be essential for their extension works in the future.

Table 2.7.31 Issues and Action to be for Pump (O&M)

No.	Issues	Issues	Proposed Solutions for Issus
1	Installation	<ul style="list-style-type: none"> No selection of PO No knowledge about pump machinery components 	<ul style="list-style-type: none"> Guideline should be followed by EOs. POs are trained by Technician (fuction of pump machinery components)

No.	Issues	Issues	Proposed Solutions for Issue
2	Operation	<ul style="list-style-type: none"> • PO has less knowledge regarding pump O&M • No manual guideline with PO 	<ul style="list-style-type: none"> • More training should be proposed for the famers by EOs • Check list will be prepared for EOs by JICA TCP
3	Maintenance	<ul style="list-style-type: none"> • No maintenance manual and schedule 	<ul style="list-style-type: none"> • Guideline and check list are followed by PO, KVA and EO's for the maintenance • Check list will be prepared for EOs by JICA TCP • Monitoring should be done by EOs
4	Extension work	<ul style="list-style-type: none"> • No practical training to EOs 	<ul style="list-style-type: none"> • More training should be done for the EOs to strengthening their capacity for pump (O&M) • Evaluation sheet are prepared by JICA TCP for selection of suitable sub-project

Source: JICA TCP Experts Team

2.7.9 Preparation of Supporting Tools for EOs

Considering sustainability of the constructed facilities, the JICA TCP prepared supporting tools such as check list and manuals for water requirement calculation. It is mentioned in the clause 2.5.4.

2.7.10 Further Discussion with DOA

Further discussion with DOA was still required aiming to ensure continuous O&M activities in each subproject after the project completion also. JICA TCP had discussion with DOA in charge regarding below items.

(1) Expected Job Profile of EOs on WM

Although the roles of ADO, AEO, and JE under DDA and SDSCO are separated, they are not separately mentioned in their job-profile in DOA as shown in Table 2.7.10. Therefore, JICA TCP had proposed new description to be added in their Job profile as shown in Table 2.7.32. This proposal had handed over to PMU and under discussion in DOA.

Table 2.7.32 Existing and Additional Job Profile for DOA EOs

Position	Existing	Additional
Agricultural Development Officers (ADOs)	<ol style="list-style-type: none"> 1. Preparation of Agriculture Extension Officer circle-wise Agriculture Production Programme 2. Arranging and stocking all the inputs at all the sale points in the block timely and adequately. 3. To coordinate stocking of fertilizer/plant protection measures at various sale points in the block with HIMFED / Coop. Societies, HPMC, HP Agro-Industries Corporation. 4. To organize farmers training camps at village level. 5. To report shortage of seed, fertilizer etc. if any, immediately, to the SMS of DDA. 6. Intensive touring during the campaign period. 7. To ensure full utilization of irrigation potential. 8. Reporting the achievement every month to the DDA's / DAO's. 	<p><u>Water Management</u></p> <ol style="list-style-type: none"> 1. Arranging trainings (awareness-building, technical support) to beneficiaries for Operation and Maintenance (O&M) after handing over of irrigation schemes.

Position	Existing	Additional
Agricultural Extension Officers (AEOs)	<ol style="list-style-type: none"> 1. Arranging supply of Agricultural inputs from District Head Quarter. 2. Organize the training camps for farmers. 3. Contacting the farmers for supply of Agriculture inputs. 4. Organise field days. 5. Collection of soil samples representing Village, Panchayats and submission to District laboratory and ensure distribution of Soil Health Cards. 6. Coordination with Panchayats (PRI's) 	<p><u>Water Management</u></p> <ol style="list-style-type: none"> 1. <i>Monitoring on the status of irrigation facilities constructed and distributed by DOA schemes and Reporting to ADOs and JEs.</i>
Sub-Divisional Soil Conservation Officers (SDSCO)	<ol style="list-style-type: none"> 1. To be responsible for the planning / execution of soil conservation minor irrigation works in their respective jurisdiction under the over all control of Deputy Director of Agriculture 	<p><u>Water Management</u></p> <ol style="list-style-type: none"> 1. <i>Preparation of Sub-division wise data/information and O&M activities of irrigation facilities.</i>
Junior Engineers (JEs)	<ol style="list-style-type: none"> 1. Designing and execution of Soil Conservation schemes and recording of measurement of works execution of Soil Conservation estimate of const of works and preparation of original map of the land to be benefited the schemes. 	<p><u>Water Management</u></p> <ol style="list-style-type: none"> 1. <i>To ensure full utilization of irrigation potential.</i> 2. <i>Arranging trainings (awareness-building, technical support) to beneficiaries for Operation and Maintenance (O&M) after handing over of irrigation schemes</i>

Note: Italic and bold text means proposed duties and responsibility on WM (this table is mentioning only WM related duties and responsibility).
Source: JICA TCP Experts Team

(2) Application of Supporting Tools to the Existing DOA Guidelines

As mentioned in above, JICA TCP has prepared some supporting tools for EOs. However, it is concerned that those tools are not used among DOA after the HPCDP-1. To avoid such situation, JICA TCP tried to apply the tools to the existing Guidelines of DOA since if the supporting tools such as check list etc. were included in it, DOA staff must use the tools in their extension activities. For the sake of the application, below steps are required according to the discussion with superintending engineer in Shimla. JICA TCP have finalized those supporting tools and PMU in HPCDP-2 is going to use those documents.

Step 1 : Preparation of Draft Documents by JICA TCP

Step 2 : Distribution of the draft to EOs/ SDSCO

Step 3 : Collection of the feedback from EOs/ SDSCO in PMU and DOA

Step 4 : Reflection of the feedback to the draft and finalization of the documents

Step 5 : Submission of the document to DOA

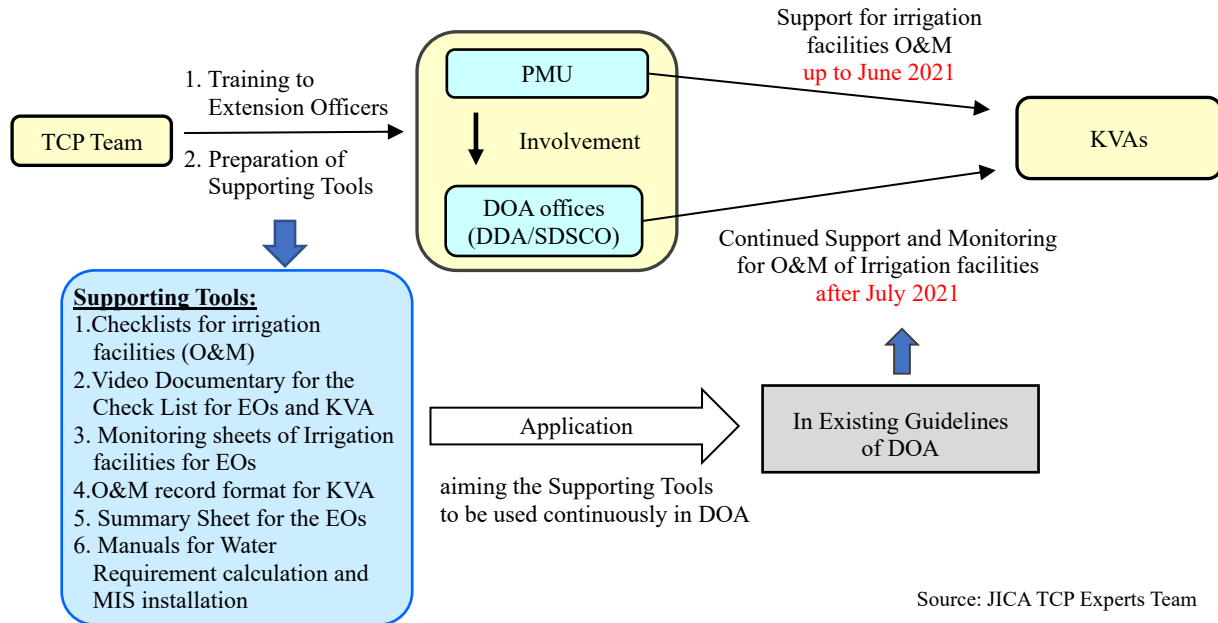


Figure 2.7.8 Relationship between Supporting tools and Existing Guidelines

2.7.11 Training and Monitoring for WRC and Check List for MIS and Pumping Machinery

(1) Training and Monitoring Water Requirement Calculation

During an assessment workshop of JICA TCP in 2019, the Extension Officers expressed their desire to learn water requirement calculations. So, it was felt urgent to impart training on water requirement calculations, a pre-requisite for planning and designing irrigation facilities, to the Extension Officers of Department of Agriculture (DOA) i.e., Deputy Directors of Agriculture (DDAs) and Sub Divisional Soil Conservation Offices (SDSCOs) and Project Management Units (PMUs) of HPCDP-1, so that they:

- Are well conversant with the identification, interpretation, importance and use of input data for water requirement calculations,
- Are familiar with the calculation process and computer excel calculation format, and
- Are able to use the output obtained for designing irrigation facilities.

It was felt that in existing excel sheet, which is in use presently for calculation of water requirement, a lot of manual calculation is also involved. As such, the excel sheet for the purpose has been modified so as to make it user friendly and only input data is required to be fed and rest of the calculations are automatic. To enable EOs to be clearer about identification, interpretation, importance and use of input data and for step-by-step procedure used for calculation in the modified excel sheet a manual on water requirement calculation has been prepared for the guidance of the extension officers.

Trainings for the extension officers as detailed below were organized in each of the five target districts during November 2021. The results are detailed in Table 2.7.33 below:

Table 2.7.33 Staff Trained by JICA TCP in WRC during November 2021

District	Office	Trained in WRC							Total
		ADO	AEO	JE	D/Man	Surveyor	AE	AO	
Hamirpur	SMS Mehre	1	-	-	-	-	-	-	1
	SDSCO	2	-	1	-	-	-	-	3
	BPMU	-	-	-	-	-	1	1	2
Bilaspur	SMS Sadar	1(DAO)	-	-	-	-	-	-	1
	SDSCO	-	2	1	-	-	-	-	3

District	Office	Trained in WRC							Total
		ADO	AEO	JE	D/Man	Surveyor	AE	AO	
	BPMU	1	-	1	-	-	1	-	3
Kangra	SMS Rait	1	-	-	-	-	-	-	1
	SMS Panchrukhi	1	-	-	-	-	-	-	1
	SDSCO Nurpur	1	1	1	-	-	-	-	3
	SDSCO Rait	1	-	-	-	-	-	-	1
	SDSCO Palampur	-	1	-	-	-	-	-	1
	SDSCO N/Bagwan	1	-	-	-	-	-	-	1
	BPMU Dehra	1(BPM)	1	1	-	-	1	-	4
	BPMU Dharamshala	-	1	1	-	-	1	-	3
BPMU Palampur	-	-	1	-	-	1	-	2	
Mandi	DPMU Mandi	1(SMS)	-	-	-	-	1	-	2
	BPMU Mandi	1(BPM) 1(ADO)	-	2	-	-	1	2	7
	BPMU Sarkaghat	-	2	2	-	-	1	-	5
	BPMU Kullu	1	2	1	-	-	-	-	4
	BPMU Gohar	1	2	2	-	-	-	-	5
Una	SMS	1	-	-	-	-	-	-	1
	SDSCO	3	-	-	1	1	-	-	5
	BPMU	1(BPM)	1	1	-	-	1	-	4
Total									63

Source) JICA TCP Experts Team

The main offices which deal with the initial planning and later on construction of the irrigation facilities are BPMUs in HPCDP-1 and SDSCOs in DOA. Extension Officers and Engineering staff in these offices is supposed to have good skills in water requirement calculations. In the five target districts of Himachal Pradesh namely Bilaspur, Hamirpur, Kangra Mandi and Una, there 9 BPMUs and 11 SDSCOs are located, as detailed below: -

Table 2.7.34 List of BPMUs and SDSCOs in Five Districts of Himachal Pradesh

BPMU under HPCDP			District	SDSCO under DOA			District
1	BPMU Bilaspur		Bilaspur	1	SDSCO Ghumarwin		Bilaspur
2	BPMU Hamirpur		Hamirpur	2	SDSCO Hamirpur		Hamirpur
3	BPMU Dharamshala		Kangra	3	SDSCO Dharamshala		Kangra
4	BPMU Kangra			4	SDSCO Dehra		
5	BPMU Palampur			5	SDSCO Fatehpur		
6	BPMU Bagsiad			6	SDSCO Nurpur		
7	BPMU Mandi		Mandi	7	SDSCO Palampur		Mandi
8	BPMU Sarkaghat			8	SDSCO Gohar		
9	BPMU Una		Una	9	SDSCO Mandi		Mandi
				10	SDSCO Sarkaghat		
				11	SDSCO Una		Una

Source) PMU, DOA, JICA TCP Experts Team

The results of monitoring / discussion held in 9 BPMUs and 11SDSCOs are detailed below: -

Table 2.7.35 Summary of Results of Monitoring / Discussion held in 9 BPMUs and 11SDSCOs

Sr. No.	BPMU / SDSCO	District	Date of Visit	Availability of Copy of WRC Document		No. of EOs Trained by CEOs	In-charge of WRC Document	Practice in WRC for Preparation of DPRs
				Soft Copy	Hard Copy			
1	BPMU Bilaspur	Bilaspur	20.01.2022	Available in Desktop	Available in Library	1	Available in LAN Sharing	5
2	BPMU Hamirpur	Hamirpur	21.01.2022	Available in Desktop	Available in Library	3	Ms. Nitika Soni AE	4
3	BPMU Una	Una	04.02.2022	Available in Desktop	Available in Library	3	Ms. Pooja Devi AE	1
4	BPMU Mandi	Mandi	09.02.2022	Available in Desktop	Available in Library	All EOs TCP trained	Ms. Shweta Kumari AE	3
5	BPMU Gohar		10.02.2022	Available in Desktop	Available in Library	All EOs TCP trained	Not yet appointed	3
6	BPMU		27.01.2022	Available in Desktop	Available in Library	All EOs	Ms. Sunita Thakur AE	1

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PROJECT COMPLETION REPORT

Sr. No.	BPMU / SDSCO	District	Date of Visit	Availability of Copy of WRC Document		No. of EOs Trained by CEOs	In-charge of WRC Document	Practice in WRC for Preparation of DPRs
				Soft Copy	Hard Copy			
	Sarkaghat					TCP trained		
7	BPMU Palampur	Kangra	17.02.2022	Available in Desktop	Available in Library	4	Sh. Vikrant Rana AE	6
8	BPMU Kangra		15.02.2022	Available in Desktop	Available in Library	1	Ms. Parika Sepehiya AO	3
9	BPMU Dharamshala		15.02.2022	Available in Desktop	Available in Library	1	Ms. Suvinka Sharma AE	2
10	SDSCO Ghumarwin	Bilaspur	20.01.2022	Available in Desktop	Available in Library	2	Sh. Shyam Lal AEO	0
11	SDSCO Hamirpur	Hamirpur	20.01.2022	Available in Desktop	Available in Library	1	-	0
12	SDSCO Una	Una	28.01.2022	Available in Desktop	Available in Library	0	Ms. Pooja Devi ADO	3
13	SDSCO Sarkaghat	Mandi	27.01.2022	*	*	-	-	-
14	SDSCO Mandi		09.02.2022	*	*	-	-	-
15	SDSCO Bagsiad		10.02.2022	*	*	-	-	-
16	SDSCO Palampur	Kangra	17.02.2022	Available in Desktop	Available in Library	0	Sh. Nitish Banta AEO	0
17	SDSCO Dehra		15.02.2022	*	*		-	-
18	SDSCO Dharamshala		24.02.2022	Available in Desktop	Available in Library	0	Ms. Akanksha Bharti AEO	0
19	SDSCO Fatehpur		22.02.2022	*	*	-	-	-
20	SDSCO Nurpur		22.02.2022	Available in Desktop	Available in Library	5	Sh. Chanchal Rana ADO	1

Note: *No EO has received JICA TCP Training
Source: JICA TCP Experts Team

It was observed that in certain SDSCOs no EO has received JICA TCP training and in other offices also there is a considerable gap between total EOs in the office and EOs trained in water requirement calculations. To bridge this gap for the sustainability of the skills in Water Requirement Calculations in these offices more JICA TCP trainings were carried out and for future sustainability of these skills the BPMUs and SDSCOs were guided/assisted to arrange internal trainings within the offices. The process of JICA TCP training and Internal training was continued in BPMUs and SDSCOs and was also continuously monitored.

The situation about training on WRC progressed and emerged as shown in the Table below. It is highly proposed that the process of learning and sharing of skills in WRC be continued through internal training arrangement.

Table 2.7.36 Office-wise Staff Trained in Water Requirement Calculation in 5 Districts

(A) 9 BPMUs

District	BPMU	EOs		Staff Trained											Untrained as in Oct. 2022		
				2021		2022											
				11	12	1	2	3	4	5	6	7	8	9		10	
Bilaspur	Bilaspur	Trained EOs	TCP Trg	5	-	-	-	-	-	-	-	-	-	-	-	-	0

PHASE II PROJECT FOR CROP DIVERSIFICATION
IN HIMACHAL PRADESH
PROJECT COMPLETION REPORT

			Int. Trg	-	-	1	-	-	-	-	-	-	-	-	
		Total EOs		6	6	6	6	6	6	6	6	6	6	6	
Hamirpur	Hamirpur	Trained	TCP Trg	3	-	-	-	-	-	-	-	-	-	-	0
		EOs	Int. Trg	-	-	3	-	-	-	-	-	-	-	-	
		Total EOs		6	6	6	6	6	6	6	6	6	6	6	
Kangra	Kangra	Trained	TCP Trg	4	-	-	-	-	-	-	-	-	-	-	0
		EOs	Int. Trg	-	-	-	1	-	-	-	-	1	-	-	
		Total EOs		6	6	6	6	6	6	6	6	6	6	6	
	Dharamshala	Trained	TCP Trg	3	-	-	-	-	-	-	-	-	-	-	0
		EOs	Int. Trg	-	-	-	1	-	-	-	-	1	-	-	
		Total EOs		5	5	5	5	5	5	5	5	5	5	5	
Palampur	Trained	TCP Trg	2	-	-	-	-	-	-	-	-	-	-	0	
	EOs	Int. Trg	-	-	-	4	-	-	-	-	-	-	-		
	Total EOs		6	6	6	6	6	6	6	6	6	6	6		
Mandi	Sarkaghat	Trained	TCP Trg	5	-	-	-	-	-	-	-	-	-	0	
		EOs	Int. Trg	-	-	-	-	-	-	-	1	-	-		
		Total EOs		6	6	6	6	6	6	6	6	6	6		6
	Mandi	Trained	TCP Trg	7	-	-	-	-	-	-	-	-	-	0	
		EOs	Int. Trg	-	-	-	-	-	-	-	-	-	-		
		Total EOs		7	7	7	7	7	7	7	7	7	7		7
Gohar	Trained	TCP Trg	5	-	-	(-1)*	-	-	-	-	-	-	0		
	EOs	Int. Trg	-	-	-	-	-	-	-	-	1	-			
	Total EOs		5	5	5	5	5	5	5	5	5	5		5	
Una	Una	Trained	TCP Trg	4	-	-	-	-	-	-	(-2)*	-	(-1)*	0	
		EOs	Int. Trg	-	-	-	2	-	-	-	-	3	-		
		Total EOs		6	6	6	6	6	6	6	8	8	6		6
Total	Trained	TCP Trg	38	-	-	-	-	-	-	-	-	-	-	0	
	EOs	Int. Trg	-	-	4	8	-	-	-	-	1	3	3		
	Total EOs		53	53	53	53	53	53	53	53	55	55	53		53

Remarks: * transferred / retired/ left the job, #to be trained internally, #1 require JICA TCP Training

TCP Trg.: Trained by JICA TCP Int. Trg.: Trained through Internal training

EOs: (Extension Officers + Engineering Staff): (BPM, ADO, AEO, AE, AO, JE, DM/JDM and Surveyor)

Source: JICA TCP Experts Team

(B) 11 SDSCOs

District	SDSCO	EOs		Staff Trained										Untrained as in Oct. 2022	
				2021		2022									
				11	12	1	2	3	4	5	6	7	8		9	10
Bilaspur	Ghumarwin	Trained	TCP Trg	3	-	(-1)*	-	-	-	-	5	-	-	-	0
		EOs	Int. Trg	-	-	2	-	-	-	-	-	-	-	-	
		Total EOs		9	9	9	9	9	9	9	9	9	9	9	
Hamirpur	Hamirpur	Trained	TCP Trg	4	-	(-1)*	-	-	-	-	3	-	-	0	
		EOs	Int. Trg	-	-	1	-	-	-	-	-	2	-		
		Total EOs		11	11	11	11	11	11	11	11	11	9		9
Kangra	Dehra	Trained	TCP Trg	-	-	-	-	6	-	-	-	-	-	1#	
		EOs	Int. Trg	-	-	-	-	-	-	-	-	2	-		
		Total EOs		9	9	9	9	9	9	9	9	9	9		9
	Fatehpur	Trained	TCP Trg	-	-	-	-	6	-	-	-	-	-	0	
		EOs	Int. Trg	-	-	-	-	-	-	-	-	-	-		
		Total EOs		6	6	6	6	6	6	6	6	6	6		6
Nurpur	Trained	TCP Trg	4	-	-	(-1)*	-	-	-	-	-	-	1#		
	EOs	Int. Trg	-	-	-	4	-	-	-	-	2	-			
	Total EOs		10	10	10	10	10	10	10	10	10	10		10	
Dharamshala	Trained	TCP Trg	3	-	-	(-2)*	-	7	-	-	-	-	0		
	EOs	Int. Trg	-	-	-	-	-	-	-	-	2	-			
	Total EOs		10	10	10	10	10	10	10	10	10	10		10	
Palampur	Trained	TCP Trg	1	-	-	-	-	6	-	4	-	-	0		
	EOs	Int. Trg	-	-	-	-	-	-	-	-	4	-			
	Total EOs		13	13	13	13	13	15	15	15	15	15		15	
Mandi	Sarkaghat	Trained	TCP Trg	-	-	-	-	8	-	-	-	-	-	0	
		EOs	Int. Trg	-	-	-	-	-	-	-	-	1	-		
		Total EOs		11	11	11	11	11	11	11	11	11	9		9
	Mandi	Trained	TCP Trg	-	-	-	-	-	6	-	5	-	-	0	
		EOs	Int. Trg	-	-	-	-	-	-	-	-	2	-		
Total EOs		13	13	13	13	13	13	13	13	13	13	13			
		Trained	TCP Trg	-	-	-	-	-	9	-	-	-	-		

District	SDSCO	EOs		Staff Trained										Untrained as in Oct. 2022			
				2021		2022											
				11	12	1	2	3	4	5	6	7	8		9	10	
	Bagsiad	EOs	Int. Trg	-	-	-	-	-	-	-	-	-	-	-	1	-	0
		Total EOs		10	10	10	10	10	10	10	10	10	10	10	10	10	
Una	Una	Trained EOs	TCP Trg	5	-	-	-	-	-	-	-	-	-	-	-	-	0
			Int. Trg	-	-	-	-	-	-	-	-	4	-	-	-		
		Total EOs		11	11	11	11	11	11	11	11	11	9	9	9	9	
Total		Trained EOs	TCP Trg	20	-	-	-	20	28	-	17	-	-	-	-	-	2#
			Int. Trg	-	-	3	4	-	-	-	-	4	10	6	-		
		Total EOs		113	113	113	113	113	115	115	115	113	111	109	109		

Remarks: * transferred / retired/ left the job, #to be trained internally
 TCP Trg.: Trained by JICA TCP Int. Trg.: Trained through Internal training
 EOs: (Extension Officers + Engineering Staff): (i.e., SDSCO, ADO, AEO, JE, DM/JDM and Surveyor)
 Source: JICA TCP Experts Team

(2) Monitoring / Discussion on use of Checklist for MIS and Water Pumping Machinery

Survey visits were made in July, 2022 to BPMUs Sarkaghat, Bilaspur and SDSCOs Sarkaghat, Ghumarwin and in September, 2022 to BPMU Una and SDSCO Una for the purpose of monitoring the use of checklist prepared by JICA TCP for installation, maintenance and repair of the Micro Irrigation System (MIS) and Water Pumping Machinery. The situation / findings and proposed remedies listed as under:

Table 2.7.37 Findings of Survey Visit on Use of Checklists for MIS

District	Participating offices	Findings	Remedies
Mandi	BPMU Sarkaghat	i) Checklists available in office library ii) Soft copy of checklists available in office desktop computer iii) Discussion on checklist points held with EOs. No change suggested by EOs. iv) No opportunity so far during this year for using the checklists.	It is proposed that in the remaining BPMUs and SDSCOs the respective DDA and DPM shall ensure: i) Availability of Checklists in Office Library of BPM / SDSCO ii) Availability of Soft copy of checklists in office desktop computer of BPM / SDSCO iii) Use of checklists during planning, installation and maintenance of MIS and Pumping Machinery & Operation and Maintenance of these systems iv) For sustainability, internal trainings to more EOs
Mandi	SDSCO Sarkaghat		
Bilaspur	BPMU Bilaspur		
Bilaspur	SDSCO Ghumarwin		
Una	BPMU Una		
Una	SDSCO Una		

Source) JICA TCP Experts Team

Discussion was also held with Extension Officers in each office for better understanding / clarification of each point of the checklist, for keeping a copy of the checklist in office library, and regarding use of checklist during planning, construction, supervision and maintenance of Micro Irrigation Systems and Pumping Machinery and also for operation & maintenance of these systems.

2.8 In-Country Training in India

In-Country Training in India was conducted for the purpose of understanding agricultural activities in other states and utilizing those knowledge and experience for promoting crop diversification in HP. Summary of 3 trainings conducted are show in the table as follows:

Table 2.8.1 Summary of In-Country Training

No.	Period	Area	Trainee	Content
1	From 3 rd July to 6 th July 2017	Haryana	Management class officers	<ul style="list-style-type: none"> • Nursery • Protected cultivation

No.	Period	Area	Trainee	Content
2	From 21 st November to 24 th November 2018	Haryana and Punjab	Extension officers and farmers	<ul style="list-style-type: none"> • Organic agriculture • Farmer's group formulation • Agricultural products distribution • Safety agricultural products • Local specialty • Agro-tourism
3	From 19 th September to 24 th September 2022	Haryana and Punjab	Management class officers	<ul style="list-style-type: none"> • Vegetable cultivation and variety • Organic agriculture • Hydroponic cultivation • Nursery • Protected cultivation • Farm mechanization • Farmer's group formulation • Disease and pest control • Agricultural products distribution • Marketing

Source: JICA TCP Experts Team

2.9 Overseas Training in Japan

Overseas Training in Japan was conducted for the purpose of understanding agricultural activities in Japan and utilizing those knowledge and experience for promoting crop diversification in HP. Summary of 3 trainings conducted are show in the table as follows:

Table 2.9.1 Summary of Overseas Training

No.	Period	Venue	Trainee	Content
1	From 1 st November to 12 th November 2017	Japan	Management class officers	<ul style="list-style-type: none"> • Vegetable farming in protected cultivation • Administrative activities related to vegetable farming, distribution and selling • Integration among production, process and selling, and Agro-tourism
2	From 4 th September to 4 th October 2018	Japan	Extension officers and farmers	<ul style="list-style-type: none"> • Vegetable farming • How to use agricultural machines • Post harvest technology • Agricultural products distribution through market • Local specialty
3	From 25 th July to 30 th July 2022	Online	Management class officers	<ul style="list-style-type: none"> • Marketing by using the internet and SNS • Protected cultivation, research and education for tomato production • Cold chain by using IceBattery • Local agricultural products distribution by using IoT • Farm mechanization in HP • Agricultural extension system in Japan

Source: JICA TCP Experts Team

2.10 Gender Baseline Survey

Gender baseline survey by questionnaire was conducted for the purpose of understanding situation of

gender for promoting crop diversification in HP. Survey method, results and analysis, and conclusion and recommendation are summarized as follows:

(1) Survey Method

- One sub-project where crop diversification has been progressing was selected from each block for implementation of the survey based on the list of sub-projects under HPCDP-1.
- In total, 8 sample sub-projects were selected for the Gender Baseline Survey.

(2) Results and Analysis

- Men have lesser involvement in the household chores in comparison to the women, which has however, increased in recent years.
- Women of the rural households of the eight subprojects under HPCDP-1 are playing dual roles as a farmer and homemaker.
- In general, differences of daily working hours are not remarkable between men and women.
- In many of the subprojects, BPMUs and DOA point out that women have now become more active in decision making
- APMCs in all the subprojects have reported 100% involvement of males in Marketing Board of APMC and no females visit for sale of produce whereas women have now started to sell their produce in local markets.

(3) Conclusion and Recommendation

- It can be concluded that change in men-women dynamics and participation is at nascent stage, initiated with the project activities as well as with other factors.
- The traditional division of works is now gradually becoming more flexible in rural households of HP and the society has recognized that women play important roles in agriculture.
- However, agriculture work can sometimes increase burden on women. As project interventions, it is recommended to continue creating opportunities of equal participation of men and women in trainings and meetings, moderately following the situation changing in the field.
- Continuous empowerment of female farmers shall be recommended through SHGs support or implementation of the food diversification activities.

2.11 Baseline and Endline Survey

Baseline survey in 2017 and endline survey in 2022 by questionnaire to farmers were conducted for the purpose of comparing crop diversification situation in HPCDP-1 before and after JICA TCP. Both surveys were conducted by subcontract. Comparison of main survey items are shown as follows:

Table 2.11.1 Comparison of Major Survey Items

Survey Item	Unit	Before JICA TCP (2016/2017)	After JICA TCP (2021/22)	
			Sub-projects with TCP activities	Sub-projects without TCP activities
Land use pattern in CCA per FHH	kanal			
(1) Cultivated land for food crops		(1) 4.48	6.60	
(2) Cultivated land for vegetables		(2) 1.01	3.15	
Annual income by Vegetables per FHH	Rs.	4,961	27,173	21,254

Survey Item	Unit	Before JICA TCP (2016/2017)	After JICA TCP (2021/22)	
			Sub-projects with TCP activities	Sub-projects without TCP activities
Quantity of farm produce marketed within and outside the state per FHH	kg	729	933	850
Household satisfaction with current extension services	%	66	92	52
Intension of Household to cultivate more vegetables	%	63	72	
Points for future improvement (Farmer's proportion)	%			
(1) More information on profitable crops		(1) 23	7	
(2) More fertilizer		(2) 14	19	
(3) Quality seeds		(3) 15	22	
(4) Skills for cultivation		(4) 10	12	

Source: JICA TCP Experts Team

2.12 Work Engagement by Japanese Experts

Work engagement by Japanese experts in the project is shown in the Attachment-2.12.1.

CHAPTER 3 PROJECT ACHIEVEMENT

3.1 Project Design Matrix (PDM)

Indicators for project output and achievement is supposed to be fixed by DOA and PMU. Therefore, at the beginning of the project, some indicators in the PDM had been kept blank. The blank indicators were finalized as following table and approved at the 5th JCC meeting convened on June 29, 2019. As a result, the PDM was updated as shown in Attachment-1.3.1.

Table 3.1.1 Blank Variable Indicators in the PDM

No.	Blank Variable Indicators (PDM)	Indicators settled
Over All Goal :		
1	**% of area under vegetable cultivation and quantity produced in the 5 districts are increased (against baseline data)	15%
2	**% of quantity of farm produce marketed within and outside the State is increased (against baseline data)	18%
Project Purpose :		
1	Extension programmes/activities for crop diversification implemented by DOA are improved in the sub project areas under the ODA Loan Project (**% of trainings to farmers targeted in the annual plans are conducted)	8%
2	Number of farmers practicing vegetable cultivation in the sub project areas under the ODA Loan Project is increased by **%	20%
Outputs :		
2.1	** Packages of standardized techniques to promote crop diversification are prepared.	5 packages

Source: DOA, PMU and JICA TCP Experts Team

3.2 Achievement of Project Outputs

Achievement progress of project outputs are as follows:

Table 3.2.1 Achievement of Project Outputs

Indicators	Achievement Progress																	
1. Technical capacity of DOA/PMU staff to promote crop diversification practices is strengthened																		
1.1 Number of techniques provided to farmers by core extension officers (CEOs) is increased	<p><u>Progress: achieved</u></p> <ul style="list-style-type: none"> ➤ Result of questionnaire survey to EOs is shown as follows: ➤ More than 90% of EOs answered that they got useful knowledge and experience about techniques to be provided to farmers from training programme of JICA TCP. ➤ More than 80 % of EOs answered that they applied the learnings and experience from training programme of JICA TCP in their extension activities. <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;">Question</th> <th style="width: 10%;">Answers</th> <th style="width: 10%;">Proportion</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Did you get useful knowledge and experience about techniques to be provided to farmers from training programme of JICA TCP?</td> <td>Yes</td> <td>199</td> <td>87%</td> </tr> <tr> <td>No</td> <td>9</td> <td>4%</td> </tr> <tr> <td rowspan="2">Have you applied the learnings/experience from training programme of JICA TCP in your extension activities?</td> <td>Yes</td> <td>181</td> <td>79%</td> </tr> <tr> <td>No</td> <td>42</td> <td>18%</td> </tr> </tbody> </table>	Question	Answers	Proportion	Did you get useful knowledge and experience about techniques to be provided to farmers from training programme of JICA TCP?	Yes	199	87%	No	9	4%	Have you applied the learnings/experience from training programme of JICA TCP in your extension activities?	Yes	181	79%	No	42	18%
Question	Answers	Proportion																
Did you get useful knowledge and experience about techniques to be provided to farmers from training programme of JICA TCP?	Yes	199	87%															
	No	9	4%															
Have you applied the learnings/experience from training programme of JICA TCP in your extension activities?	Yes	181	79%															
	No	42	18%															

<p>1.2 Number of techniques provided to farmers by other DOA/PMU staff are increased</p>	<p><u>Progress: achieved</u></p> <ul style="list-style-type: none"> ➤ Result of questionnaire survey to EOs is shown as follows: ➤ About 90% of EOs answered that they shared their experience with other extension officers in their office. ➤ More than 60% of EOs thought that other staff got more techniques to be provided to farmers from their sharing. <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Question</th> <th style="width: 10%;">Answers</th> <th style="width: 10%;">Answers</th> <th style="width: 10%;">Proportion</th> </tr> </thead> <tbody> <tr> <td rowspan="2">After participating in training programme of JICA TCP, did you share your experience with other extension officers in your office?</td> <td>Yes</td> <td>206</td> <td>90%</td> </tr> <tr> <td>No</td> <td>22</td> <td>10%</td> </tr> <tr> <td rowspan="3">Do you think that other staff got more techniques to be provided to farmers from your sharing?</td> <td>Yes</td> <td>146</td> <td>64%</td> </tr> <tr> <td>No</td> <td>2</td> <td>1%</td> </tr> <tr> <td>Not sure</td> <td>53</td> <td>23%</td> </tr> </tbody> </table>	Question	Answers	Answers	Proportion	After participating in training programme of JICA TCP, did you share your experience with other extension officers in your office?	Yes	206	90%	No	22	10%	Do you think that other staff got more techniques to be provided to farmers from your sharing?	Yes	146	64%	No	2	1%	Not sure	53	23%																																																																											
Question	Answers	Answers	Proportion																																																																																														
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	No	2	1%																																																																																														
	Not sure	53	23%																																																																																														
<p>1.3 Satisfaction degree of farmers on extension services provided by DOA/PMU is improved</p>	<p><u>Progress: achieved</u></p> <ul style="list-style-type: none"> ➤ Result of baseline and endline survey is shown as follows: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;">Content</th> <th style="width: 20%;">Baseline</th> <th style="width: 20%;">Endline</th> </tr> </thead> <tbody> <tr> <td>Satisfaction degree of farmers on extension services</td> <td style="text-align: center;">66%</td> <td style="text-align: center;">71%</td> </tr> </tbody> </table>	Content	Baseline	Endline	Satisfaction degree of farmers on extension services	66%	71%																																																																																										
Content	Baseline	Endline																																																																																															
Satisfaction degree of farmers on extension services	66%	71%																																																																																															
<p>2. Through activities in pilot areas, packages of techniques to promote crop diversification are compiled</p>																																																																																																	
<p>2.1 5 packages of standardized techniques to promote crop diversification are prepared</p>	<p><u>Progress: achieved</u></p> <ul style="list-style-type: none"> ➤ 5 Package of standardized techniques are compiled as follows: ➤ Extension materials as picture story style were prepared that are method for extension officers to easily disseminate the techniques at site. <ol style="list-style-type: none"> (1) Nursery Raising (2) Fertilizer Application (3) Vegetative Propagation (Cutting and Grafting) (4) Protected Cultivation (5) Local Specialty Production 																																																																																																
<p>2.2 Indicators of crop diversification (i.e. area under vegetables production and income) are increased in the pilot areas</p>	<p><u>Progress: achieved</u></p> <ul style="list-style-type: none"> ➤ Area under vegetables production and income in the pilot areas after JICA TCP are shown as follows: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 20%;">Pilot area</th> <th style="width: 10%;">Season</th> <th style="width: 15%;">Area (m²)</th> <th style="width: 15%;">Income (Rs.)</th> </tr> </thead> <tbody> <tr> <td colspan="4">Stage-1</td> </tr> <tr> <td rowspan="2">Chelleli</td> <td>Rabi</td> <td>123</td> <td>23,460</td> </tr> <tr> <td>Kharif</td> <td>123</td> <td>12,000</td> </tr> <tr> <td rowspan="2">Gela Kuhl</td> <td>Rabi</td> <td>70</td> <td>133,000</td> </tr> <tr> <td>Kharif</td> <td>70</td> <td>209,000</td> </tr> <tr> <td rowspan="2">Gabli Kuhl</td> <td>Rabi</td> <td>4,860</td> <td>80,000</td> </tr> <tr> <td>Kharif</td> <td>4,860</td> <td>187,000</td> </tr> <tr> <td rowspan="2">Sandral</td> <td>Rabi</td> <td>800</td> <td>18,000</td> </tr> <tr> <td>Kharif</td> <td style="text-align: center;">-</td> <td style="text-align: center;">-</td> </tr> <tr> <td rowspan="2">Jai Khad Dhangadhar</td> <td>Rabi</td> <td style="text-align: center;">-</td> <td style="text-align: center;">-</td> </tr> <tr> <td>Kharif</td> <td>9,200</td> <td>316,000</td> </tr> <tr> <td rowspan="2">Johar Dariya</td> <td>Rabi</td> <td>30</td> <td>11,775</td> </tr> <tr> <td>Kharif</td> <td>30</td> <td>7,960</td> </tr> <tr> <td rowspan="2">Badhera Lower</td> <td>Rabi</td> <td>6,018</td> <td>37,000</td> </tr> <tr> <td>Kharif</td> <td>6,018</td> <td>6,810</td> </tr> <tr> <td rowspan="2">Balhseena</td> <td>Rabi</td> <td>129</td> <td>26,500</td> </tr> <tr> <td>Kharif</td> <td>129</td> <td>30,000</td> </tr> <tr> <td colspan="4">Stage-2</td> </tr> <tr> <td rowspan="2">Dudhana</td> <td>Rabi</td> <td>1,600</td> <td>16,000</td> </tr> <tr> <td>Kharif</td> <td>1,700</td> <td>50,000</td> </tr> <tr> <td rowspan="2">Dughiari</td> <td>Rabi</td> <td>505</td> <td>25,000</td> </tr> <tr> <td>Kharif</td> <td>505</td> <td>35,000</td> </tr> <tr> <td rowspan="2">Hartara</td> <td>Rabi</td> <td>76</td> <td>40,000</td> </tr> <tr> <td>Kharif</td> <td>76</td> <td>48,000</td> </tr> <tr> <td rowspan="2">Dhamella</td> <td>Rabi</td> <td>4,070</td> <td>150,000</td> </tr> <tr> <td>Kharif</td> <td>4,070</td> <td>100,000</td> </tr> </tbody> </table>	Pilot area	Season	Area (m ²)	Income (Rs.)	Stage-1				Chelleli	Rabi	123	23,460	Kharif	123	12,000	Gela Kuhl	Rabi	70	133,000	Kharif	70	209,000	Gabli Kuhl	Rabi	4,860	80,000	Kharif	4,860	187,000	Sandral	Rabi	800	18,000	Kharif	-	-	Jai Khad Dhangadhar	Rabi	-	-	Kharif	9,200	316,000	Johar Dariya	Rabi	30	11,775	Kharif	30	7,960	Badhera Lower	Rabi	6,018	37,000	Kharif	6,018	6,810	Balhseena	Rabi	129	26,500	Kharif	129	30,000	Stage-2				Dudhana	Rabi	1,600	16,000	Kharif	1,700	50,000	Dughiari	Rabi	505	25,000	Kharif	505	35,000	Hartara	Rabi	76	40,000	Kharif	76	48,000	Dhamella	Rabi	4,070	150,000	Kharif	4,070	100,000
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		Sathru	Rabi	600	27,000														
			Kharif	600	25,000														
		Jhamradiyan	Rabi	4,991	40,000														
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		Note: Most of farmers have no experience on vegetable cultivation. Therefore, data before the pilot activities are not available and would be considered as almost 0.																	
3. Effective marketing activities for farm produce are identified																			
3.1	Recommendation for effective activities to improve marketing of farm produce are made	<p>Progress: achieved</p> <ul style="list-style-type: none"> ➤ Effective activities to improve marketing of farm produce are made as follow: <ol style="list-style-type: none"> (1) Promotion of market-oriented production planning by farmers <ul style="list-style-type: none"> - Assistance on production planning (open field, poly-house, and whole farm) - Assistance on production planning to target a particular customer (2) Promotion of direct sales to local consumers <ul style="list-style-type: none"> - Support the installation of collection point - Assistance to put a farmer-made plan into practice as follows: <ul style="list-style-type: none"> ✓ Start up a mini-tomato production to sell to Green Leaf ✓ Planned production of Pak-choi in poly-house to sell to Tibetan monastery ✓ Support the very beginner farmer for starting a commercial production - Fact-finding survey (project formulation) (3) Promotion of collective shipment to APMC market yards <ul style="list-style-type: none"> - Support for linkage building with wholesalers (C/A) who deal with exotic vegetables in Chandigarh (4) Promotion of vegetable production aim to sell at time of higher-price <ul style="list-style-type: none"> - Developing time-shifted cultivation method as follows: <ul style="list-style-type: none"> ✓ Early cultivation of okra and cucumber to harvest in April – June ✓ Early cultivation of cole crops by use of mulching sheet ✓ Cucumber & Early cauliflower cultivation by use of mulching sheet ✓ Coriander cultivation in Jul-Aug under poly-sheet roof ✓ Cucumber + Early cauliflower cultivation in paddy area by use of mulching sheet, furrow irrigation and underground drain - Promotion of developed time-shifted as follows: <ul style="list-style-type: none"> ✓ Promotion of Cucumber & Early cauliflower cultivation by use of mulching sheet & drip irrigation - Assistance to put a farmer-made plan into practice as follows: <ul style="list-style-type: none"> ✓ Cultivation of early cucumber + other crops in poly house (5) Other <ul style="list-style-type: none"> - Anaerobic/Biological Soil Disinfestation inside poly house 																	
4. Sustainable plans of DOA to promote crop diversification in the respective 5 districts are formulated on achievement of the project																			
4.1	Five-year-action plans in the respective 5 districts after completion of the project are formulated and approved by DOA	<p>Progress: achieved</p> <ul style="list-style-type: none"> ➤ Five-year-action plans in 133 sub-projects out of 210 sub-projects are formulated as follows: ➤ Formulated five-year-action plans are approved by DOA in 12th JCC. <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>District</th> <th>No. of sub-projects where five-year-action plans are formulated</th> </tr> </thead> <tbody> <tr> <td>Bilaspur</td> <td>13</td> </tr> <tr> <td>Hamirpur</td> <td>19</td> </tr> <tr> <td>Mandi</td> <td>47</td> </tr> <tr> <td>Kangra</td> <td>39</td> </tr> <tr> <td>Una</td> <td>15</td> </tr> <tr> <td>Total</td> <td>133</td> </tr> </tbody> </table>				District	No. of sub-projects where five-year-action plans are formulated	Bilaspur	13	Hamirpur	19	Mandi	47	Kangra	39	Una	15	Total	133
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Total	133																		

<p>4.2 Crop diversification guidelines and training materials are refined</p>	<p>Progress: Substantially achieved</p> <ul style="list-style-type: none"> ➤ New committee was established to continuously manage and update various guidelines and training materials in DOA. Actual management and updating of the documents is conducted by Agriculture Information Unit (AIU) in DOA. ➤ Basically, “crop diversification guideline” is referred to “Guideline prepared by JICA TCP Phase 1”. On the other hand, there are other materials like guideline and manuals prepared by DOA, training materials prepared by HPCDP-1 and other related materials. ➤ It is important that those documents should be utilized for extension activity at site. However, the documents are not managed well by DOA at present and they are not integrated. In addition, the documents are not utilized at site and necessary updating is not conducted either. ➤ From now on, various request for updating and preparing new material from extension officers who utilize the documents at site is reported to AIU and new committee works as management office for a whole smooth procedure. The committee gives direction of updating to AIU once a half year or a year and AIU is in charge of actual updating. ➤ Uploading extension materials in Web site of DOA is required.
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Source: JICA TCP Experts Team

3.3 Achievement of Project Purposes

Achievement progress of project purposes are as follows:

Table 3.3.1 Achievement of Project Purposes

Indicators	Achievement Progress																																							
Project Purposes: Organizational capacity of DOA to promote crop diversification in the 5 districts is strengthened																																								
<p>1. Extension programmes / activities for crop diversification implemented by DOA are improved in the sub-project area under the ODA loan project (8% of trainings to farmers targeted in the annual plans are conducted)</p>	<p>Progress: Substantially achieved</p> <ul style="list-style-type: none"> ➤ In DOA’s existing schemes, there are few schemes related to vegetable farming and no scheme including field demonstration for vegetable cultivation (that’s why JICA TCP requested DOA to formulate new scheme covering them). ➤ Under one existing scheme (RKVY), extension officers supply vegetable seeds to farmers and this is considered as limited one of extension programmes / activities for crop diversification implemented by DOA under current existing schemes. ➤ Cultivated area with RKVY in each district and cultivated area with RKVY in HPCDP-1 sub-projects in the 5 districts in 2020-21 are shown as follows: ➤ 13,321ha were covered by RKVY in the 5districts, while 811ha in HPCDP-1 were covered by RKVY and its proportion is 6%. <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th rowspan="2">District</th> <th>District</th> <th colspan="3">90 Sub-projects with RKVY</th> </tr> <tr> <th>Vege. in Rabi (ha)</th> <th>Total (ha)</th> <th>Vege. In Rabi (ha)</th> <th>Vege.in Rabi in District (%)</th> </tr> </thead> <tbody> <tr> <td>Bilaspur</td> <td>1,201</td> <td>203</td> <td>53</td> <td>4</td> </tr> <tr> <td>Hamirpur</td> <td>1,648</td> <td>107</td> <td>27</td> <td>2</td> </tr> <tr> <td>Mandi</td> <td>3,914</td> <td>1,008</td> <td>351</td> <td>9</td> </tr> <tr> <td>Kangra</td> <td>5,418</td> <td>573</td> <td>356</td> <td>7</td> </tr> <tr> <td>Una</td> <td>1,140</td> <td>49</td> <td>24</td> <td>2</td> </tr> <tr> <td>Total</td> <td>13,321</td> <td>1,983</td> <td>811</td> <td>6</td> </tr> </tbody> </table> <p>Note : Before project implementation, it is intimated that there are limited farmers to cultivate vegetables in sub-projects of HPCDP. Most of farmers in HPCDP have less experience on purchase of vegetable seeds. Therefore, it is intimated that the data on cultivated area applied sold vegetable seeds before project implementation is not available and would be considered as almost nil.</p>	District	District	90 Sub-projects with RKVY			Vege. in Rabi (ha)	Total (ha)	Vege. In Rabi (ha)	Vege.in Rabi in District (%)	Bilaspur	1,201	203	53	4	Hamirpur	1,648	107	27	2	Mandi	3,914	1,008	351	9	Kangra	5,418	573	356	7	Una	1,140	49	24	2	Total	13,321	1,983	811	6
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2. Number of farmers practicing vegetable cultivation in the sub-project area under the ODA loan project is increased by 20%	<p>Progress: achieved</p> <ul style="list-style-type: none"> ➤ Proportion of all farmers practicing vegetable cultivation in the sub-projects is around 70% out of total farmers, while proportion of commercial vegetable farmers is 27% out of total farmers as follows: ➤ A number of farmers have limited vegetable cultivation in their kitchen garden, thus there is scarcely vegetable cultivation in the CCA before implementation of the project. It means that number of farmers practicing vegetable cultivation in the sub-projects is increased by over 20% under HPCDP-1. <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th rowspan="2">District</th> <th rowspan="2">Total Farmer (No.)</th> <th colspan="2">After Project Implementation</th> </tr> <tr> <th>Proportion of All Vegetable Farmer (%)</th> <th>Proportion of Commercial Vegetable Farmer (%)</th> </tr> </thead> <tbody> <tr> <td>Bilaspur</td> <td>732</td> <td>83</td> <td>23</td> </tr> <tr> <td>Hamirpur</td> <td>1,167</td> <td>58</td> <td>11</td> </tr> <tr> <td>Mandi</td> <td>4,779</td> <td>74</td> <td>31</td> </tr> <tr> <td>Kangra</td> <td>8,421</td> <td>68</td> <td>27</td> </tr> <tr> <td>Una</td> <td>607</td> <td>76</td> <td>23</td> </tr> <tr> <td>Total</td> <td>15,706</td> <td>70</td> <td>27</td> </tr> </tbody> </table> <p>Note: A number of farmers have limited vegetable cultivation in their kitchen garden, thus there is scarcely vegetable cultivation for commercial purpose in the CCA before implementation of the project.</p>	District	Total Farmer (No.)	After Project Implementation		Proportion of All Vegetable Farmer (%)	Proportion of Commercial Vegetable Farmer (%)	Bilaspur	732	83	23	Hamirpur	1,167	58	11	Mandi	4,779	74	31	Kangra	8,421	68	27	Una	607	76	23	Total	15,706	70	27
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Source: JICA TCP Experts Team

3.4 Prediction of Overall Goal Achievement

Prediction of overall goal achievement is as follows:

Table 3.4.1 Prediction of Overall Goal Achievement

Indicators	Achievement Progress																											
Overall Goal: Crop diversification according to Agro-Ecological situation is promoted in the 5 districts of Himachal Pradesh																												
1. 15% of area under vegetable cultivation and quantity produced in the 5 districts are increased (against baseline data)	<p>Progress: predicted to be achieved conditionally</p> <ul style="list-style-type: none"> ➤ As 2016-17 (before TCP) is baseline, comparison with 2021-22 (after TCP) including COVID-19 effect and comparison with 2019-20 not including COVID-19 effect are shown as follows: ➤ In comparison with 2021-22, increase rate of area is 7.00% and that of quantity produced is 2.10%. ➤ In comparison with 2019-20 not including COVID-19 effect, on the other hand, increase rate of area is 5.49% and that of quantity produced is 6.63%. ➤ There are two estimated reasons that increase rate of quantity produced is not increased as much as that of area in 2021-22. ➤ One reason is restriction to EOs in HPCDP-1 towards field work due to intermittent lock-down and prohibiting gathering by COVID-19 since August 2021. ➤ The other reason is limited extension activity at site by EOs in DOA (After handing over of 210 sub-projects from HPCDP-1 to DOA, extension activity at site in the sub-projects are also limited). ➤ On condition that situation of field work by EOs of DOA is improved, this indicator is expected to be achieved. <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th rowspan="2">Content</th> <th colspan="3">Including COVID-19 effect</th> <th colspan="3">Not including COVID-19 effect</th> </tr> <tr> <th>2016-17</th> <th>2021-22</th> <th>Increase Rate</th> <th>2016-17</th> <th>2019-20</th> <th>Increase Rate</th> </tr> </thead> <tbody> <tr> <td>Area (ha)</td> <td>28,451</td> <td>30,443</td> <td>7%</td> <td>28,451</td> <td>30,012</td> <td>5%</td> </tr> <tr> <td>quantity produced (t)</td> <td>587,977</td> <td>600,309</td> <td>2%</td> <td>587,977</td> <td>626,941</td> <td>6%</td> </tr> </tbody> </table>	Content	Including COVID-19 effect			Not including COVID-19 effect			2016-17	2021-22	Increase Rate	2016-17	2019-20	Increase Rate	Area (ha)	28,451	30,443	7%	28,451	30,012	5%	quantity produced (t)	587,977	600,309	2%	587,977	626,941	6%
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<p>2. 18% of quantity of farm produce marketed within and outside the state is increased (against baseline data)</p> <p>※ Amount of farm produce (vegetables) in the target 5 districts marketed within and outside HP state</p>	<p><u>Progress: achieved</u></p> <ul style="list-style-type: none"> ➤ Baseline data was obtained from the Baseline Survey conducted in May 2017. ➤ Data after project implementation was confirmed by the Endline Survey conducted in September 2022. ➤ In the endline survey, current situations in 2 types of sub-projects, that is with and without JICA TCP activities were clarified as follows: <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th rowspan="2" style="width: 25%;">Before Project Implementation (Baseline Survey in 2017) (kg/FHH)</th> <th colspan="2" style="width: 40%;">After Project Implementation (Endline Survey in 2022)</th> <th colspan="2" style="width: 35%;">Incremental Rate (%)</th> </tr> <tr> <th style="width: 15%;">With TCP activities (kg/FHH)</th> <th style="width: 25%;">without TCP activities (kg/FHH)</th> <th style="width: 15%;">with TCP activities</th> <th style="width: 15%;">without TCP activities</th> </tr> </thead> <tbody> <tr> <td>729</td> <td>933</td> <td>850</td> <td>30</td> <td>17</td> </tr> </tbody> </table>	Before Project Implementation (Baseline Survey in 2017) (kg/FHH)	After Project Implementation (Endline Survey in 2022)		Incremental Rate (%)		With TCP activities (kg/FHH)	without TCP activities (kg/FHH)	with TCP activities	without TCP activities	729	933	850	30	17
Before Project Implementation (Baseline Survey in 2017) (kg/FHH)	After Project Implementation (Endline Survey in 2022)		Incremental Rate (%)												
	With TCP activities (kg/FHH)	without TCP activities (kg/FHH)	with TCP activities	without TCP activities											
729	933	850	30	17											

Source: JICA TCP Experts Team

CHAPTER 4 CHALLENGES, IDEAS AND FUTURE PLAN FOR PROJECT MANAGEMENT

4.1 Challenges for Project Overall

4.1.1 Transfer and Vacant Posts of Extension Officers

Transfer of extension officers in PMU is happened frequently. The reason is that many extension officers are outsourced and they seek for more stable job because their contract with PMU is annual and not stable. In addition, extension offices from DOA are periodically transferred to other organization. Thus, it is difficult for extension officers to stay one organization even though they have strong intension for staying longer.

In addition to the transfer, there is vacancy of extension officers in SMS due to lack of budget. Thus, one extension officer often covers not only his original area but also 2 or 3 more areas.

Table 4.1.1 Extension Officers in SMS and ATMA Office

District	Posts of Extension Staff* ¹		
	Sanctioned	Filled	Vacant (%)
Bilaspur	33	30	3 (10)
Hamirpur	70	35	35 (50)
Kangra	171	109	62 (37)
Mandi	141	83	50 (42)
Una	55	20	35 (64)
Total	470	277	193 (42)

Note: *1: SMS, ADO, AADO, and AEO assigned in SMS offices
Source: Respective DOA offices, October 2021

Considering the situation above, JICA TCP has strongly requested DOA to employ additional extension officers since 2019. As of October 2022, there was no employment of additional extension officers to fill the vacancy. It is essential to deploy enough extension officers so that JICA TCP activities would be sustainably continued by DOA after JICA TCP is finished.

4.1.2 Updating Job Profile of Extension Officers

In JICA TCP, activities related to marketing, food diversification and water management/O&M were conducted for promoting crop diversification. However, those activities are not described in job profile of extension officers. Thus, JICA TCP has requested DOA to add those description to job profile since 2019 (refer to Attachment-4.1.1). As of October 2022, HP state government approved the revised job profile and it is expected to be circulated to all officers.

4.2 Output-1: Technical Capacity of DOA/PMU Staff to Promote Crop Diversification Practices is Strengthened

4.2.1 Sharing Information and Training Materials among Extension Officers

It is recommended that new information and materials in CEOs obtained by training are shared with other extension officers. Such sharing was not seen at the beginning of JICA TCP. Thus, JICA TCP recommended that new information and training materials are shared in periodical or monthly meetings in each district DOA. As of October 2022, such sharing is gradually seen in the meetings. In addition, one change is also seen that training materials are stored in cabinet or bookshelves in each district DOA office.

4.2.2 Extension Planning and Conducting Extension Activities Based on PDCA Cycle

It is important for extension officers to prepare extension plan for their field work. DOA currently prepares action plan but output of activities is not clear and confirming expansion of activities is difficult in the plan. In addition, extension officers do not prepare extension plan based on the action plan at site level. Considering the situation, JICA TCP proposed that DOA and PMU prepare action plan that PDCA is clear. PDCA has to be considered for not only extension planning but also extension activities as well. Points to be checked are shown as follows:

- 1) Action plan on each extension activity (*confirmation of activities*): P of PDCA cycle
- 2) Purpose and outputs to be expected in each extension activity: P of PDCA cycle
- 3) Confirmation of actual activities: D of PDCA cycle
- 4) Report after implementation of each extension activity with materials: C of PDCA cycle
- 5) Performance of sharing their experience with other extension officers: A of PDCA cycle
- 6) Sharing their activities in regular meetings (Learning from success and failure)
- 7) Proceeding of regular meetings

4.3 Output-2: Through Activities in Pilot Areas, Package of Techniques to Promote Crop Diversification are Compiled

4.3.1 Selection of Pilot Area

After the beginning of JICA TCP in Stage-1, there were some cases that targeted farmer and group had to be changed due to lack of consent with them when PMU selected pilot areas.

Based on the learning, JICA TCP refined selection procedure of pilot area and focused on communication and opinion exchange among farmer's group with PMU and DOA. Before selection of pilot areas, JICA TCP visited candidate pilot areas with PMU and DOA and had close communication with farmer's group. Pilot areas were finalized based on their consent and activity plan was discussed.

4.3.2 Lack of Experience of Farmer and Extension Staff in Field

Most of targeted farmers were beginner and had less knowledge and experience to do farming as planned. In addition, extension officers had less experience even though they had enough knowledge.

Based on the learning, demonstration of important cultivation skills was conducted at each pilot area. To make it more effective, training was conducted in advance (also after demonstration if necessary) regarding demonstration (nursery raising, fertilizer application, grafting / cutting and protected cultivation) by using of PowerPoint slides and picture story so that participants easily understand the demonstration. It is recommended that extension officers use the training materials for their extension activities at other sites.

4.4 Output-3: Effective Marketing Activities for Farm Produce are Identified

4.4.1 Appropriate and Effective Pest Control by Farmers

In the trial of "Early cauliflower cultivation by use of mulch sheet (2018)", most of the participants reduced the harvest due to insect damage. Since it was the first experiment, JICA TCP and BPMU were not able to foresee the insect attack. In addition, farmers failed a timely and effective pest control since they had no knowledge of appropriate pesticide for cauliflower. One farmer did not use a

recommended pesticide because of feeling fear like getting sick himself by using the pesticide. Another farmer, who never had training on pesticide before, did not know how to use safely agricultural chemical.

Considering the situation, JICA TCP prepared proactive measures against cucumber pest based on idea like “all participants do not know about chemical” in the trial of “Cucumber and early cauliflower cultivation by use of mulch sheet (2019)”. JICA TCP prepared a recommended pest control method to apply in June and July; it showed pest to be controlled for each month, 1st chemical to use, 2nd chemical to use, dilution rates and time interval. Then, JICA TCP requested three BPMU 1) to instruct the farmers to carry out pest control according to the recommended method, 2) to assist the farmers to get the chemicals, and 3) to give the farmers a basic training in safe use of agricultural chemical.

4.4.2 Technical Trial in Farmer’s Field

Two technical trials were carried out in farmers’ fields in 2022. One is the trial of underground drain made by locally available materials to examine the applicability of Cucumber & early cauliflower cropping system in terraced paddy fields by mitigating wet soil condition in August (in transplanting time of cauliflower) by underground drain. Another one is the trial of Anaerobic/Biological Soil Disinfestation inside poly house by locally available materials to examine whether it is feasible for farmers or not.

Comparative cultivation test to check the effect of applied technique were carried out and we faced difficult situation to examine the effect in both trials. In the underground drain trial, farmer did not plant seedlings in “without” field at same time with “with” field, and he did not work to make ditch to drain surface water in “without” field. In the soil disinfestation trail, roof plastic film was broken in one of the polyhouse and cultivation was not conducted, in addition, there was a possibility that the second poly-house used for cultivation test was not polluted by soil-borne disease.

Applying of these techniques in farm fields (installation/treatment) were carried out under direct supervision/instruction by Japanese expert. However, frequent supervision of cultivation tests by Japanese expert was hard to practice. It was also not easy to find ideal farm fields / farmers. To assure the proper execution of cultivation test, it may be better to request a cooperation to university or agricultural research institute to implement the field test in their research field.

4.5 Output-4: Sustainable Plans of DOA to Promote Crop Diversification in the Respective 5 Districts are Formulated Based on Achievements of the Projects

4.5.1 Resources Needed to Promote Crop Diversification

It is definitely intimated that interested and practicing farmers should be required for promotion of crop diversification. It is sure that crop diversification is attractive target for positive farmers, who maintain constant awareness of issues in their agriculture, have desire to get more income, and further try to improve their working style in agriculture. Therefore, existence of extension officers who possess skills as well as knowledge is essential. It is stated that capacity building of extension officers is absolutely required, in order to provide practical extension activities for farmers. Further budget as well as transportation for implementation of field extension activities are also required.

4.5.2 Guidelines and Training Material Needed to Improve Technical Capacity

Technical Guidelines for promotion of crop diversification were formulated in JICA TCP Phase-1 and

distributed to DOA and PMU as well. In these Guidelines, there are sufficient skills, information, etc. for cultivation and management of major vegetables as well as food grain crops. These Guidelines should be adopted for various situation of extension activities in fields.

Further, these Guidelines are required to be periodically checked and some parts, which are older, should be replaced like vehicle or other machines. It is recommended that the Guidelines should be constantly maintained and always keep updated information as well as skills, otherwise it is difficult to respond to various requests from farmers who are facing some troubles. Accordingly, activities of the committee for updating Guidelines should be continued regularly in order to maintain Guidelines in good condition with latest information.

Meanwhile, various guidelines, manuals, handouts, etc. should be also kept in Sales Centers, in order to respond farmers' inquiries.

4.6 Food Diversification (Food and Nutrition / Livelihood Improvement / Gender / Social Inclusion)

4.6.1 Incorporation of Nutrition Components into an Agricultural Project

First, on incorporating the nutrition components, the concept "food diversification for promoting crop diversification", into an existing agricultural project has been well accepted by the counterparts and the beneficiaries. It could be said the new activities were rather easily incorporated into ongoing projects due to their form of awareness raising.

As the background of the extension officers is basically agriculture, they have insufficient experience and knowledge on the subject of food and nutrition. To help them understand teaching contents of the subject and instruct to farmers more easily, extension tools were simplified and visualized for smoother knowledge transfer mainly in the form of frontside and backside flipcharts for farmers training with illustrations. Also, under the frequent personnel shift of extension officers limiting human resources for wider and effective extension, use of the Cookpad application, a recipe sharing service, has been promoted to help them for easing dissemination of the recipes. Positive comments were given by extension officers and beneficiaries regarding easiness of learning the recipes, for example, even under the pandemic restricting ordinary extension.

While working with counterparts in the agricultural sector for the nutrition topics, following points attracted them, too; healthy recipes which can lead to income generation (beets powder, soya bars, etc.) and quantification of outputs (changes in frequencies of consumption) or materials (daily value, etc.).

4.6.2 Coexistence of Self-Consumption and Income Generation

There have been sometimes discussions of an idea that self-consumption for nutrition improvement is antagonistic to income generation. Therefore, efforts were continuously made on explaining the meanings of the food diversification activities in the JICA TCP to the counterparts as follows:

In the JICA TCP, self-consumption is not promoted at a level of continuous food security but for food diversification, requiring a smaller part of commercially grown vegetables, to introduce to farmers' regular meals. In such cases, self-consumption by farmers does not make a great impact on their income in a negative sense, but even increasing chances of marketing, also enriching their diets. It is

expected that the food diversification approach can gradually raise farmers' awareness for eating healthy balanced diets with more vegetables; this is a nutrition improvement aspect. At the same time, for adding value to vegetables through sharing nutritional information; this is an income generation aspect. This is how two aspects can coexist in a same project in this way. Following figure summarizes the idea of nutrition improvement to contribute to marketing:

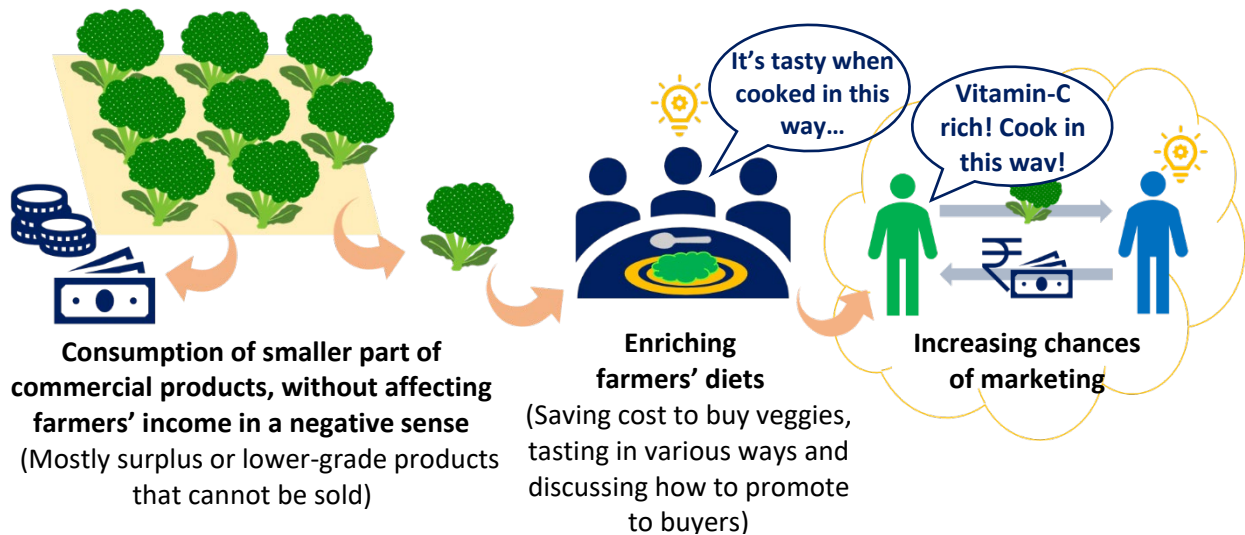


Figure 4.6.1 Idea of Nutrition Improvement to Contribute to Marketing

In Japan and probably many other countries, it is quite common for farmers to enjoy eating what they grow in their own field, mostly surplus or lower-grade products that they cannot sell, to have a variety of vegetables on their table without buying the vegetables during harvest time, tasting and cooking in various ways and discussing how to promote the vegetables to buyers or consumers. This idea may be more applicable in areas with more conscious consumers for tastes or nutrition of agricultural products. Still, it will be valuable to work on awareness raising also for producers in areas moving into such phase.

4.6.3 Sustainability of Beetroot Powder Selling

Since the beetroot powder activity originally aimed at promotion of self-consumption of beets, no big goal of livelihood improvement was set there. Selling the beetroot powder has been then recommended to the farmers as an optional way to increase beetroot income when farmgate prices of fresh beetroot go down. To ensure profit through the activity, farmers need to consider processing cost and transport fees as well as farmgate prices. Farmers were thus able to decide if they will work on beetroot powder preparation depending on the actual situation in the field.

In 2020, some farmers spontaneously started powder preparation concerning they were not able to sell fresh beetroot during the coronavirus lockdown. However, Kamdhenu Sweets, which used to express their intension to extend the use of the powder to their branch shops in/outside the State, has been long limiting procurement of the powder to smaller quantities than originally estimated due to the sales declines. Therefore, some amount of beetroot powder remained unsold and it was a matter of concern that if farmers' motivation could be kept up even though the powder was stackable for a few more months.

Then, to keep the farmers' motivation as high as possible, the JICA TCP specially supported them for

selling the powder to individual consumers at the HAVI shop in Hamirpur, developing new recipes for urban individuals. Eventually, 80% of the powder at the shop was sold, which is not so bad as first trial. The experience indicates, in the future after the pandemic, there may be possibilities to have more diversified customers, not limiting to sweets shops like Kamdhenu Sweets.

4.7 Water Management / O&M

4.7.1 Job Profile of EOs in DOA

JICA TCP conducted data collection about KVA's water management related information such as irrigation method (FIS, LIS, STW), status of possession of Micro Irrigation facilities, and number of pump operator to understand the current situation on activities of water management in the subprojects. When JICA TCP collected information from 8 BPMUs in five Districts, no BPMUs have any organized data of each sub-project. They just had Detailed Project Report (DPR) and Project Completion Report (PCR) and some documents which were required to be prepared at the time of infrastructure development and extension works. Because of such situation of information management, not well-organized data management, JICA TCP needed to update KVA's information so often by hearing from extension officers.

The reasons that PMU didn't manage well-organized information for O&M of constructed facilities was that they have such understandings "PMU's tasks are only construction works and distribution works of facilities".

Thus, JICA TCP has been emphasizing the importance of monitoring, keeping record, and updating of subprojects' information by EOs. Since the situation is same in district DOA and SDSCO also, JICA TCP proposed to revise EO's job-profile and prepared draft Job profile, which was handed it over to PMU as they can discuss this issue in DOA.

4.7.2 Effective Use of Check List in DOA

JICA TCP found that most of farmers were not familiar with O&M of irrigation facilities such as micro irrigation and motor pump. Considering the situation, JICA TCP selected two training contents (1. Micro irrigation O&M and 2. Pump O&M). Although JICA TCP conducted training for EOs many times, the EOs didn't disseminate the learnings for farmers at the implementation stage of trainings. The difficulties of practical training to farmers by EOs themselves are due to lack of their knowledge and complexness of existing guidelines (they didn't prioritize WM trainings since WM works are mostly engineering part). Therefore, JICA TCP prepared check list which EOs could make their extension works more easily and effectively. JICA TCP supported their extension works as EOs could use the check list more easily and efficiently through co-working with them. The check list will be helpful for EOs in DOA also and the best way to be used them seems that the check list will be inserted to existing DOA guideline or manuals.

CHAPTER 5 SUGGESTION TO ACCOMPLISHMENT OF OVERALL GOAL

5.1 Conducting Extension Activity on Vegetable Cultivation at Site by DOA Extension Officers

To promote crop diversification in HP and increase vegetable cultivation area and production for marketing continuously, extension activity to farmers at the field level by extension officers is essential. When farmers are willing to shift from self-consumption grain production to commercial vegetable production, it is impractical for them to accomplish it by themselves. Farmers can be motivated up for starting and continuing vegetable cultivation by instruction from extension officers on how to grow vegetables that farmers have no experience of growing, and by sharing marketing information such as the needs and market prices of various vegetables. In particular, when teaching vegetable cultivation methods, it is considered that setting up demonstration plots, where farmers can actually move their hands and see the results, is very effective rather than just verbal explanations.

However, at present, there are less extension activities conducted at field level as described above by DOA extension officers. The duties of DOA extension officers are wide. One of major duties is the distribution of vegetable seeds under the RKVY, which is one of DOA's project schemes. RKVY is a project that sells and distributes vegetable seeds to farmers with 50% of the original price subsidized by DOA. The vegetable seeds are stored at sales center that is in charge of each extension officer and extension officers sell and distribute the seeds to farmers. Since a large amount of time is devoted to the sale and distribution of these vegetable seeds, DOA extension officers do not have enough time to conduct sufficient extension activities at field level.

To improve these situations, JICA TCP proposes “conducting extension activity on vegetable cultivation at site by DOA extension officers as best as they could.” To be more specific, “conducting extension activity on vegetable cultivation at sales center by DOA extension officers by using training materials prepared by JICA TCP when they distribute seeds under RKVY.” As mentioned above, under the RKVY, extension officers sell and distribute vegetable seeds to farmers at sales center, which can be considered as a place where extension officers and farmers can communicate with each other. Utilizing the current situation, JICA TCP distributed the packages of techniques prepared by Output-2, materials on cucumber and cauliflower prepared by Output-3 and other materials to the sales center in the five districts in paper form. It is expected that extension officers would conduct extension activities on vegetable cultivation at the sales center by using the distributed materials at the time of seed distribution under RKVY. Ideally, extension activities described above should be conducted during the busy period of seed distribution under RKVY, and extension activities at farmer’s sites should be conducted during the period when the seed distribution is completed and extension officers have more time.

5.2 Implementing DOA New Scheme on Vegetable Cultivation and Its Improvement

DOA has 40 project schemes related to agriculture, but few of them are related to vegetable cultivation. RKVY is one of the limited schemes related to vegetable cultivation, but its content is the sale and distribution of vegetable seeds and excludes post-distribution guidance to farmers on vegetable cultivation. Therefore, at present, no schemes include on-site instruction or demonstration of vegetable cultivation.

Given this situation, JICA TCP requested DOA to develop a new project scheme that includes instruction

and demonstration of vegetable cultivation in the field. As of October 2022, a new project scheme called Mukhya Mantri Krishi Samvardhan Yojna was approved by the HP state government. This scheme is expected to solve the problem of extension officers, which is not being able to go to the field due to the lack of transportation funds, as it includes not only instruction and demonstration of vegetable cultivation in the field but also budget for extension officers to go to the field. After the completion of the JICA TCP, it is expected that farmers are able to increase their vegetable cultivation area and production through the implementation of this new project scheme.

Although this new project scheme has not yet been started, JICA TCP is aware of one issue, which is the number of years of support to the target farmers. The scheme adopts a cluster approach, in which extension activities are conducted on a certain number of farmers (cluster), but the extension activities are conducted on a one-year basis. JICA TCP has provided support to various farmers through its extension officers and has realized that since agriculture itself is a cycle of one year, farmers experience in the first year and continue in the second and subsequent years and then skills become firmly established in their own hands. Therefore, JICA TCP proposes “Considering implementation of the scheme as project for promotion of crop diversification and preparing 5-year plan based on extension activity after the second year” and “Based on the 5-year plan, monitoring the continuation of vegetable cultivation in the farmer’s clusters that have already completed support after the second year of implementation of this scheme”. In terms of preparing the 5-year plan, actual experience of preparing and monitoring 5-year plan conducted under JICA TCP will be helpful for DOA to prepare and monitor the plan.

5.3 Strengthening Cooperation between DOA and HPCDP-2

Himachal Pradesh Crop Diversification Promotion Project Phase 1 (HPCDP-1) was implemented from February 2011 to June 2021. Although officers from DOA were assigned in PMU of HPCDP-1, extension officers in PMU took the lead in crop diversification extension activities, and there were limited opportunities for DOA extension officers to participate in the activities. Therefore, after the completion of HPCDP-1 and handover of 210 sub-projects to DOA, the extension activities in those 210 sites were not continued by DOA extension officers. Ideally, the extension activities on crop diversification would be carried out in the 210 sub-projects led by DOA officers who worked in PMU, but due to lack of budget and staff, such flow has not yet been established. Additionally, it was also observed that DOA extension officers were unaware of what kind of extension activities were being implemented in HPCDP-1.

While HPCDP-1 covered 5 districts in HP, Himachal Pradesh Crop Diversification Promotion Project Phase 2 (HPCDP-2) covers all 12 districts. To spread crop diversification throughout HP, HPCDP-2 covering all 12 districts will play an essential role and collaboration between PMU and DOA from now is essential for sustainability of HPCDP-2, considering the learning from HPCDP-1. As specific collaboration methods, JICA TCP proposes “DOA should strongly recognize that sub-projects in HPCDP-2 are also DOA’s extension target sites” and “Sharing extension schedule at sites by PMU extension officer with DOA and accompanied with DOA extension officer” and “Holding regular meetings between DOA and PMU to report and discuss their progress and share opinion and needs from farmers”.

In addition to the collaboration between PMU and DOA, crop diversification will be promoted more if

ATMA (Agricultural Technology Management Agency) could join them. ATMA is the organization responsible for agricultural extension in HP, and before 2018–19, there were clear division of works between DOA and ATMA such as DOA was responsible for agricultural production and ATMA was responsible for agricultural extension activities. However, after 2019–20, ATMA started focusing on extension of natural farming (SPNF: Subhash Palekar Natural Farming). Since DOA's policy it to improve agricultural production without denying the use of chemical fertilizers and chemicals, there was difference in their direction. As a result, the two organizations are not currently working together well. But ATMA has the budget and human resource for agricultural extension, and if DOA, PMU, and ATMA could work together under the one objective of crop diversification in HP, more effective and sustainable extension activities can be expected.

5.4 Sharing Information on Agricultural Marketing with Farmers and Conducting Necessary Technical Training

One of the motivating factors for farmers to start and continue vegetable cultivation is profitability. JICA TCP developed a cucumber/cauliflower cropping pattern targeting high market prices in Output-3 activities and disseminated the cropping pattern to farmers through guidance to extension officers. In some cases, farmers who joined extension activity and earned profits continued the cropping pattern and earned profits on their own, even in the absence of support from JICA TCP and extension officers. Crop diversification is a shift from self-consumption grain farming to commercial vegetable farming, and considering the above cases, it is indicated that whether vegetable farming is profitable or not is one of major factors to promote crop diversification.

For the cucumber/cauliflower cropping pattern described above, Japanese experts in JICA TCP investigated the market prices of both vegetables and determined the cropping pattern based on time when the respective prices were high. The Japanese experts also proposed solutions to the technical factors that were problematic in the cropping pattern. Specifically, the lack of water for cucumbers and the heavy rainfall for cauliflower were the main issues, and the use of drip irrigation, which had been supported in HPCDP-1, was proposed for the former, while the use of mulch sheets was proposed for the latter. When a cropping pattern is designed for a period of high market prices, some technical issues may arise because the cultivation timing is different from the usual cropping pattern. To be able to consider and propose measures that can solve such issues is an important factor, along with sharing marketing information.

After the completion of JICA TCP, such sharing of marketing information and necessary technical guidance need to be provided by extension officers to farmers. However, it does not seem realistic for extension officers themselves to do these two things since the extension officers at the field level are busy with various duties. Therefore, JICA TCP proposes "Developing cropping pattern based on marketing information like market price and proposing technical solution to extension officers by DOA and establishing new department in DOA that is in charge of offering information related to marketing". It is recommended that DOA use the various documents prepared by JICA TCP and the guidelines compiled in Output-3 when considering cropping patterns and technical solutions.

5.5 Improvement in O&M for Irrigation Facility

Access to water is essential to success of promotion of crop diversification. Therefore, in HPCDP-1,

various irrigation facilities were provided in the target areas. With the irrigation facilities, farmers get access to water and no limitation in terms of agricultural production by rainy/dry season, which helps promoting crop diversification more. On the other hand, JICA TCP provided technical guidance on vegetable cultivation based on the use of irrigation facilities. Since the collaboration between HPCDP-1, providing irrigation facilities, and JICA TCP, providing technical assistance, effective result was achieved.

However, JICA TCP has identified one issue related to irrigation facilities, which is the lack of proper maintenance of irrigation facilities. Irrigation facilities are handed over to KVA after survey, planning and construction. DOA and SDSCO are involved only until handing over the irrigation facilities to the KVA, and the maintenance and management of the facilities are left to the KVA. At the time of handover, the extension officers explain the maintenance and management of the irrigation facilities to the KVA, but the KVA are not able to properly maintain and manage the facilities because the extension officers do not monitor the facilities after the handover. Therefore, it is expected to be occurred in the future that farmers are using irrigation facilities for agricultural production at present, but when the irrigation facilities are no longer available, they would return to agricultural production with limitation by rainy/dry season.

In response to this situation, it is strongly expected that manuals prepared by HPCDP-1 should be utilized for monitoring and giving direction in HPCDP-2. Regarding to MIS and pomp facility, JICA TCP proposes that "DOA and SDSCO extension officers monitor and giving direction to KVA by using checklist developed by JICA TCP". Previously, the job profile of extension officers did not specify activities after the handover of irrigation facilities and no technical assistance was conducted. As described in 4.1.2 in Chapter 4, the HP state government has approved the addition of such activities to the existing job profile. From now on, it is expected that extension activity related to water management/O&M will be conducted more and effectively.

Attachment


Chapter 1

RECORD OF DISCUSSIONS
ON
PHASE II PROJECT FOR CROP DIVERSIFICATION IN
HIMACHAL PRADESH
IN
REPUBLIC OF INDIA
AGREED UPON BETWEEN
DEPARTMENT OF AGRICULTURE
AND
JAPAN INTERNATIONAL COOPERATION AGENCY

Shimla, **22 JUL 2016**
2016




Takema Sakamoto
Chief Representative
JICA India Office
Japan International Cooperation
Agency

 22/7/2016

Anuradha Thakur
Secretary,
Department of Agriculture
Government of Himachal Pradesh

WITNESS:



सी. एम. पाण्डेय / C.M. PANDEY
अवर आधुनिक/Additional Commissioner
आर. आर. सरकार / Government of India
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S. Selvakumar
Joint Secretary (ABC),
Department of Economic Affairs
Ministry of Finance
Government of India



Based on the minutes of meetings on the Detailed Planning Survey on the Phase II Project for Crop Diversification in Himachal Pradesh (hereinafter referred to as "the Project") signed on 9th March 2016 between Department of Agriculture (hereinafter referred to as "DOA"), the State Government of Himachal Pradesh (hereinafter referred to as "GOHP") and the Japan International Cooperation Agency (hereinafter referred to as "JICA"), JICA held a series of discussions with DOA and relevant organizations to develop a detailed plan of the Project.

Both parties agreed the details of the Project and the main points discussed as described in the Appendix 1 and the Appendix 2 respectively.

Both parties also agreed that DOA, the counterpart to JICA, will be responsible for the implementation of the Project in cooperation with JICA, coordinate with other relevant organizations and ensure that the self-reliant operation of the Project is sustained during and after the implementation period in order to contribute toward social and economic development of the State of Himachal Pradesh.

The Project will be implemented within the framework of the Note Verbales to be exchanged between the Government of Japan (hereinafter referred to as "GOJ") and Government of India (hereinafter referred to as "GOI").

The effectiveness of the record of discussions is subject to the exchange of the Note Verbales.

Appendix 1: Project Description

Appendix 2: Main Points Discussed



Appendix 1**PROJECT DESCRIPTION**

Both parties confirmed that there is no major changes in the Project Description in the minutes of meetings for Preparatory Survey on the Project signed on 9th March 2016.

I. BACKGROUND

The State of Himachal Pradesh is a hilly state located at the foot of the Western Himalayas, with an area of 556.7 million ha, and a population of approximately 6.8 million. Nearly 70% of the working population in the state is engaged in agriculture, but agriculture and allied sector accounts for only 20% of the Gross State Domestic Products (2013-14). The low agriculture productivity partly attributes to the fact that the area available for crop cultivation is limited to 10% of the total land area of the state due to the hilly terrain, and therefore more than 80% of the farmers are marginal and small landholders with an area of less than 2.0 ha. Also, only 20% of the cultivable area has irrigation facilities, and the rest of the area has to depend on rain-fed cultivation. Therefore, the majority of the farmers in the state remain engaged in traditional cultivation of food grains, and they are unable to diversify the farming to more profitable crops, such as vegetables and fruits.

The state has a considerable potential for vegetable production, with an advantage of cool climate compared to other parts of the county, as well as the geographical proximity to the large cities such as Delhi and Chandigarh. This would enable the farmers to produce off-season vegetables and fruits, which have a large market in the urban cities with better prices. In order to boost the agricultural development and to enhance the farm income in the rural area, it is important to increase the productivity of the existing cultivated area, through shifting from self-subsistence food grain cultivation to diversified agriculture, by adopting cash crops such as vegetables which are suitable to hilly and highland areas. However, development of irrigation facilities and distribution-related infrastructure was a concern for stable production of cash crops and their transportation. High potential of climate variability was not fully utilized which need clearer picture for agricultural development including farming management and land use plan appropriate to the character of each district. Further, farmers' technologies of vegetable cultivation are not sufficient and extension service from public and private sector needs more focus. Under such circumstances, "The Study on Diversified Agriculture for Enhanced Farm Income in the State of Himachal Pradesh (2007 to 2009)" was conducted and the master plan on rural development through diversified agriculture is formulated based on the agricultural characteristics of each region and its needs by the study. In line with the master plan, Official Development Assistance (ODA) Loan Project titled "Himachal Crop Diversification Promotion Project (hereinafter referred to as "the ODA Loan Project")" is under implementation by GoHP with financial assistance of JICA in the 5 potential districts of the state from 2011 to 2018. Technical



Cooperation Project (hereinafter referred to as "TCP") for Crop Diversification in Himachal Pradesh (hereinafter referred to as "Phase I") focusing on 1) development of the Crop Diversification Model in the pilot area, and 2) capacity development of the extension officers was implemented under technical assistance of JICA from 2011 to 2016 for supporting smooth implementation of the ODA Loan Project.

After the successful completion of TCP, GOHP through the GOI requested the GOJ for further technical assistance (Phase II Project for Crop Diversification in Himachal Pradesh (hereinafter referred to as "the Project")) to uplift and stabilize farmers' income through further expansion of crop diversification in the 5 districts of the state along with the ODA Loan Project. The Project activities mainly focus on 1) enhancement of crop diversification model developed under Phase I and 2) organizational capacity development of DOA.

II. OUTLINE OF THE PROJECT

Details of the Project are described in the Logical Framework (Project Design Matrix: PDM) (Annex 1) and the Plan of Operation (Annex 2).】

1. Title of the Project

Phase II Project for Crop Diversification in Himachal Pradesh

2. Expected Goals which will be attained after implementing the Proposed Plan

- (1) **Super Goal:** Farmers' income increase and stabilization are promoted in the 5 districts of Himachal Pradesh.
- (2) **Overall Goal:** Crop diversification according to Agro-Ecological Situations is promoted in the 5 districts of Himachal Pradesh.
- (3) **Project Purpose:** Organizational capacity of DOA to promote crop diversification in the 5 districts is strengthened.

3. Outputs

- (1) **Output 1:** Technical capacity of DOA/PMU staff to promote crop diversification practices is strengthened.
- (2) **Output 2:** Through activities in pilot areas, packages of techniques to promote crop diversification are compiled.
- (3) **Output 3:** Effective marketing activities for farm produce are identified.
- (4) **Output 4:** Sustainable plans of DOA to promote crop diversification in the respective 5 districts are formulated based on achievements of the Project.

4. Activities

(1) For Output 1:

- 1.1 Collect information and analyze technical capacity of DOA/PMU staff at Block level to support crop diversification practices.
- 1.2 Conduct training needs assessment based on examination of the contents of existing trainings.
- 1.3 Based on the results of activity 1.1 and 1.2, make training plans on respective aspects of crop diversification practice.
- 1.4 Conduct trainings for DOA/PMU staff at Block level (CEOs) according to

the annual plans.

- 1.5 Support CEOs in conducting extension activities for farming communities.
- 1.6 Monitor transferring technologies to other DOA/PMU staff by CEOs.
- 1.7 Conduct monitoring and evaluation of progress and achievement of extension activities.

(2) For Output 2:

- 2.1 Select pilot site one in each Block Project Management Unit (BPMU) every two years based on farmers' proposals and criteria developed by PMU/DOA (state, district).
- 2.2 Support BPMU/DOA staff (Block) and farming communities in preparing plans of pilot activities for crop diversification based on the market demand.
- 2.3 Support BPMU/DOA (Block) and farming communities in implementing selected pilot activities at the respective sites.
- 2.4 Conduct monitoring and evaluation of progress and achievement of pilot activities and compile packages of techniques to promote crop diversification.

(3) For Output 3:

- 3.1 Collect information and analyze the current situation and issues regarding marketing of farm produce in the target areas and make plans for promotion.
- 3.2 List up candidate activities to promote marketing of farm produce through seminars and meetings with various stakeholders including private companies and farmers (groups).
- 3.3 Select higher priority activities to be supported by the Project from the list prepared.
- 3.4 Implement selected activities in collaboration with Agricultural Producers' Market Committee (hereinafter referred to as "APMC").
- 3.5 Conduct monitoring and evaluation of progress and achievement of activities undertaken.

(4) For Output 4:

- 4.1 Make annual plans to promote crop diversification in the 5 districts.
- 4.2 Conduct monitoring and evaluation of progress and achievement of Crop Diversification Plans at the respective sub-projects.
- 4.3 Compile evaluation results on activities carried out for Output 1, 2 and 3 at the end of each activity.
- 4.4 Based on the results of the evaluation, revise Crop Diversification Guidelines and training materials (prepared in Phase I) where necessary.
- 4.5 Hold workshops with stakeholders to share the achievement of the Project and discuss the way forward.
- 4.6 Make five-year-action plans after the completion of the Project to promote crop diversification in the 5 districts.

5. Input

(1) Input by JICA

- (a) Dispatch of Experts
Chief Advisor/Agriculture,
Vegetable Farming/Post-harvest, Marketing,

Water Management/O&M, Gender/Social Inclusion,
Project Coordinator
and others as per requirement

(b) Training in Japan

2 courses (1-2 weeks for each) can be arranged for management level functionaries. 2 courses (1 month for each) can be arranged for field level officers and/or Krishak Vikas Association (KVA) members.

(c) Machinery and Equipment

Vehicle(s), office equipment and machineries/tools/equipment to be procured to implement activities in Pilot areas.

In case of importation, the machinery, equipment and other materials under II-5 (1) (c) above will become the property of the GOHP upon being delivered C.I.F. (cost, insurance and freight) to the Indian authorities concerned at the ports and/or airports of disembarkation.

All responsibilities for operation/maintenance of machinery, equipment and other materials to be handed over to the GOHP should be taken by GOHP.

Input other than indicated above will be determined through mutual consultations between JICA and DOA during the implementation of the Project, as necessary.

(2) Input by DOA

DOA will take necessary measures to provide at its own expense:

- (a) Services of DOA's counterpart personnel and administrative personnel as referred to in II-6;
- (b) Suitable office space with necessary equipment;
- (c) Supply or replacement of machinery, equipment, instruments, vehicles, tools, spare parts and any other materials necessary for the implementation of the Project other than the equipment provided by JICA;
- (d) Information as well as support in obtaining medical service and security;
- (e) Credentials or identification cards;
- (f) Available data (including maps and photographs) and information related to the Project;
- (g) Running expenses necessary for the implementation of the Project; and
- (h) Necessary facilities to the JICA TCP experts for the remittance as well as utilization of the funds introduced into Republic of India from Japan in connection with the implementation of the Project

6. Implementation Structure

The project organization chart is given in the Annex 3. The roles and assignments of relevant organizations are as follows:

(1) DOA

(a) Project Director

Director of Agriculture will be responsible for overall administration and implementation of the Project.

(b) Project Managers

Additional Director of Agriculture, North Zone and Project Director of the ODA Loan Project will be responsible for managerial and technical matters.

(2) JICA TCP experts

The JICA TCP experts will give necessary technical guidance, advice and recommendations to DOA on any matters pertaining to the implementation of the Project.

(3) Joint Coordinating Committee and Counterpart Meeting

Joint Coordinating Committee (hereinafter referred to as "JCC") will be established in order to facilitate inter-organizational coordination. JCC will be held at least once a year and whenever deems it necessary. JCC will review the progress, revise the overall plan when necessary, approve an annual work plan, conduct evaluation of the Project, and exchange opinions on major issues that arise during the implementation of the Project. In addition to JCC, Counterpart Meeting will be held at least twice a year and whenever deems it necessary. In the counterpart Meeting, participants will review the progress and discuss more detailed matters than JCC. A list of members of JCC and Counterpart Meeting is shown in the Annex 4.

7. Project Site(s) and Beneficiaries

(1) Project Site(s): Bilaspur, Hamirpur, Kangra, Mandi and Una

(2) Beneficiaries: Direct target: Extension Officers in DOA/PMU, Indirect target: Farming communities (Member of Krishak Vikas Association, Self Help Group etc.) under ODA Loan Project

8. Duration

5 years from the arrival of the first expert

9. Environmental and Social Considerations

(1) DOA will abide by 'JICA Guidelines for Environmental and Social Considerations' in order to ensure that appropriate considerations will be made for the environmental and social impacts of the Project.

III. UNDERTAKINGS OF GOHP and GOI

1. GOHP and GOI will take necessary measures to:

- (1) ensure that the technologies and knowledge acquired by the Indian nationals as a result of Japanese technical cooperation contributes to the economic and social development of the State of Himachal Pradesh, and that the knowledge and experience acquired by the personnel of the State of Himachal Pradesh from technical training as well as the equipment provided by JICA will be utilized effectively in the implementation of the Project; and
- (2) grant privileges, exemptions and benefits to the JICA TCP experts referred to in II-5 above and their families, which are no less favorable than those granted to experts and members of the missions and their families of third countries or international organizations performing similar missions in

Republic of India.

2. GOHP and GOI will take necessary measures to:

- (1) provide security-related information as well as measures to ensure the safety of the JICA TCP experts;
- (2) permit the JICA TCP experts to enter, leave and sojourn in Republic of India for the duration of their assignments therein and exempt them from foreign registration requirements and consular fees.
- (3) exempt the JICA TCP experts from taxes and any other charges on the equipment, machinery and other material necessary for the implementation of the Project;
- (4) exempt the JICA TCP experts from income tax and charges of any kind imposed on or in connection with any emoluments or allowances paid to them and/or remitted to them from abroad for their services in connection with the implementation of the Project; and
- (5) meet taxes and any other charges on the equipment, machinery and other material, referred to in II-5 above, necessary for the implementation of the Project.

3. GOHP and GOI will bear claims, if any arises, against the JICA TCP experts resulting from, occurring in the course of, or otherwise connected with, the discharge of their duties in the implementation of the Project, except when such claims arise from gross negligence or willful misconduct on the part of the JICA TCP experts.

IV. MONITORING AND EVALUATION

JICA and the DOA will jointly and regularly monitor the progress of the Project through the Monitoring Sheets based on the Project Design Matrix (PDM) and Plan of Operation (PO). The Monitoring Sheets will be reviewed every six (6) months.

Also, Project Completion Report will be jointly drawn up one (1) month before the termination of the Project.

JICA will conduct the following evaluations and surveys to verify sustainability and impact of the Project and draw lessons. The DOA is required to provide necessary support for them.

1. Ex-post evaluation three (3) years after the project completion, in principle
2. Follow-up surveys on necessity basis

V. PROMOTION OF PUBLIC SUPPORT

For the purpose of promoting support for the Project, DOA will take appropriate measures to make the Project widely known to the people of Republic of India.

VI. MISCONDUCT

All related personnel and organization shall keep the highest ethic and prevent

any corrupt or fraudulent practices in the implementation of the Project. If JICA receives information related to suspected corrupt or fraudulent practices in the implementation of the Project, DOA and relevant organizations will provide JICA with such information as JICA may reasonably request, including information related to any concerned official of the government and/or public organizations of the Republic of India.

DOA and relevant organizations will not, unfairly or unfavorably treat the person and/or company which provided the information related to suspected corrupt or fraudulent practices in the implementation of the Project.

VII. MUTUAL CONSULTATION

JICA and DOA will consult each other whenever any major issues arise in the course of Project implementation.

VIII. AMENDMENTS

The record of discussions may be amended by the minutes of meetings between JICA and authorized person of DOA. However, PO may be amended in the Monitoring Sheets.

The minutes of meetings will be signed by authorized persons of each side who may be different from the signers of the record of discussions.

- Annex 1 Logical Framework (Project Design Matrix: PDM)
- Annex 2 Plan of Operation
- Annex 3 Project Organization Chart
- Annex 4 A List of Members of Joint Coordinating Committee and Counterpart Meeting

Appendix 2

MAIN POINTS DISCUSSED

In addition to Appendix 1 and Annex 1 - 4, DOA and JICA jointly agreed on the following highlighted frameworks and conditions.

1. Implementation Structure

- Project Manager, District Coordinators and Core Extension Officers shall be assigned from DOA as well as PMU before the commencement of the Project and shall be informed JICA accordingly.
- DOA is having 6-8 numbers of Extension Officers at each block level and one Extension Officer will be exclusively deployed for carrying out crop diversification activities under the Project as committed by Director of Agriculture in the letter No. Agr. H (Project Cell) F (2) 1/2009JICA-TCP-III issued on 21st July 2015.
- DOA with the help of the State Agricultural Marketing Board and APMCs will be the key implementers of the Project.
- 5 Deputy Directors of Agriculture and 5 District Project Managers/Block Managers under ODA Loan Project will be assigned as District Coordinators
- 2 DOA staff in each block office and 1 PMU staff in each BPMU office (Subject Matter Specialist/Agricultural Development Officer) will be assigned as Core Extension Officers

2. Activities for Each Output

a. Training & Extension Services (Output 1)

- **Objective:** Enhancement of technical capacity of DOA/PMU staff
- **Areas:** District Level (Bilaspur, Una, Hamirpur, Mandi and Kangra)
- **Main Target:** Core Extension Officers and other extension officers in 5 districts under the ODA Loan Project
- **Activities:** 30 trainings (1 training is held for 1 – 1.5 days and covering several topics) for DOA/PMU staff (Core Extension Officers) would be organized annually. Contents of trainings will be determined after the commencement of the Project. As a tentative idea, they may comprise 1) Vegetable Farming & Post-harvest, 2) Water Management and O&M, 3) Marketing and 4) Gender & Social Inclusion. Extension activities will be supported in the field at the timing of above trainings by JICA TCP experts. Core Extension Officers shall share their learnings with other extension officers through meetings and/or On the Job Training in the field.
- **Monitoring & Evaluation:** Level of knowledge and skills of DOA/PMU staff will be monitored and evaluated based on "Technical Assessment Sheet" to be developed by District Coordinators and JICA TCP experts. Satisfaction level of farmers will also be assessed by District Coordinators through the activity 4.3. in the middle and end of the Project.
- **Responsibility:** District Coordinators

b. Activities in pilot areas (Output 2)

- **Objective:** Compilation of replicable packages on new techniques to promote crop diversification depending upon Agro-Ecological Situation based on the needs of farmers
- **Areas:** sub-projects under the ODA Loan Project.
- **Main Target:** Farmers, Core Extension Officers
- **Activities:** Total 16 areas will be selected as pilot. (1 pilot area will be selected from each 8 BPMU area every 2 years. (total 2 batches)) For instance, vegetable farming, post-harvest management, processing, small-scale storage, micro irrigation, protected cultivation, Integrated Pest Management (IPM), organic farming, Good Agricultural Practice (GAP) and farm mechanization etc. can be selected as activities in pilot areas. Selection procedures of activities in pilot areas are: 1) simple application format with explanatory note will be handed over to KVA/Extension Officers along with community motivator by District Coordinators and JICA TCP experts, 2) The block level officers will collect the application formats filled by community motivators based on the discussion within each community, 3) block level officers will select pilot areas based on the selection criteria for pilot areas which shall include motivation of farmers, activeness of village leaders & group activities etc. developed by District Coordinators and JICA TCP experts. 4) District Coordinators and JICA TCP experts will select activities to be implemented under the Project based on selection criteria for activities which shall include high potential for replication (low input cost and/or high return) etc. developed by District Coordinators and JICA TCP experts, 5) The contents of activities will be finalized as an implementation plan based on market information, and 6) Project Director/Project Managers will approve the activities in pilot areas. The above process will be implemented before the commencement of each batch.
- **Monitoring & Evaluation:** The number of replicable packages on new techniques and Crop Diversification Indicators (i.e. area under vegetables, production and income) will be monitored and evaluated by District Coordinators.
- **Responsibility:** District Coordinators
- **Others:** Introduction of small scale farm mechanization (machines/tools/equipments) shall be positively considered. Further, demonstration sites shall be set-up under the activities in pilot areas depending upon the activities selected.

c. Marketing Activities (Output 3)

- **Objective:** Identification of effective marketing activities for farm produces (mainly vegetables) in Himachal Pradesh based on the actual needs from the market
- **Areas:** The main target of sub-projects under the ODA Loan Project along with the remaining areas in Himachal Pradesh (depending upon the activities selected)
- **Main Target:** AMPC, District Coordinators, Core Extension Officers and other Extension Officers
- **Activities:** For instance, the survey of the market, development of

grading/packaging standard, value addition, advertisement activities, exhibitions/fair/competition, cooking activities, traceability with record keeping, antenna shop in consumer area, tour of buyer/consumer/sellers, buyer-sellers meeting, improvement of existing marketing system, improvement of market information system etc.

- **Monitoring & Evaluation:** Lessons learned such as Benefit-Cost Ratio, response from the market, issues to be improved etc. shall be identified, monitored and evaluated for each activity and finalized as recommendations by District Coordinators with the help of Secretary of APMC and Extension Officers.
- **Responsibility:** District Coordinators with the help of Secretary of APMC and Extension Officers
- **Others:** The environment of the market dynamically varies all the time. Therefore, not just learning the theory of the marketing but also acquire the method to survey and select the appropriate activities, which contributes to crop diversification and required by the market, will be very important for DOA/PMU and APMC staff. The capacity of DOA/PMU and APMC staff for the survey of the market and selection of target activities shall be developed under the Project.

d. Five-year-action plans (Output 4)

- **Objective:** Formulation of Five-year-action plans to promote crop diversification in the respective 5 districts after completion of the Project to be authorized as a part of annual plan to be developed by DOA
- **Areas:** 5 districts targeted under the ODA Loan Project
- **Main Target:** DOA/District Coordinators
- **Activities:** Five-year-plan including results/lessons to be learnt from the Project activities, applicable new techniques, next five year target for crop diversification after the Project, and necessary actions (with current problem, countermeasures, implementers, implementation period and budget arrangement) will be formulated by DOA with support from JICA TCP experts.
- **Monitoring & Evaluation:** The achievement of this output shall be incorporated into authorized annual plan developed by DOA. It shall be monitored and evaluated by DOA during and after the Project period.
- **Responsibility:** DOA/District Coordinators

3. Training in Japan

- Total 4 training programs in Japan will be organized under the Project.
- 2 courses (1-2 weeks for each) can be arranged for management level functionaries. 2 courses (1 month for each) can be arranged for field level officers and/or KVA members. Details will be determined after the commencement of the Project.

4. Budget Allocation

- Enough budget of DOA shall be allocated for continuing extension services developed under the ODA Loan Project after its completion.
- Travel Allowance/Daily Allowance and Boarding/Lodging of Indian

counterparts to participate in the project activities shall be borne by DOA in principle. DOA shall allocate separate budget for those expenses. In case that they have to travel beyond the district they belong to, JICA may bear their cost. Whenever JICA bear their cost, DOA shall clarify that any Travel Allowance/Daily Allowance and Boarding/Lodging will not be paid to the traveler from Indian side.

- DOA will also utilize the current schemes of DOA to implement the activities in pilot areas and marketing activities. Further, those schemes will be positively utilized to enhance the output of the Project and the ODA Loan Project.
- DOA will prepare the necessary budget for FY 2016, at the moment, at least.

5. Others

- The way to revise Crop Diversification Guidelines by DOA periodically based on farmers' feedback will be examined and described in Five-year-action plans.
- The office space will be prepared for JICA TCP experts in Shimla. Though it is difficult for DOA to prepare the one in the PMU office currently under construction in Hamirpur, DOA will explore the possibility to make space for JICA TCP experts in the PMU office in future.
- If the number of sub-projects under the ODA Loan Project increases, DOA and JICA will explore the possibility to provide technical assistance to those additional sub-projects as well. If it is difficult to allocate additional budget for technical assistance from both sides, reallocation within the existing budget shall be considered.
- A few trainings will be arranged for Extension Officers of DOA in 7 districts (other than 5 districts under the ODA Loan Project). Travel Allowance/Daily Allowance and Boarding/Lodging for those shall be borne by DOA.

Annex 1: Logical Framework (Project Design Matrix: PDM)

Project Title:	Phase II Project for Crop Diversification in Himachal Pradesh		
Period:	5 years from the arrival of the first expert		
Counterpart Agency:	Department of Agriculture (DOA) & Project Management Unit of ODA Loan Project (PMU) under Government of Himachal Pradesh		
Target Areas:	Direct target: 5 districts under ODA Loan Project (Bilaspur, Hamirpur, Kangra, Mandi, Una) Indirect target: 7 remaining districts in Himachal Pradesh State (Chamba, Kinnaur, Kullu, Lahaul & Spiti, Shimla, Simaur, Solan)		
Target Group	Direct target: Extension Officers in DOA/PMU, Indirect target: Farming communities (Member of Krishak Vikas Association, Self Help Group etc.) under ODA Loan Project		
Date Formulated:	, 2016 (Ver. 1)		
	Project Summary	Objectively Verifiable Indicators	Means of Verification
	Super Goal: Farmers' income increase and stabilization are promoted in the 5 districts of Himachal Pradesh.		Important Assumptions
	Overall Goal: Crop diversification according to Agro-Ecological Situations is promoted in the 5 districts of Himachal Pradesh.	<ol style="list-style-type: none"> **% of area under vegetable cultivation and quantity produced in the 5 districts is increased (against baseline data). **% of quantity of farm produce marketed within and outside the state is increased (against baseline data). 	<ul style="list-style-type: none"> Statistical data of DOA Monitoring data of ODA Loan Project
	Project Purpose: Organizational capacity ⁽¹⁾ of DOA to promote crop diversification in the 5 districts is strengthened. (1) Ability and capacity of an organization expressed in terms of its (i) Human resources: their number, quality, skills, and experience, (ii) Physical and material resources: machines, land, buildings, (iii) Financial resources: (iv) Information resources: pool of knowledge, databases, and, etc.	<ol style="list-style-type: none"> Extension programmes/activities for crop diversification implemented by DOA are improved in the sub-project areas under the ODA Loan Project (**% of trainings to farmers targeted in the annual plans are conducted). Number of farmers practicing vegetable cultivation in the sub-project areas under the ODA Loan Project is increased by **% 	<ul style="list-style-type: none"> Annual reports of DOA TCP Progress and completion reports Monitoring reports by extension officers Policies of Central and HP government for crop diversification are maintained. Climate change does not affect crop production drastically.
	Outputs: 1 Technical capacity of DOA/PMU staff to promote crop diversification practices is strengthened.	Indicators: 1.1 Number of technicians provided to farmers by Core Extension Officers (CEOs) is increased. 1.2 Number of technicians provided to farmers by other DOA/PMU staff is increased. 1.3 Satisfaction degree of farmers on extension services provided by DOA/PMU is improved.	<ul style="list-style-type: none"> TCP Progress and completion reports Evaluation survey on extension activities by farmers Majority of DOA/PMU staff trained by the Project are not transferred or resigned). All the tasks currently

Project Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions	
<p>2 Through activities in pilot areas, packages of techniques to promote crop diversification are compiled.</p>	<p>2.1 ** packages of standardized techniques to promote crop diversification are prepared. 2.2 Indicators of crop diversification (i.e. area under vegetables, production and income) are increased in the pilot areas.</p>	<ul style="list-style-type: none"> • Monitoring reports by extension officers • Revised Crop Diversification Guideline • Technical manual on production techniques • Monitoring and evaluation reports on pilot activities • Feedback from DOA/PMU staff • TCP progress and completion reports 	<p>carried out by PMU are smoothly taken over by DOA after the ODA-Loan Project has phased out in March 2018.</p>	
<p>3 Effective marketing activities for farm produce are identified.</p>	<p>3.1 Recommendations for effective activities to improve marketing of farm produce are made.</p>	<ul style="list-style-type: none"> • Compiled recommendations • Monitoring and evaluation reports on marketing support activities • TCP progress and completion reports 		
<p>4 Sustainable plans of DOA to promote crop diversification in the respective 5 districts are formulated based on achievements of the Project.</p>	<p>4.1 Five-year-action plans in the respective 5 districts after completion of the Project are formulated and approved by DOA. 4.2 Crop Diversification Guidelines and training materials are refined.</p>	<ul style="list-style-type: none"> • Five-year-action plans prepared for the respective 5 districts • Final version of Crop Diversification Guidelines and training materials 		
<p>Activities: 1.1 Collect information and analyze technical capacity of DOA/PMU staff at Block level to support crop diversification practices.</p>		<p>Implementers: DC, BSMS /CEO</p>	<p>Inputs: From Indian side 1) Personnel</p>	<p>Important Assumptions</p>

<p>1.2 Conduct training needs assessment based on examination of the contents of existing trainings.</p> <p>1.3 Based on the results of activity 1.1 and 1.2, make training plans on respective aspects of crop diversification practice.</p> <p>1.4 Conduct trainings for DOA/PMU staff at Block level (CEOs) according to the annual plans.</p> <p>1.5 Support CEOs in conducting extension activities for farming communities.</p> <p>1.6 Monitor transferring technologies to other DOA/PMU staff by CEOs.</p> <p>1.7 Conduct monitoring and evaluation of progress and achievement of extension activities.</p> <p>2.1 Select pilot site one in each Block Project Management Unit (BPMU) every two years based on farmers' proposals and criteria developed by PMU/DOA (state, district).</p> <p>2.2 Support BPMU/DOA staff (Block) and farming communities in preparing plans of pilot activities for crop diversification based on the market demand.</p> <p>2.3 Support BPMU/DOA (Block) and farming communities in implementing selected pilot activities at the respective sites.</p> <p>2.4 Conduct monitoring and evaluation of progress and achievement of pilot activities and compile packages of techniques to promote crop diversification.</p> <p>3.1 Collect information and analyze the current situation and issues regarding marketing of farm produce in the target areas and make plans for promotion.</p> <p>3.2 List up candidate activities to promote marketing of farm produce through seminars and meetings with various stakeholders including private companies and farmers (groups).</p> <p>3.3 Select higher priority activities to be supported by the Project from the list prepared.</p> <p>3.4 Implement selected activities in collaboration with Agricultural Producers' Market Committee (APMCs).</p> <p>3.5 Conduct monitoring and evaluation of progress and achievement of activities undertaken.</p> <p>4.1 Make annual plans to promote crop diversification in the 5 districts.</p> <p>4.2 Conduct monitoring and evaluation of progress and achievement of Crop Diversification Plans at the respective sub-projects.</p> <p>4.3 Compile evaluation results on activities carried out for Output 1, 2 and 3 at the end of each activity.</p> <p>4.4 Based on the results of the evaluation, revise Crop Diversification Guidelines and training materials (prepared in Phase I) where necessary.</p> <p>4.5 Hold workshops with stakeholders to share the achievement of the Project and discuss the way forward.</p> <p>4.6 Make five-year-action plans after the completion of the Project to promote crop diversification in the 5 districts.</p>	<p>DC, BSMS /CEO PM, DC BSMS/CEO BSMS/CEO DC, BSMS /CEO DC, BSMS /CEO DC BSMS/CEO BSMS/CEO DC, BSMS /CEO, DC, APMC DC, APMC DC, APMC APMC, BSMS/ CEO DC, APMC, BSMS/CEO, DC, BSMS /CEO DC PM, DC PM, DC</p>	<p>Counterpart (C/P) officers of DOA/PMU</p> <p>2) Equipment/facilities Office space at DOA</p> <p>3) Others Travel expense for C/P officers</p> <p>From Japan side</p> <p>1) Personnel Experts - Chief Advisor/Agriculture - Vegetable Farming/ Post-harvest - Marketing - Water Management/O&M - Gender/Social Inclusion - Project Coordinator</p> <p>2) Equipment Vehicle(s) Office equipment Others when required</p> <p>3) Counterpart Training Japan</p>	<p>Pre-condition</p>
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Implementers: District Coordinator (DC), Block Subject Matter Specialist (BSMS), Core Extension Officer (CEO), Project Manager (PM), Agricultural Produce Market Committee (APMC)

Annex 2 : Plan of Operation (PO)

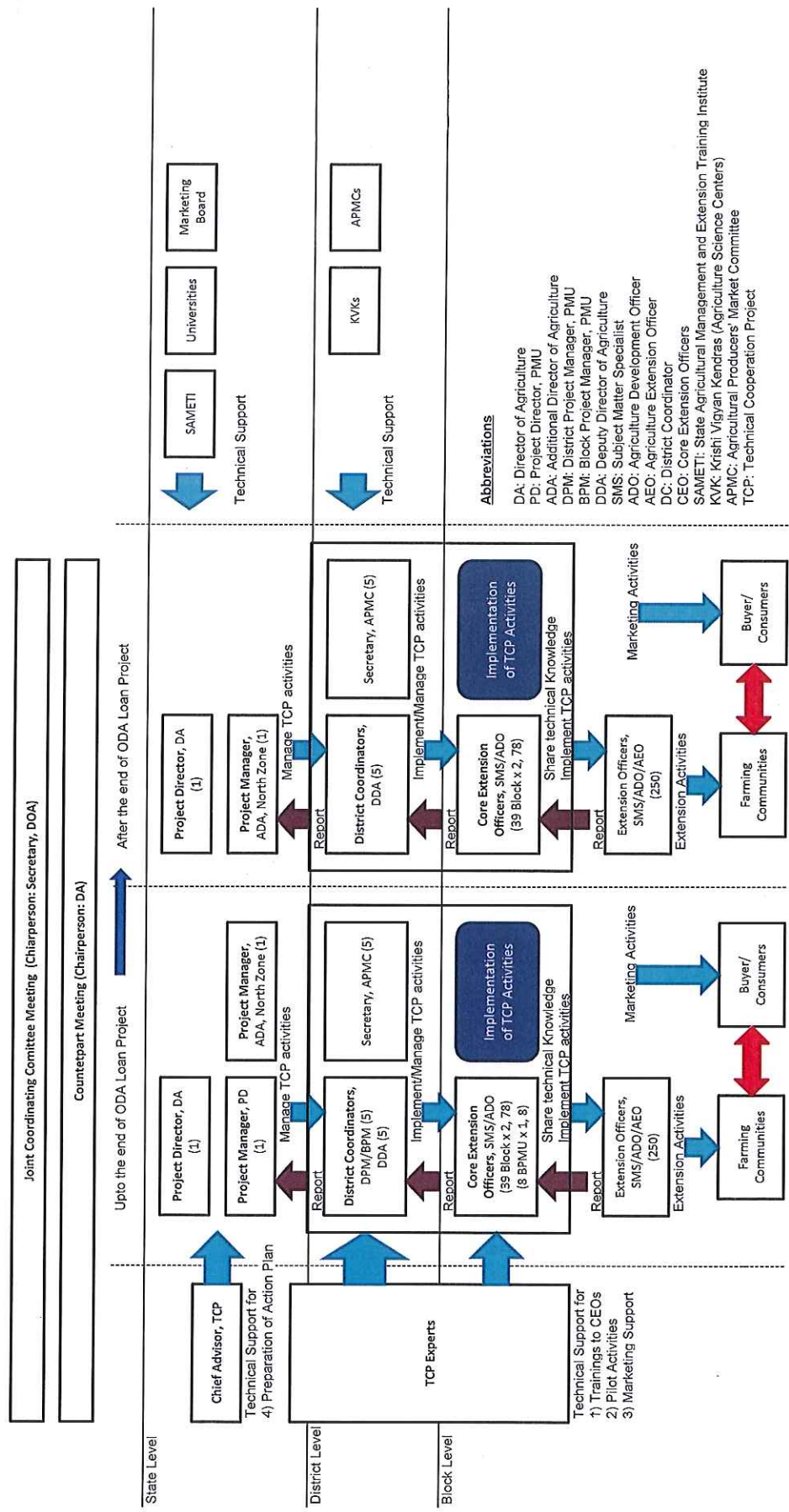
Version 1

Dated 2016

Project Title: Phase II Project for Crop Diversification in Himachal Pradesh

Inputs	Year	1st Year				2nd Year				3rd Year				4th Year				5th Year				6th Year				Remarks	Monitoring	
		I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV		Issue	Solution
Equipment																												
Vehicle(s)	Plan	●																										
	Actual																											
Training in Japan																												
Training for Counterpart Personnel	Plan																											
	Actual																											
Activities																												
Sub-Activities																												
Output 1: Technical capacity of DOA/PMU staff to support crop diversification practices is strengthened.																												
1.1 Collect information and analyze technical capacity of DOA/PMU staff at Block level to support crop diversification practices. DOA/PMU	Plan																											
	Actual																											
1.2 Conduct training needs assessment based on examination of the contents of existing trainings.	Plan																											
	Actual																											
1.3 Conduct trainings for DOA/PMU staff at Block level (CEOs) according to the annual plans.	Plan																											
	Actual																											
1.4 Conduct trainings for DOA/PMU staff at Block level according to the annual plans.	Plan																											
	Actual																											
1.5 Support CEOs in conducting extension activities for farming communities.	Plan																											
	Actual																											
1.6 Monitor transferring technologies to other DOA/PMU staff by CEOs.	Plan																											
	Actual																											
1.7 Conduct monitoring and evaluation of technical capacity of DOA/PMU staff at Block level. DOA/PMU	Plan																											
	Actual																											
Output 2: Through activities in pilot areas, packages of techniques to promote crop diversification are compiled.																												
2.1 Select pilot site one in each Block Project Management Unit (BPMU) every two years based on farmers' proposals and criteria developed by PMU/DOA (state, district).	Plan																											
	Actual																											
2.2 Support BPMU/DOA staff (Block) and farming communities in preparing plans of pilot activities for crop diversification based on the market demand.	Plan																											
	Actual																											
2.3 Support BPMU/DOA (block) and farming communities in implementing selected pilot activities at the respective sites.	Plan																											
	Actual																											
2.4 Conduct monitoring and evaluation of progress and achievement of pilot activities and compile packages of techniques to promote crop diversification.	Plan																											
	Actual																											
Output 3: Effective marketing activities for farm products are identified.																												
3.1 Collect information and analyze the current situation and issues regarding marketing of farm products in the target areas and make plans for promotion.	Plan																											
	Actual																											
3.2 List up candidate activities to promote marketing of farm products through seminars and meetings with various stakeholders including private companies and farmers (groups).	Plan																											
	Actual																											
3.3 Select higher priority activities to be supported by the Project from the list prepared.	Plan																											
	Actual																											
3.4 Implement selected activities in collaboration with Agricultural Producers' Market Committee (APMCs).	Plan																											
	Actual																											
3.5 Conduct monitoring and evaluation of progress and achievement of activities undertaken.	Plan																											
	Actual																											
Output 4: Sustainable plans of DOA to promote crop diversification in the respective 5 districts are formulated based on achievements of the Project.																												
4.1 Make annual plans to promote crop diversification in the 5 districts.	Plan																											
	Actual																											
4.2 Conduct monitoring and evaluation of progress and achievement of Crop Diversification Plans at the respective sub-projects.	Plan																											
	Actual																											
4.3 Compile evaluation results on activities carried out for Output 1, 2 and 3 at the end of each activity.	Plan																											
	Actual																											
4.4 Based on the results of the evaluation, revise Crop Diversification Guidelines and training materials (prepared in Phase I) where necessary.	Plan																											
	Actual																											
4.5 Hold workshops with stakeholders to share the achievement of the Project and discuss the way forward.	Plan																											
	Actual																											
4.6 Make five-year-action plans after the completion of the Project to promote crop diversification in the 5 districts.	Plan																											
	Actual																											
Duration / Phasing	Plan																											
	Actual																											
Monitoring Plan	Year																											
		I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	Remarks	Issue	Solution
Monitoring																												
Joint Coordinating Committee Meeting	Plan	●																										
	Actual																											
Set-up the Detailed Plan of Operation	Plan	▲																										
	Actual																											
Submission of Monitoring Sheet	Plan																											
	Actual																											
Reports/Documents																												
Inception Report	Plan	▲																										
	Actual																											
Work Plan cum Progress Report	Plan																											
	Actual																											
Project Completion Report	Plan																											
	Actual																											

Annex 3: Project Organization Chart



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Annex 4: A List of Members of Joint Coordinating Committee and Counterpart Meeting

1. Member of JCC

(Indian Side)

- Secretary, DOA (Chairperson)
- Director, DOA
- Additional Director, DOA } Convener
- Project Director, PMU }
- Chief Project Advisor, PMU
- Joint Director, DOA
- Director, SAMETI
- Director Extension Education of State Agriculture University
- Managing Director, State Agricultural Marketing Board
- Ministry of Agriculture, GoI (Observer)
- Team Leader, PMC (Observer)

(Japanese Side)

- Chief Advisor, TCP (Co-Convener)
- JICA Representative
- Representative of Japanese embassy (Observer, when necessary)

Other personnel are allowed to be invited as observers upon the agreement between the Chairperson and JICA.

2. Member of Counterpart Meeting

- Director, DOA (Chairperson)
- Additional Director/Joint Director, DOA } Convener
- Project Director, PMU }
- Deputy Directors (5 districts), DOA
- Deputy Project Directors (2), PMU
- District Project Managers (3), PMU
- Divisional Engineer, DOA
- SMS, DOA
- Project Director, ATMA (5)
- Chief Advisor, TCP (Co-Convener)

Other personnel are allowed to be invited upon the agreement between the Chairperson and Chief Advisor.

Project Monitoring Sheet-I

Version 2
Date: June 29, 2019

Project Title:	Phase II Project for Crop Diversification in Himachal Pradesh
Period:	5 years from the arrival of the first expert
Implementing Agency:	Department of Agriculture (DOA) & Project Management Unit of ODA Loan Project (PMU) under Government of Himachal Pradesh
Target Areas:	Direct target: 5 districts under ODA Loan Project (Bilaspur, Hamirpur, Kangra, Mandi, Una) Indirect target: 7 remaining districts in Himachal Pradesh State (Chamba, Kinnaur, Kullu, Lahaul & Spiti, Shimla, Simaur, Solan)
Target Group	Direct target: Extension Officers in DOA/PMU, Indirect target: Farming communities (Member of Krishak Vikas Association, Self Help Group etc.) under ODA Loan Project
Date Formulated:	July 7, 2017 (Ver. 1)

Project Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions	Achievement in Dec. 2020	Remarks
<p>Super Goal: Farmers' income increase and stabilization are promoted in the 5 districts of Himachal Pradesh</p> <p>Overall Goal: Crop diversification according to Agro-Ecological Situations is promoted in the 5 districts of Himachal Pradesh.</p>	<ol style="list-style-type: none"> 15% of area under vegetable cultivation and quantity produced in the 5 districts are increased (against baseline data). 18% of Quantity of farm produce marketed within and outside the state is increased (against baseline data). 	<ul style="list-style-type: none"> Statistical data of DOA Monitoring data of ODA Loan Project 			Subjects to approval
<p>Project Purpose: Organizational capacity ⁽¹⁾ of DOA to promote crop diversification in the 5 districts is strengthened.</p> <p>⁽¹⁾ Ability and capacity of an organization expressed in terms of its (i) Human resources: their number, quality, skills, and experience, (ii) Physical and material resources:</p>	<ol style="list-style-type: none"> 1. Extension programmes/activities for crop diversification implemented by DOA are improved in the sub-project areas under the ODA Loan Project (8% of trainings to farmers targeted in the annual plans are conducted). 2. Number of farmers practicing vegetable cultivation in the 	<ul style="list-style-type: none"> Annual reports of DOA TCP Progress and completion reports Monitoring reports by extension officers 	<ul style="list-style-type: none"> Policies of Central and HP government for crop diversification are maintained. Climate change does not affect crop production drastically. 	<ul style="list-style-type: none"> Major contents of each priority subject for Stage-2 was specified. Implementation of training programmes were delayed due to COVID-19. Currently trainings have been conducted as remote 	Subjects to approval

Annex-I

Project Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions	Achievement in Dec. 2020	Remarks
<p>machines, land, buildings, (iii) Financial resources: (iv) Information resources: pool of knowledge, databases, and, etc.</p> <p>Outputs:</p> <p>1 Technical capacity of DOA/PMU staff to promote crop diversification practices is strengthened.</p>	<p>sub-project areas under the ODA Loan Project is increased by 20%</p> <p>Indicators:</p> <p>1.1 Number of techniques provided to farmers by Core Extension Officers (CEOs) is increased.</p> <p>1.2 Number of techniques provided to farmers by other DOA/PMU staff are increased.</p> <p>1.3 Satisfaction degree of farmers on extension services provided by DOA/PMU is improved.</p>	<ul style="list-style-type: none"> TCP Progress and completion reports Evaluation survey on extension activities by farmers Monitoring reports by extension officers 	<ul style="list-style-type: none"> Majority of DOA/PMU staff trained by the Project are not transferred or resigned). All the tasks currently carried out by PMU are smoothly taken over by DOA after the ODA-Loan Project has phased out in March 2020. 	<p>training, applying internet.</p> <p>1.1 Through activities of Outputs 2 / 3, food diversification, and water management, extension officers have provided additional skills to farmers.</p> <p>1.2 Other DOA staff have joined in field activities of JICA TCP and gained experience.</p> <p>1.3 Not applicable</p>	Subjects to approval
<p>2 Through activities in pilot areas, packages of techniques to promote crop diversification are compiled.</p>	<p>2.1 5 packages of standardized techniques to promote crop diversification are prepared.</p> <p>2.2 Indicators of crop diversification (i.e. area under vegetables, production and income) are increased in the pilot areas.</p>	<ul style="list-style-type: none"> Revised Crop Diversification Guideline Technical manual on production techniques Monitoring and evaluation reports on pilot activities Feedback from DOA/PMU staff TCP progress and completion reports 	<p>2.1 8 pilot activities and 8 pilot sites were selected.</p> <p>Pilot activities in each pilot site have been conducted (on-going).</p> <p>However, some activities have been suspended due to outbreak of COVID-19.</p> <p>2.2 Currently, PMU has undertaken monitoring on crop diversification (area and production) in the sub-projects in cooperation with JICA TCP experts.</p>	Subjects to approval	

Annex-I

Project Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions	Achievement in Dec. 2020	Remarks
3 Effective marketing activities for farm produce are identified.	3.1 Recommendations for effective activities to improve marketing of farm produce are made.	<ul style="list-style-type: none"> • Compiled recommendations • Monitoring and evaluation reports on marketing support activities • TCP progress and completion reports 		3.1 30 sub-projects were selected in 8 BPMUs. Activities in each pilot site have been conducted (on-going). However, some activities have been suspended due to outbreak of COVID-19.	
4 Sustainable plans of DOA to promote crop diversification in the respective 5 districts are formulated based on achievements of the Project.	4.1 Five-year-action plans in the respective 5 districts after completion of the Project are formulated and approved by DOA. 4.2 Crop Diversification Guidelines and training materials are refined.	<ul style="list-style-type: none"> • Five-year-action plans prepared for the respective 5 districts • Final version of Crop Diversification Guidelines and training materials 		4.1 - Block-wise annual plans for production as well as extension activities prepared by DOA and ATMA have been confirmed (on-going). - Trials on crop diversification in 5 Districts have been monitored (on-going). - CDPs for each sub-project in the HPCDP have been confirmed (on-going). 4.2 In each Output, materials for guidelines have been prepared.	

Activities:	Implementers:	Inputs:	Important Assumptions
1.1 Collect information and analyze technical capacity of DOA/PMU staff at Block level to support crop diversification practices. 1.2 Conduct training needs assessment based on examination of the contents of existing trainings.	DC, BSMS/CEO DC, BSMS/CEO	From Indian side 1) Personnel Counterpart (C/P) officers of DOA/PMU	N.A.

Annex-I

		Pre-condition
1.3 Based on the results of activity 1.1 and 1.2, make training plans on respective aspects of crop diversification practice.	PM, DC	
1.4 Conduct trainings for DOA/PMU staff at Block level (CEOs) according to the annual plans.	BSMS/CEO	2) Equipment/facilities Office space at DOA
1.5 Support CEOs in conducting extension activities for farming communities.	BSMS/CEO	3) Others
1.6 Monitor transferring technologies to other DOA/PMU staff by CEOs.	DC, BSMS /CEO	Travel expense for C/P officers
1.7 Conduct monitoring and evaluation of progress and achievement of extension activities.	DC, BSMS/CEO	
2.1 Select pilot site one in each Block Project Management Unit (BPMU) every two years based on farmers' proposals and criteria developed by PMU/DOA (state, district).	DC	From Japan side
2.2 Support BPMU/DOA staff (Block) and farming communities in preparing plans of pilot activities for crop diversification based on the market demand.	BSMS/CEO	1) Personnel Experts
2.3 Support BPMU/DOA (Block) and farming communities in implementing selected pilot activities at the respective sites.	BSMS/CEO	- Chief Advisor/Agriculture - Vegetable Farming/ Post-harvest
2.4 Conduct monitoring and evaluation of progress and achievement of pilot activities and compile packages of techniques to promote crop diversification.	DC, BSMS/CEO,	- Marketing
3.1 Collect information and analyze the current situation and issues regarding marketing of farm produce in the target areas and make plans for promotion.	DC, APMC	- Water Management/O&M
3.2 List up candidate activities to promote marketing of farm produce through seminars and meetings with various stakeholders including private companies and farmers (groups).	DC, APMC	- Gender/Social Inclusion
3.3 Select higher priority activities to be supported by the Project from the list prepared.	DC, APMC	- Project Coordinator
3.4 Implement selected activities in collaboration with Agricultural Producers' Market Committee (APMCs).	DC, APMC APMC, BSMS/CEO	2) Equipment Vehicle(s) Office equipment Others when required
3.5 Conduct monitoring and evaluation of progress and achievement of activities undertaken.	DC, APMC, BSMS/CEO,	3) Counterpart Trainings In India In Japan
4.1 Make annual plans to promote crop diversification in the 5 districts.	DC, BSMS /CEO	
4.2 Conduct monitoring and evaluation of progress and achievement of Crop Diversification Plans at the respective sub-projects.	DC, BSMS /CEO	
4.3 Compile evaluation results on activities carried out for Output 1, 2 and 3 at the end of each activity.	DC	
4.4 Based on the results of the evaluation, revise Crop Diversification Guidelines and training materials (prepared in Phase I) where necessary.	DC	
4.5 Hold workshops with stakeholders to share the achievement of the Project and discuss the way forward.	PM, DC	
4.6 Make five-year-action plans after the completion of the Project to promote crop diversification in the 5 districts.	PM, DC	

Implementers: District Coordinator (DC), Block Subject Matter Specialist (BSMS), Core Extension Officer (CEO), Project Manager (PM), Agricultural Produce Market Committee (APMC)

Current Staff Deployment in Development Block

(1) Bilaspur District

Block	Office Name		Sales Centre	No. of Existing Staff							Sub-project
				SMS	ADO	AADO	AEO	BTM	ATM	Total	
1 Sadar	SMS Office	Sadar		1	1	1	1	1	2	7	
	(1) ADO circle office	Sadar								0	
	1 AEO circle office	Kisan Bhawan	1				1			1	Dali
	2 AEO circle office	Sadar	1				1			0	Noa
										0	Kahali
										0	Parohi
	3 AEO circle office	Jukhala	1				1			1	Chal-Karot
4 AEO circle office	Dhartatoh	1				1			1	Nalwar Kotlu	
	Total		4	1	1	1	5	1	2	11	
2 Swarghat	SMS Office	Swarghat						1	2	3	
	(1) ADO circle office	Swarghat			1					1	
	1 AEO circle office	Swarghat	1				1			1	
	2 AEO circle office	Swahan	1				1			1	
	3 AEO circle office	Bassi	1				1			1	
	Total		3	0	1	0	3	1	2	7	
3 Jhandutta	SMS Office	Jhandutta		1		1	1	1	2	6	
	(1) ADO circle office	Jhandutta								0	
	1 AEO circle office	Jhandutta	1				1			1	
	2 AEO circle office	Dahad								0	
	3 AEO circle office	Panol					1			1	
	4 AEO circle office	Kalol	1				1			1	
	(2) ADO circle office	Berthin			1					1	
	5 AEO circle office	Berthin	1				1			1	Balh Seena
										0	Fagog Dol Laswa
										0	Ghandir Jhamararhian
									0	Malangan Kuthehra	
	6 AEO circle office	Talai	1							0	
	7 AEO circle office	Gharan								0	
	Total		4	1	1	1	5	1	2	11	
4 Ghumarwi	SMS Office	Ghumarwin		1		1	1	1	2	6	
	(1) ADO circle office	Ghumarwin								0	
	1 AEO circle office	Ghumarwin	1				1			1	Bakroa
										0	Androli
										0	Takrera
										0	Chhiber Ballu
	2 AEO circle office	Bharari	1				1			1	Domehar
										0	Lehri-Sarai
										0	Sawara Jasoora
	3 AEO circle office	Bagetu	1				1			1	
(2) ADO circle office	Harlog			1					1		
4 AEO circle office	Harlog	1				1			1		
5 AEO circle office	Bhatoli	1				1			1		
6 AEO circle office	Kuthehra	1				1			1	Nalti	
	Total		6	1	1	1	7	1	2	13	
	G. Total		17	3	4	3	20	4	8	42	

Source) DDA and PD ATMA Offices, Bilaspur, September 2021

Current Staff Deployment in Development Block

(2) Hamirpur District

Block	Office Name		Sales Centre	No. of Existing Staff							Sub-Projects
				SMS	ADO	AADO	AEO	BTM	ATM	Total	
1	Hamirpur	SMS Office	Hamirpur			1	2	1	2	7	
		(1) ADO circle office	Hamirpur							0	
		1 AEO circle office	Hamirpur	1						0	(Majhog)
		2 AEO circle office	Kot				1			1	Dhangota Loharkhrian Khiya Brahmna
		3 AEO circle office	Kuthera				1			1	Balla Guhai
		4 AEO circle office	Dhaned				0			0	Kirwin-I
		5 AEO circle office	Nalti	1			1			1	Baleta Khurd
		Total		2	1	1	5	1	2	10	
2	Sujanpur	SMS Office	Sujanpur	1	1			1	2	4	
		(1) ADO circle office	Sujanpur		0		0			0	
		1 AEO circle office	Chauri		0		0			0	
		2 AEO circle office	Tihra				0			0	
		3 AEO circle office	Patlander				0			0	
		4 AEO circle office	Dosarka				0			0	
		5 AEO circle office	Chabutra		0		0			0	
		(2) ADO circle office	Jangal Beri			1	0			1	
6 AEO circle office	Jangalberi	1			1			1			
Total		2	1	1	0	1	1	2	6		
3	Bamsan (Tauni Devi)	SMS Office	Tauni Devi		1		1	1	2	5	
		(1) ADO circle office	TauniDevi							0	
		1 AEO circle office	Tauni Devi	1						0	Brahmni Manji
		2 AEO circle office	Samirpur	1			1			1	
		3 AEO circle office	Uhal				0			0	
		4 AEO circle office	Kakkar				0			0	
		(2) ADO circle office	Lambloo	1						0	
		5 AEO circle office	Lambloo				1			1	
		6 AEO circle office	Kanjhian	1						0	
		7 AEO circle office	Bhira				1			1	Panjahli Majhot Bhiunt
8 AEO circle office	Dadhoo	1			1			1			
Total		5	1	0	0	5	1	2	9		
4	Bhoranj	SMS Office	Bhoranj	1	1	1	1	1	2	6	
		(1) ADO circle office	Bhoranj			1				1	
		1 AEO circle office	Bhoranj							0	Draondla Samlog
		2 AEO circle office	Ludder				0			0	
		3 AEO circle office	Sulgwan	1			1			1	
		(2) ADO circle office	Patta							0	
		4 AEO circle office	Patta	1			1			1	
		5 AEO circle office	Tal	1			0			0	Amned Dharnasi Rahjol Deot-I Deot-II Ser Nahalwin-I Neri Bagh
6 AEO circle office	Mair				1			1			
Total		4	1	1	1	4	1	2	10		
5	Bijhari	SMS Office	Bijhari		1	1		1	2	5	
		(1) ADO circle office	Bijhari			1					
		1 AEO circle office	Bijhari	1			1				Bah Thakur-Arjun
		2 AEO circle office	Salauni								
		3 AEO circle office	Suhari				1				
4 AEO circle office	Maharal								Challeli Chalada Chakdala Majru Jamli		

(2) Hamirpur District

Block	Office Name		Sales Centre	No. of Existing Staff							Sub-Projects	
				SMS	ADO	AADO	AEO	BTM	ATM	Total		
												Ghodi
	5	AEO circle office	Garli									
	(2)	ADO circle office	Mehre								0	
	6	AEO circle office	Mehre	1				1			1	
	7	AEO circle office	Jeoli devi	1				1			1	
	8	AEO circle office	Dandroo								0	
		Total		3	1	1	1	4	1	2	10	
6	Nadaun	SMS Office	Nadaun	1	1		1	1	1	2	6	
	(1)	ADO circle office	Nadaun								0	
	1	AEO circle office	Nadaun									
	2	AEO circle office	Dhaneta								0	Beha Balla
												Beha
	3	AEO circle office	Bhumpal					0				
	(2)	ADO circle office	Kangoo			0	0	0				
	4	AEO circle office	Kangoo	1							0	Dhago
	5	AEO circle office	Fahal					1				
	6	AEO circle office	Gahlian					1			1	Guriah
												Manjra
	7	AEO circle office	Rangas					0				
	8	AEO circle office	Baldhuk					0				
	9	AEO circle office	Kaloor					0			0	
		Total		2	1	0	1	3	1	2	8	
		G. Total		18	6	3	4	22	6	12	53	

Source) DDA and PD ATMA Offices, Hamirpur, October 2021

Current Staff Deployment in Development Block

(3) Kangra District

Block	Office Name	Sales Centre	No. of Existing Staff							Sub-project	
			SMS	ADO	AADO	AEO	BTM	ATM	Total		
1	Bajnath	SMS Office	Bajnath	1				1	2	4	
		(1) ADO circle office	Bajnath			1				1	
	1	AEO circle office	Bajnath	1			2			2	Gabli Kuhal
	2	AEO circle office	Kudail							0	Hartada
	3	AEO circle office	Deol				1			1	Saron
	4	AEO circle office	Panjala	1			1			1	Mandhehar
										0	Matruhal
										0	Kanjhrad Sehal
										0	Thathi
	5	AEO circle office	Bir	1			1			1	Gunehar
	6	AEO circle office	Multhan							0	
		(2) ADO circle office	Chadiar							0	
	7	AEO circle office	Chadiar							0	
8	AEO circle office	Sansai	1						0		
	Total		4	1	0	1	5	1	2	10	
2	Dehra	SMS Office	Dehra	1				1	2	4	
		(1) ADO circle office	Dehra			1				1	
	1	AEO circle office	Dehra	1			1			1	Lower Sunhet
										0	Amb
	2	AEO circle office	Bankhandi	1			1			1	
	3	AEO circle office	Gummer	1			1			1	
	4	AEO circle office	Jwalaji							0	
		(2) ADO circle office	Khundian							0	
5	AEO circle office	Khundian	1						0	Chhount	
6	AEO circle office	Majheen				1			1		
	Total		4	1	1	0	4	1	2	9	
3	Nurpur	SMS Office	Nurpur	1	1	1	1	1	2	6	
		(1) ADO circle office	Nurpur			1				1	
	1	AEO circle office	Jaunta							0	
	2	AEO circle office	Sadwan				1			1	
	3	AEO circle office	Chawki							0	
		(2) ADO circle office								0	
	4	AEO circle office	Jachh	1						0	
	5	AEO circle office	Pargna							0	
6	AEO circle office	Panjhara							0		
	Total		2	1	1	1	2	1	2	8	
4	Bhawarna	SMS Office	Bhawarna	1		1		1	2	5	
		(1) ADO circle office	Bhawarna			1				1	
	1	AEO circle office	Bhawarna	1			1			1	
	2	AEO circle office	Pahara	1			1			1	Hatli
										0	Tang Bodhal
	3	AEO circle office	Dhoran	1			1			1	
	4	AEO circle office	Bhattoo	1						0	Sidhpur Sarkari
		(2) ADO circle office	Chachain							0	
5	AEO circle office	Chachain	1			1			1	Mathred	
6	AEO circle office	Dadh	1			1			1		
7	AEO circle office	Bundla							0		
	Total		6	1	1	1	5	1	2	11	
5	Kangra	SMS Office	Kangra	1		1		1	2	5	
		(1) ADO circle office	Kangra/Kach			1				1	
	1	AEO circle office	Kachhiari	1			1			1	Pagdandi Kuhal
										0	Loharu Kuhal
										0	Ansoli
										0	Rajul Kuhal
										0	Tarkhankar
										0	Dadu Kuhal
									0	Gela Kuhal	
2	AEO circle office	Birta	1						0		
	(2) ADO circle office	Tiara			1				1		
3	AEO circle office	Tiara	1			1			1	Ketal Kuhal	
									0	Dhugiari	
									0	Ketlu Kuhal	
									0	Joknali	
									0	Saproo	
4	AEO circle office	Ichhi				1			1		

(3) Kangra District

Block	Office Name		Sales Centre	No. of Existing Staff							Sub-project		
				SMS	ADO	AADO	AEO	BTM	ATM	Total			
	5	AEO circle office	Takipur				1				1		
	6	AEO circle office	Rajal				1				1		
	Total			3	1	2	1	5	1	2	12		
6	Bhedu Mahadev	SMS Office	Bhedu Mahadev				1	1	2	4			
		(1) ADO circle office	Bhedu Mahadev	1	1					1			
		1	AEO circle office	Garh	1			1			1		
		2	AEO circle office	Khaira	1			1			1	Upper Bhadul Kuhul	
		3	AEO circle office	Thural	1						0		
		(2) ADO circle office	Dheera								0		
		4	AEO circle office	Dheera	1			1			1		
		5	AEO circle office	Sulah	1			1			1	Taloti	
		6	AEO circle office	Panaper								0	Chandral
											0	0	Pathan Kuhl
									0	0	Panapar		
									0	0	Sapruhal		
Total			6	0	1	0	5	1	2	9	0	Makruhal	
7	Rait	SMS Office	Rait		1	1		1	2	5			
		(1) ADO circle office	Rait								0		
		1	AEO circle office	Rait	1			1			1	Rait	
											0	Johar Dariya	
											0	Gorda	
		2	AEO circle office	Nerti	1			1			1	Tatwani	
		3	AEO circle office	Rajol	1			1			1	Minji Gram	
		4	AEO circle office	Charri	1			1			1		
		(2) ADO circle office	Bhanala								0		
		5	AEO circle office	Bhanala				1			1		
6	AEO circle office	Lapiana				1			1				
Total			4	1	0	1	6	1	2	11			
8	Dharamshala	SMS Office	Dharmashala		1			1	2	4			
		(1) ADO circle office	Dharmashala								0		
		1	AEO circle office	Kalapul							0		
		2	AEO circle office	Dari	1			1			1	Dari-Khaniara	
											0	Manuh Kuhal	
		3	AEO circle office	Bagli at Masrer				1			1	Jheol	
											0	Dehri Kuhal	
		4	AEO circle office	Sidhwari	1			1			1	Bani Kuhal	
											0	Sukkar	
											0	Bhagul Kuhal	
									0	Hillan Kuhal			
									0	Chatrer Kuhal			
(2) ADO circle office	Dari								0				
5	AEO circle office	Tang	1			1			1	Gurnala Kuhal			
									0	Charul Kuhal			
									0	Noid Rani Kuhal			
6	AEO circle office	Dari							0				
Total			3	1	0	0	4	1	2	8			
9	Nagrot Bagwan	SMS Office	Nagrot Bagwan		1	1		1	1	4			
		(1) ADO circle office	Nagrot Bagwan								0		
		1	AEO circle office	Nagrot Bagwan	1			1			1	Majethly	
		2	AEO circle office	Serathana							0	Lattar Chamba	
		3	AEO circle office	Hatwas							0		
		(2) ADO circle office	Baroh								0		
		4	AEO circle office	Samloti				1			1	Fali Kuhal	
											0	Rani Kuhl	
5	AEO circle office	Baroh				1			1				
6	AEO circle office	Sadoon	1			1			1				
Total			2	1	0	1	4	1	1	8			
10	Panchrukhi	SMS Office	Panchrukhi		1	1	1	1	2	6			
		(1) ADO circle office	Panchrukhi								0		
		1	AEO circle office	kandwari	1			1			1	Raghulu	
											0	Solulu	
		2	AEO circle office	Sagoor	1			1			1	Rakkar / Rajol	
											0	Ragulu	
									0	Rakkar Khudli Chohat			
3	AEO circle office	trahel	1			1			1				
4	AEO circle office	Bhuana	1			1			1				

(3) Kangra District

Block	Office Name		Sales Centre	No. of Existing Staff							Sub-project	
				SMS	ADO	AADO	AEO	BTM	ATM	Total		
	5	AEO circle office	Punchrukhi	1				1			1	Dattal Tikkar
										0	0	Khajruhal Kuhal
	6	AEO circle office	Patti	1				1			1	Nihang Adarsh Nagar
										0	0	Holsu
										0	0	Badher
		Total		6	1	0	1	7	1	2	12	
11	Paragpur	SMS Office	Paragpur		1				1	2	4	
		(1) ADO circle office	Paragpur			1					1	
		1 AEO circle office	Pragpur	1				1			1	
		2 AEO circle office	Peersaluhi								0	Chameti
											0	Jhikli Bharoli
											0	Rajiana Mishra
		(2) ADO circle office	Dadasiba								0	
		3 AEO circle office	Dadasiba	1							0	Bandhal
4 AEO circle office	Kasba Kotla								0	Riri Kuthera		
	Total		2	1	1	0	1	1	2	6		
12	Nagrota Surian	SMS Office	Nagrota Surian		1		1		1	2	5	
		(1) ADO circle office	Nagrota Surian			1					1	
		1 AEO circle office	guler								0	
		2 AEO circle office	Barial								0	
		3 AEO circle office	Nagrota Surian	1				1			1	Sakri
		4 AEO circle office	Amlella								0	
		(2) ADO circle office	Kotla								0	
		5 AEO circle office	Jwali	1				1			1	Bharmad
		6 AEO circle office	Harsar								0	
7 AEO circle office	Trilokpur								0			
8 AEO circle office	Kotla	1				1			1			
	Total		3	1	1	1	3	1	2	9		
13	Fatehpur	SMS Office	Fatehpur		1				1	2	4	
		(1) ADO circle office	Fatehpur								0	
		1 AEO circle office	Fatehpur	1				1			1	
		2 AEO circle office	Barmar					1			1	
		3 AEO circle office	Dhameta	1							0	
		4 AEO circle office	Talbasa								0	Manwala
											0	Gaith
		(2) ADO circle office	Rehan								0	
		5 AEO circle office	Badukhar	1							0	Kumbh
									0	Babbal Bahi Khadon		
6 AEO circle office	Nakodar								0			
7 AEO circle office	Rehan								0			
8 AEO circle office	Chakuan								0			
	Total		3	1	0	0	2	1	2	6		
14	Indora	SMS Office	Indora						1	2	3	
		(1) ADO circle office	Indora								0	
		1 AEO circle office	Indora	1							0	
		2 AEO circle office	Gangath								0	
		3 AEO circle office	Mohtli					1			1	
		(2) ADO circle office	Milwan			1					1	
		4 AEO circle office	Milwan					1			1	
5 AEO circle office	Thakurdwala								0			
6 AEO circle office	Ladhwan								0			
	Total		1	0	1	0	2	1	2	6		
15	Lambagaon	SMS Office	Lambagaon		1		1		1	2	5	
		(1) ADO circle office	Lambagaon								0	
		1 AEO circle office	Lahru	1				1			1	
		2 AEO circle office	Jangal	1				1			1	
		3 AEO circle office	Andrana					1			1	
		4 AEO circle office	Lambagaon	1				1			1	
		(2) ADO circle office	Jalag			1					1	
5 AEO circle office	jalag	1							0			
6 AEO circle office	Sanghole								0	Tikru		
									0	Nag Naguli		
	Total		4	1	1	1	4	1	2	10		
G. Total				53	13	10	9	59	15	29	135	

Source) DDA and PD ATMA Offices, Kangra, October 2021

Current Staff Deployment in Development Block

(4) Mandi District

No.	Block	Office Name		Sales Centre	No. of Existing Staff						Sub-Projects	
					SMS	ADO	AADC	AEO	BTM	ATM		Total
1	Sadar	SMS Office	Sadar		1			1	1	2	5	
		(1) ADO circle office	Sadar			1					1	
		1 AEO circle office	Panarsa	1				1			1	Palsehar Magru
		2 AEO circle office	Pandoh	1				1			1	
		3 AEO circle office	Katindhi	1				1			1	Kandi Nallah to Dulchi Chonal to Kharsi Biaru Khad to Nughrad Ropari Khad to Navlaya Shilliaali to Kataula
		4 AEO circle office	Bhiuli	1				1			1	Padhiun Ghambhar Khad
		(2) ADO circle office	Saigaloo								0	
		5 AEO circle office	Bir	1				1			1	
		6 AEO circle office	Saigaloo	1				1			1	Tarwahar
		7 AEO circle office	Kotli								0	Balhi-Rakar-Bari
		Total		6	1	1	0	7	1	2	12	
2	Balh	SMS Office	Bhangrotu	1	1			2	1	2	6	
		(1) ADO circle office	Bhangrotu			1					1	
		1 AEO circle office	Bhangrotu					1			1	
		2 AEO circle office	Baggi	1				1			1	Chamytar Khad to Mansai Kundli to Shegli
		3 AEO circle office	Gagal	1				1			1	
		(2) ADO circle office	Rewalsar			1					1	
		4 AEO circle office	Leda	1			1				1	
		5 AEO circle office	Rewalsar	1				1			1	Lingari to Chid Jada Nala-Rihri
		6 AEO circle office	Ratti	1				1			1	
				Total	6	1	2	1	7	1	2	14
3	Sundernagar	SMS Office	Sundernagar		1			1	1	2	5	
		(1) ADO circle office	Sundernagar			1					1	
		1 AEO circle office	Sundernagar	1				1			1	Takwad
		2 AEO circle office	Dhanotu (Mal)	1				1			1	
		3 AEO circle office	Rohanda	1				1			1	Sanji Kothi
		(2) ADO circle office	Kangoo			1					1	
		4 AEO circle office	Harabag	1				1			1	Trihawin
		5 AEO circle office	Kangoo	1				1			1	Ropri to Khanyod
6 AEO circle office	Dehar	1				1			1			
		Total	6	1	2	0	7	1	2	13		
4	Gohar	SMS Office	Gohar		1			1	1	2	5	
		(1) ADO circle office	Gohar			1					1	
		1 AEO circle office	Gohar	1				1			1	Safe to Bani Dhan Bahuwa Kanda-Bagsyad
		2 AEO circle office	Chhaprahan								0	
		3 AEO circle office	Bagsiad	1				1			1	
		4 AEO circle office	Chailchowk	1							0	
		(2) ADO circle office	Sukibain								0	
		5 AEO circle office	Sukibain	1				1			1	Kingri to Nachhet
		6 AEO circle office	Brokhari	1							0	
		7 AEO circle office	Shalla	1				1			1	Karnala Chabad Nalla to Ger Chalehar to Gulaad
8 AEO circle office	Jahal / Jach	1	0			1			1	Jarwara to Khandoli Jail Khad-Dhunji Dhar Badli to Bag		
		Total	7	1	1	0	6	1	2	11		
5	Karsog	SMS Office	Karsog		1				1	2	4	
		(1) ADO circle office	Karsog			1					1	
		1 AEO circle office	Karsog	1				1			1	Chatruna-Khawai Kharkhan-Bhalog Birm-Masal
		2 AEO circle office	Churag	1				1			1	
		3 AEO circle office	Kelodhar	1				1			1	
		4 AEO circle office	Thakurthana								0	
		(2) ADO circle office	Pangna								0	
		5 AEO circle office	Pangna	1				1			1	
		6 AEO circle office	Alsindi	1				1			1	
		7 AEO circle office	Tatta Pani	1				1			1	
8 AEO circle office	Nihri								0			
		Total	6	1	1	0	6	1	2	11		

(4) Mandi District

No.	Block	Office Name	Sales Centre	No. of Existing Staff							Sub-Projects		
				SMS	ADO	AADC	AEO	BTM	ATM	Total			
6	Seraj	SMS Office	Janjehli		1		1		1	2	5		
		(1) ADO circle office	Janjehli			1					1		
		1 AEO circle office	Janjehli	1				1				1	Nor Khad to Teer Sangalwara Keoli Nal
		2 AEO circle office	Thunag	1				1			1		
		3 AEO circle office	Shillibagi	1				1			1		
		4 AEO circle office	Chhatri	1				1			1		
		(2) ADO circle office	Balichowki								0		
		5 AEO circle office	Thachi	1				1			1		
		6 AEO circle office	Panjain	1				1			1		
7 AEO circle office	Balichowki	1							0				
8 AEO circle office	Gadgushaini								0				
		Total		7	1	1	1	6	1	2	12		
7	Chauntra	SMS Office	Chauntra		1				1	2	4		
		(1) ADO circle office	Chauntra			1					1		
		1 AEO circle office	Chauntra	1				1			1	Tikroo Sandral	
		2 AEO circle office	Dhelu	1							0	Lambahar to Tharu Nagan Bharola Padain	
		3 AEO circle office	Drahal	1							0		
		4 AEO circle office	Drubbal	1							0		
		(2) ADO circle office	Lad Bharol								0		
		5 AEO circle office	Pandol	1				1			1	Gaddnallah to Arki	
		6 AEO circle office	Lad Bharol	1				1			1		
7 AEO circle office	Langna	1				1			1				
		Total		7	1	1	0	4	1	2	9		
8	Drang	SMS Office	Padhar		1				1	2	4		
		(1) ADO circle office	Padhar			1					1		
		1 AEO circle office	Padhar	1				1			1	Batheri	
		2 AEO circle office	Padwahan/Pal	1				1			1		
		3 AEO circle office	Balh Tikkar	1				1			1		
		4 AEO circle office	Gumma								0		
		(2) ADO circle office	Jogindernagar			0					0		
		5 AEO circle office	Jogindernagar	1				1			1		
		6 AEO circle office	Majharnu	1				1			1		
7 AEO circle office	Tikken	1				1			1				
8 AEO circle office	Barot		0			0			0	Bagicha Patyud			
		Total		6	1	1	0	6	1	2	11		
9	Gopalpur	SMS Office	Sarkaghat		1			1	1	2	5		
		(1) ADO circle office	Sarkaghat			1					1		
		1 AEO circle office	Sarkaghat	1				1			1	Karadi Kandyol Kharoh Sadhot Nalasa Kanger Kothi Dharbyani Patti Konalag Thana Mohin	
		2 AEO circle office	Paonta	1				1			1		
		3 AEO circle office	Bhaderwar	1				1			1	Damella Kukain Tikkari Rohn	
		(2) ADO circle office	Baldwara								0		
		4 AEO circle office	Bhambla	1				1			1		
		5 AEO circle office	Baldwara	1				1			1	Ladheri Barin Ukhala Lahra Khanot	
		6 AEO circle office	Amla Galu	1				1			1	Tikkari	
		Total		6	1	1	0	7	1	2	12		

(4) Mandi District

No.	Block	Office Name	Sales Centre	No. of Existing Staff							Sub-Projects	
				SMS	ADO	AADC	AEO	BTM	ATM	Total		
10	Dharampu	SMS Office	Dharampur		1		1		1	2	5	
		(1) ADO circle office	Dharampur			1					1	
		1 AEO circle office	Dharampur	1				1			1	Morla Ghiun
		2 AEO circle office	Baroti					0			0	
		3 AEO circle office	Ropri					0			0	
		4 AEO circle office	SajauPiplu	1				1			1	
		(2) ADO circle office	Sandhole								0	
		5 AEO circle office	Tihra								0	
		6 AEO circle office	Sandhole	1							0	
		7 AEO circle office	Kothuan								0	
		Total		3	1	1	1	2	1	2	8	
11	Bali Chowki	SMS Office							1	2	3	
		(1) ADO circle office									0	
		1 AEO circle office									0	
		2 AEO circle office									0	
		3 AEO circle office									0	
		4 AEO circle office									0	
		(2) ADO circle office									0	
		5 AEO circle office									0	
		6 AEO circle office									0	
		7 AEO circle office									0	
8 AEO circle office									0			
		Total		0	0	0	0	0	1	2	3	
		G. Total		60	10	12	3	58	11	22	116	

Source) DDA and PD ATMA Offices, Mandi, October 2021

Current Staff Deployment in Development Block

(5) Una District

No.	Block	Office Name		Sales Centre	No. of Staff						Sub-projects	
					SMS	ADO	AADO	AEO	BTM	ATM		Total
1	Una	SMS Office	Una		1		1		1	2	5	
		(1) ADO circle office	Una								0	
		1 AEO circle office	Ajoli				1				1	
		2 AEO circle office	Chargarh	1			1				1	
		3 AEO circle office	Bamoh	1							0	
		4 AEO circle office	Una	1							0	Phekubela
											0	Jakour
											0	Badsala
											0	Upper Basoli
		(2) ADO circle office	Santogarh								0	
		5 AEO circle office	Nart Charola								0	
		6 AEO circle office	Satoshgash								0	
		7 AEO circle office	Behdala								0	
			Total		3	1		1	2	1	2	7
2	Amb	SMS Office	Amb		1		1	1	1	2	6	
		(1) ADO circle office	Amb			1					1	
		1 AEO circle office	Chak Sarai								0	Ghungrala
											0	Dhar Gujran
											0	Suri
											0	Muchlehar
											0	Landher
		2 AEO circle office	Amb	1							0	Salana
											0	Sathru
		3 AEO circle office	Chanu								0	
		4 AEO circle office	Dhunaara								0	
		(2) ADO circle office	Churru								0	
		5 AEO circle office	Nehri Nonnga								0	
		6 AEO circle office	Nari Chimpurni								0	
7 AEO circle office	Gathniroom								0			
	Total		1	1	1	1	1	1	2	7		
3	Haroli	SMS Office	Haroli	1	1				1	2	4	
		(1) ADO circle office	Haroli			1					1	
		1 AEO circle office	Haroli					1			1	
		2 AEO circle office	Bathu					1			1	
		3 AEO circle office	Heeran								0	
		4 AEO circle office	Santosh Garh								0	
		(2) ADO circle office	Saloh								0	
		5 AEO circle office	Saloh	1							0	Badera Lower
		6 AEO circle office	Badhera								0	
		7 AEO circle office	Panjawar					1			1	
	Total		2	1	1	0	3	1	2	8		
4	Bangana	SMS Office	Bangana		1			1	1	2	5	
		(1) ADO circle office	Bangana	1							0	
		1 AEO circle office	Mandli at Chlm	1				1			1	Thana Khas
		2 AEO circle office	Khurwair								0	Amroh
		3 AEO circle office	Sohari Takoli								0	
		4 AEO circle office	Chowkuninar	1				1			1	Nagar Chowki
											0	Krishna Nagar
											0	Berian
		(2) ADO circle office	Chowkuninar								0	
		5 AEO circle office	Malangar								0	
6 AEO circle office	Bangani								0			
7 AEO circle office	Talhera								0	Behlan		
	Total		3	1	0	0	3	1	2	7		
5	Gagret	SMS Office	Gagret	1	1		1	1	1	2	6	
		(1) ADO circle office	Gagret								0	
		1 AEO circle office	Bhanjal								0	
		2 AEO circle office	Daulatpur Chov	1							0	
		3 AEO circle office	Prithpur								0	
		4 AEO circle office	Oet								0	
		(2) ADO circle office	Daulatpur								0	
		5 AEO circle office	Gagret at Kaloh								0	Jarla-Kori
		6 AEO circle office	Badehra Rajputan								0	
7 AEO circle office	bhaderkali								0			
	Total		2	1	0	1	1	1	2	6		
G. Total				11	5	2	3	10	5	10	35	

Source) DDA and PD ATMA Offices, Una, October 2021

List of Technical Staff in Agriculture Sector of PMU

PMU Office	Post	State PMU	District PMU			Block PMU					Total			
			Palampur	Hamirpur	Mandi	Hamirpur	Una	Mandi	Sarka ehat	Dehra		Nurpur	Bajnath	
State PMU	1 Project Director	Suresh Kapoor											1	
	2 Deputy Project Director (Engineer)												1	
	3 Deputy Project Director (AAE)	Kishore C. Azad												
	4 Deputy Project Director	Ravinder Chauthan											1	
	5 SMS	Ashish Anand											1	
	6 SMS	Rakesh Kumar											1	
	7 Agriculture Extension Officer	Sheeva Sharma											1	
District PMU	Sub-total for State PMU	6											6	
	1 District Project Manager		Rajesh Sood	Sumil Chouhan	Navneet Sood								3	
	2 SMS		Sapan Thakur*	Rajnish Kumar	Sonal Gupta								4	
	3 Agriculture Development Officer		Nagender Nag*										1	
	4 Agriculture Extension Officer		Ranu Pathania	Disha Parial	Tamara Arya	Kiran Kumari							1	
	5 Agriculture Expert		Nidhi Rana	Himani Gupta									3	
6 Agriculture Officer												1		
Sub-total for District PMUs		5	5	3									13	
Block PMU	1 Block Project Manager		Prem Chand Sharma				Virender Kumar Bagga				Ravi Kant	Nandini Kumari	Banita Sood	8
	2 Agriculture Development Officer						Aruna Sharma				Gulshan Mankota		Jitender Kumar	3
	3 Agriculture Extension Officer						Disha Parial	Anoop Kumar	Ankita Kapoor	Sakshi Sharma	Purnima Thakur	Ridhima Gupta	Neerav Salila	9
	4 Agriculture Expert						Nitika Soni	Amit Sharma	Pooja Devi	Rasham Sood	Sunita Thakur	Suvinitika Sharma	Vikarant Rana	5
	5 Agriculture Officer						Jayoti Thakur	Vikram Singh	Rasham Sood	Pooja Devi	Sunita Thakur	Parika Sepehiya	Swati Sood	8
Sub-total for Block PMUs		4	5	5	5	5	4	4	4	4	3	3	4	33
Grand Total		6	5	3	5	5	4	4	4	4	3	2	4	52
CEOs		0	4	2	3	4	4	4	3	3	2	2	3	35
No. of Sub-project areas			33	18	19	18	19	19	19	33	29	25	32	210

Note: * : outsourcing or comprehensive contract basis (re-employment) Staff : Male= 23 : Female= 29 : Male= 9 : Female= 26
 * : in charge of SCTC : Female= 28 : Male= 26 : Female= 27
 Source) List of Staff, HPCDP JICA ODA, Hamirpur (as of October 2021) CEOs : Male= 9 : Female= 26 : Male= 26 : Female= 27

Chapter 2

2.1 *General Activities*

Draft Minutes of 1st meeting of JICA Technical Cooperation Project for Crop Diversification in Himachal Pradesh Phase-II held under the Chairmanship of Sh.A.K. Metha, Additional Chief Secretary (Agri.) to the Govt. of H.P. Shimla-2, on 7th March, 2017 at 4.00 P.M. in the Committee Room, Armsdale Building, H.P. Sectt. Shimla-2.

The list of participants is attached at **Annexure-1**.

At the outset, Director of Agriculture, Himachal Pradesh welcomed the Chairman and all the participants with special welcome to the JICA-India representatives for launching Technical Cooperation Project Phase II in the target five districts viz. Hamirpur, Kangra, Mandi, Bilaspur and Una.

Dr. Suresh Sharma, SMS, (Project Cell), Directorate of Agriculture, HP Shimla gave detailed outline of different activities to be taken up by the JICA TCP during Phase II. He informed that the duration of JICA TCP Phase II shall be for five years starting from 15th of February 2017 till February 2022. He expressed that JICA expert team headed by Mr. Yoshiyuki Ishizaki has arrived in the State of Himachal Pradesh on 2nd of March 2017, and the team will implement different activities envisaged under the project in two stages in cooperation with DOA/PMU. The first stage will be up to July 2019, and the second stage shall start from August 2019 to February 2022, but their activities shall continue without break during the intervening period also. The activities to be taken up by JICA TCP Phase II is attached at **Annexure-2**.

Mr. Ishizaki gave details about the Japanese experts who have been associated with Phase II activities. He further stated that draft work plan for Phase II in the stage-1 has been prepared and circulated among the members attached at **Annexure-3**. The Chairman desired that JICA-TCP should have detailed discussions with the PMU/DOA officers in this behalf and come out with final work plan for approval. Mr. Ishizaki informed that the final work plan shall be ready by May, 2017 and requested that additional JCC meeting is required to be convened for approval of final work plan which shall be implemented during Phase II Stage-1. It was suggested that after finalization of final work plan, additional meeting of JCC be convened in the end of May, 2017 for approval of the final work plan. The next EC meeting is scheduled to be held in June, therefore the next JCC meeting (2nd JCC meeting) could be arranged with EC meeting at the same time.

The follow issues were emerged from the presentation:

- The Chairman enquired about number of DOA/PMU officers to be imparted training by JICA-TCP during Phase II. Dr. Suresh Sharma informed that 342 officers from DOA as well as 48 officers from PMU of five districts viz. Hamirpur, Una, Bilaspur, Mandi, Kangra shall be imparted training

during Stage-1 in Phase-II. The Chairman desired that possibility for imparting training of remaining 7 districts officers should also be explored and those may also be closely associated with the training programmes. Mr. Kimura also endorsed the said suggestion.

- Mr. Subrotu informed that JICA-TCP is the first project in India wherein it has been proposed for one month training schedule of farmers to Japan. Dr. J.C. Rana informed that although it is good step but we have to be very careful for selection of farmers for the said scheduled visit.
- The Chairman desired to know the adoption level of organic farming in Japan. Mr. Takayoshi Tange Sr. Representative JICA India informed that in Japan also organic farming is being practiced. Adoption level depends upon the demand and supply position so that farmers should sustain for the adoption of organic farming. It also depends on the size of market viz. whether the produce is to be sold in global market, state market, district market or local market.
- The Chairman expressed that we are very admirer to the Japanese who have done very hard work and developed human capacity in their planning system. We also expect that similar planning should be developed in Himachal Pradesh and the people may get best output.
- The Chairman stated that sufficient irrigation infrastructure has been created in Himachal Pradesh by different agencies but there is still need for field channelization and this aspect needs to be given special emphasis.

At the end the Chairman thanked the JICA-India officers for launching JICA-TCP Phase II in Himachal Pradesh. He desired that all the associated agencies should work earnestly to achieve the envisaged targets under this project so that real benefit may go to the farming community. He asked the officers to integrate all the on-going programmes so as to develop command irrigation area. He suggested that required guidance needs to be provided to the farmers for selling their produce so that they may get remunerative prices of their produce.

The meeting ended with vote of thanks to and from the Chair.

Annexure-1

LIST OF PARTICIPANTS

Sr. No.	Name	Position
1	Sh. A.K. Mehta	Addl. Chief Secretary (Agri.) to the Govt. of H.P. Shimla-2.
2	Sh. J.C.Rana	Chief Project Advisor JICA ODA, Hamirpur
3	Sh. Ramesh Chand	Director of Agriculture Himachal Pradesh, Shimla-5.
4	Mr. Takayoshi Tange	Sr. Representative/Deputy Chief JICA India office. New Delhi
5	Mr. Akihiro Kimura	Representative JICA India Office New Delhi
6	Mr. Subroto Talukdar	Principal Deve. Specialist, JICA India office New Delhi.
7	Dr. V.K. Sharma	Project Director, HP CDP, Hamirpur
8	Sh. D.D. Sharma	Sr. Marketing Officer, Representative Managing Director, HP State Agriculture Marketing Board Shimla
9	Dr. N.K. Badhan	Director, State Agriculture Management Extension Training Institute, Mashobra, Shimla
10	Dr. Manoj Gupta	Professor, CSK Sirmour, Representative Director Extension, HPKCC, Palampur
11	Sh. M.L. Gupta	Co-Team Leader PMC, Hamirpur
12	Mr. Ishizaki	Chief Advisor, JICA-TCP Hamirpur
13	Ms. Togawa	Project Coordinator/Market & Agri. Support, JICA-TCP, Hamirpur
14	Sh. Desh Raj Sharma	Joint Director of Agriculture, Himachal Pradesh, Shimla-5.
15	Sh. Ved Parkash Sharma	Joint Director of Agriculture, Himachal Pradesh, Shimla-5.
16	Sh. Y.S. Pathania	District Project Manager, HP CDP Mandi
17	Sh. R.S. Minhas	District Project Manager, HPCDP Palampur, District Kangra
18	Sh. Jagjit Kumar	SMS, SPMU, Hamirur
19	Dr. Suresh Sharma	SMS (Project Cell), Directorate of Agriculture, H.P.Shimla-5.

Draft minutes of the 2nd JCC Meeting held under the Chairmanship of Sh.A.K.Mehta, Addl. Chief Secretary (Agri.) to the Govt. of H.P. Shimla-2, on 17.07.2017 at 04.00 P.M. in the meeting hall of Arms Dale Building, H.P. Secretariat, Shimla-2.

The list of participants is attached at **Annexure-I**.

At the outset, Dr.V.K. Sharma, Project Director, HPCDP, JICA-ODA, welcomed the Chairman, Team from JICA India, Chief Project Advisor, JICA-CDP ODA and all other participants and informed that this is the 2nd meeting of the JCC being convened under JICA TCP Phase-2 Stage-1. Thereafter, Project Director requested the Deputy Project Director, HP CDP, Hamirpur to give brief presentation on the activities to be taken up by JICA-TCP during Phase II Stage-1.

The Deputy Project Director, Hamirpur informed that this is the second meeting of JICA-TCP being convened under Phase-II. The 1st JCC meeting was held on 7th of March 2017 at Shimla which was an introductory meeting and the outlines of the project were discussed. The detailed draft work plan for different activities to be taken up during this year was prepared which is depicted in **Annexure -2**. He further informed that during this meeting the work done from March 2017 to June 2017, and scheduled work plan for remaining period of the current year was discussed for approval. The DPD further stated that TCP Phase 2 Stage 1 was started from March 2017 and will go up to July 2019. The purpose of the project is to strengthen the capacity of Extension Officers (Eos) of Department of Agriculture / PMU to promote crop diversification in the 5 targeted districts viz. Hamirpur, Una, Bilaspur, Kangra and Mandi. However, the capacity building through trainings of DOA officers for remaining seven districts shall also be developed. He explained that during Stage-I (February 2017 to July, 2019) of Phase II, following activities under Outputs 1,2,3 and 4 shall be taken up:

- Output 1: To develop technical capacity of EOs through conducting need based trainings on different subjects for promotion of crop diversification practices.
- Output 2: Select pilot site and pilot activity one in each Block Project Management Unit based on the need of the farmers for promotion of crop diversification.
- Output 3: To collect information and analyse the current situation regarding marketing of farm produce.
- Output 4: To make annual plans to promote crop diversification in 5 Districts.

Thereafter, Deputy Project Director gave detail power point presentation on different activities to be taken up during current year. The proposed work plan attached at **Annexure-3** was approved with following observations:

- The ACS (Agri.) suggested that DOA officials in the remaining 7 districts should also be trained under the TCP. The JICA mission explained that if DOA allocate budget, then such trainings can be arranged by the TCP. Further, The ACS suggested that DOA, PMU and SAU (State Agricultural Universities) should have better communication among them.
- The ACS(Agri.) desired that a working group should be formulated and Senior Marketing Officer should be made a Nodal Officer for monitoring different activities concerning to marketing activities under JICA TCP and he may also suggest the names of resource persons for imparting training under marketing discipline. Further he suggested that all 41 market yard officials and 10 Secretaries of APMC should be involved actively under JICA-TCP programme, and the list of these officials be supplied to Chief Advisor, JICA-TCP immediately.
- The ACS(Agri.) suggested that the DOA officials in 7 Districts other than the ODA loan project be trained under the TCP. Meanwhile the JICA mission explained that there is small scope of the training for those officials, however, it is possible to increase the number of trainees if the DOA could allocate the necessary budget for them. The ACS instructed the DOA to allocate the necessary budget for the said purpose.
- Director (Extension) HPKV, Palampur suggested that KVK should also be actively involved for different activities to be taken up under JICA-TCP Phase II stage-1.
- Senior Marketing Officer HP State Marketing Board (Mr. D.D. Sharma), suggested that the Secretary of APMC should also be closely associated with marketing activities being listed under JICA-TCP.
- Mr. Subroto. JICA-India, suggested that APMC staff should be actively associated with JICA-TCP.
- Mr. Akihiro Kimura, Representative, JICA-India suggested that the expenses of TA / DA and boarding/lodging as well of DOA/SPMU officers should be borne by the DOA/ SPMU as there is no provision for the same under JICA-TCP. The Chief Project Advisor informed that there are sufficient funds to meet the TA/DA expenses by the DOA/SPMU, and in future these expenses shall be met by DOA/SPMU from their own budget.
- Mr. Akihiro Kimura suggested that the guidelines developed by JICA-TCP during phase-1 should also be up-dated keeping in view the field requirements.
- Mr. Akihiro Kimura suggested that to enhance the outputs, some similar schemes of DOA may also be converged with JICA-TCP activities so as to get better results.

After the discussions, the JCC approved the Work Plan for Stage-1 to be implemented during the period from March 2017 to July 2019. At the end, the Project Director, HPCDP, ODA thanked all the participants and requested to make sincere efforts so that the TCP activities are implemented in a successful manner. It is the programme of all of us so we should devote our full efforts to achieve the goal set up under this project. He assured that we will work together so that the JICA TCP Phase II stage-1 activities are achieved in full.

The meeting ended with a vote of thanks from and to the Chair.

Annexure -I

List of participants who participated in the Second JCC meeting held under the Chairmanship of Addl. Chief Secretary (Agri.) to the Govt. of H.P. Shimla-2, held on 17.07.2017 at 04 P.M. in the meeting hall of Armsdale building, H.P. Secretariat, Shimla-2.

Sr. No.	Name	Position
1.	Sh. Naresh Thakur	Joint Secretary (Agri.) to the Govt. of H.P. Shimla-2
2.	Sh. Ved Parkash Sharma	Director of Agriculture, Himachal Pradesh, Shimla-5.
3.	Dr. J.C.Rana	Chief Project Advisor, JICA-CDP, ODA, Hamirpur
4.	Dr. Vinod Kumar Sharma	Project Director, JICA-CDP, ODA, Hamirpur
5.	Mr. Takayoshi Tange	Sr. Representative/Deputy Chief Representative JICA India, New Delhi.
6.	Mr. Akihiro Kimura	Representative, JICA-India New Delhi
7.	Mr. Subroto Talukdar	Project Dev. Specialist, JICA-India New Delhi
8.	Sh. Desh Raj Sharma	Jt. Director of Agriculture, H.P. Shimla-5.
9.	Sh. R.K. Kondal	Joint Director of Agriculture, Himachal Pradesh, Shimla-5.
10.	Prof. Dr. Atul	Director, Extension Education, CSK, HPKV, Palampur
11.	Sh. Anand Parashar	Deputy Project Director, JICA-CDP, ODA, Hamirpur
12.	Sh. D.D.Sharma	Sr. Marketing Officer, H.P. Marketing Board, Shimla-2.
13.	Mr. Yoshiyuki Ishizaki	Chief Advisor, JICA-TCP, Hamirpur
14.	Ms. Yoko Nagata	Farming & Post Harvest Expert JICA-TCP, Hamirpur
15.	Dr. Sapau Thakur,	Rep. Director SAMETI, Mashobra, Shimla-7
16.	Sh. N.K. Dhiman	District Project Manager, HPCDP, ODA, Hamirpur
17.	Sh. R.S. Minhas	District Project Manager, HPCDP, ODA, Palampur
18.	Sh. Y.S. Pathania	District Project Manager, HPCDP, ODA, Mandi
19.	Sh. Ramesh Chand	S.O. Finance
20.	Dr. Suresh Kumar Sharma	Subject Matter Specialist, Directorate of Agri. H.P. Shimla-5.
21.	Sh. Jagjit Kumar Sharma	Subject Matter Specialist, SPMU, Hamirpur
22.	Sh. Gyan Asi Jena	Project Director, AECOM PMC

Draft minutes of 3rd JCC meeting held under the Chairmanship of Dr. Shrikant Baldi, Addl. Chief Secretary (Agri.) to the Govt. of H.P. Shimla-2, on 07.05.2018 at 06.00 P.M. in the meeting hall of D' POLO Hotel, Dharamshala, Himachal Pradesh.

The list of participants is attached at **Attachment-1**.

At the outset, Dr. V.K Sharma, Project Director, HPCDP, JICA-ODA, welcomed the Chairman, Chief Representative and Team from JICA India, Assistant Commissioner (NRM), Govt. of India, Chief Project Advisor, HPCDP, members of JCC and all other participants. He informed that this is the 3rd meeting of JCC being convened under JICA TCP Phase-2 Stage-1. Thereafter, Subsequently, the Project Director requested Dr. Suresh Kumar Sharma, Subject Matter Specialist, Directorate of Agriculture, HP Shimla-5 to give brief presentation on the activities taken up by JICA TCP during the year 2017-2018. He apprised the committee that it is the 3rd meeting of JICA TCP being convened under Phase-II, Stage-1. The first JCC was held on March 7, 2017 and second meeting was held on July 17.2017 at Shimla. Thereafter, following items were discussed (refer **Attachment-2**):

Agenda No.1: Confirmation of the Minutes of 2nd JCC meeting held on 17.07.2017:

The minutes of 2nd JCC meeting were circulated to all the members of Joint Coordination Committee (JCC) vide letter No. LDOAZTH-17-057 dated July 24, 2017. Action taken Report as per the “**Annexure-I**” was explained, and no comments were received from any quarter, hence the same were confirmed as such.

Agenda No.2: Comments provided from JICA India Office on Project Monitoring Sheet (PMS) up to December 2017.

Regarding comments provided from JICA India office on Project Monitoring Sheet (PMS) up to December 2017 for consideration and countermeasures have been taken in this regard. The Action taken report as per the “**Annexure –II**” was explained to the participants. JICA India Office requested to make concrete action plan with the information of what shall be done by whom by when.

Agenda No.3: Presentation and discussion on the work progress in Stage-1 of JICA TCP Phase-II:

The detailed presentation on Outputs and activities wise work progress of JICA TCP Phase-II from July 2017 to April, 2018 was presented as shown in “**Annexure-III**” and explained as under:

OUTPUT-1: Strengthening technical capacity of DOA /PMU staff for promotion of Crop Diversification (CD)

Under work plan, it was proposed to conduct 13 trainings on different priority subjects, out of which trainings on four priority subjects i.e. Micro Irrigation System (crop water requirement), Exotic Vegetables cultivation, Weed Management (including mulching) and Organic Farming and Certification in all the five JICA ODA districts were organised. The participation level was good. After discussion, the committee expressed satisfaction of the progress and asked the Chief Advisor JICA-TCP-II to complete the remaining subjects of trainings as per approved work plan.

OUTPUT-2: Compilation of packages of techniques for promotion of Crop Diversification (CD)

Under output-2, four pilot activities in 8 pilot sub projects were identified and implemented by the Extension Officers (EOs) of PMU with the support of TCP Experts. The Chairman enquired about the use of raising nursery in small poly tunnel. It was informed that the farmers earlier used to raise vegetable nursery in open fields where the germination is not so good and the effect of bad weather conditions used to affect the seedlings. Therefore, it was proposed to demonstrate poly tunnels where nursery can be raised in technical manner and the germination under poly tunnels is comparatively quite high and plants are healthier. These small poly tunnels are portable and can be shifted easily to other fields. The Additional Chief Secretary (Agri.) asked the DoA to follow the better recommendations as being suggested by JICA TCP in other districts and incorporate these recommendations into the Centrally and State sponsored schemes.

OUTPUT-3: Identification of Effective Marketing Activities.

Different activities being taken up under Output-3 were presented in detail. The Chairman desired that there is need of establishing system of marketing linked with processing or linked with APMC shipment and good post-harvest facilities. Large scale production of vegetables at one point of time has to be kept in view and we have to look for other options of marketing. We have to do much new and more advanced practices under this component on marketing so that farmers get better prices. Mr. Ishizaki informed that activities of JICA TCP are conducted based on the present production situations in those selected pilot sub project areas, and if the volume of production will increase and situation of farmers be changed, then it is expected to consider different approaches depending upon the situation.

OUTPUT-4: Formulation of sustainable plans of DOA to promote Crop Diversification (CD) in the respective Five JICA ODA districts.

The implementation schedule for preparation of CDP was explained in detail. The Chairman pointed out that Crop Diversification Plan (CDP) is the basic of this project, therefore, it is suggested the DOA will prepare Crop Diversification Plan (CDP) for Promotion of vegetable cultivation keeping in view the local conditions and the farmers requirements with support of TCP Experts.

Progress of Food Diversification: Gender Issues:

The presentation on progress of food diversification taken up last year was narrated in detail.

Progress of Water Management and Operation & Management:

The committee was apprised that under water management and Operation & Maintenance, the current situations about O&M, clarifying certain issues such as preparation of training material for Extension Officers and updating of training material and guidelines for water management are being undertaken.

Agenda No.4: Criteria of selection of trainees for the next overseas Training in Japan:

The Chief Advisor, JICA TCP Experts Team It was informed that it is proposed to organize One-month training in Japan consisting of 10 persons, under JICA TCP Phase-II and out of which 5 persons will be Extension officers and 5 persons will be farmers of ODA Project areas. The tentative criteria for selection of 5 Extension Officers and 5 advanced farmers have been prepared and attached at **Attachment-3**. This training shall be organized from the 1st week of September 2018 to the first week of October 2018. After discussion, it was decided that PMU in consultation with DOA shall prepare /finalize the list of Extension Officers (EOs) and advanced farmers on the basis of outlined criteria in May2018. The names of EOs & Farmers selected be got approved from Govt. of Himachal Pradesh. The approved list be sent to Govt. of India for their approval also. The JICA India requested that the final list be made available one and half month before the date of its actual commencement. The Chairman suggested that before final approval of list, it should be discussed with the JICA India authorities. An undertaking may also be obtained from the selected Extension Officers that they will work in the project up to year 2020 i.e. the date of completion of HPCDP.

At the end, Director of Agriculture, HP thanked all the participants with special thanks to Addl. Chief Secretary (Agri.), JICA India Team and Govt. of India officer for attending the meeting and giving their valuable suggestions/guidelines. Further, He deeply appreciated for participation of Mr. Sakamoto, chief representative of JICA India Office, although he attended for short time in the latter part of the meeting. Finally he assured that whatever suggestions/ guidelines have been given, those shall be adhered to strictly and all out efforts shall be made to implement all outputs of JICA TCP so as to make this programme successful and promoting Crop diversification in the State.

The meeting ended with a vote of thanks from and to the Chair.

Attachment-1

List of participants who participated in the 3rd JCC meeting held under the Chairmanship of Dr. Shrikant Baldi, Addl. Chief Secretary (Agri.) to the Govt. of H.P. Shimla-2, on 07.05.2018 at 6.00 P.M in the meeting hall of D' POLO Hotel, Dharamshala , Himachal Pradesh

r.No.	Name	Position
1	Mr. Takema Sakamoto	Chief Representative, JICA India.
2	Mr. Akihiro Kimura	Representative, JICA India.
3.	Mr. Subroto Talukdar	Principal Development Specialist, JICA India.
4	Sh. RAS Patel	Assistant Commissioner (NRM), Govt. of India, Ministry of Agriculture, Department of Agri. & Cooperation, New Delhi.
5	Dr. J.C. Rana	Chief Project Advisor, JICA-CDP, ODA, Hamirpur
6	Dr. Des Raj Sharma	Director of Agriculture, Himachal Pradesh, Shimla-5.
7	Dr. V.K. Sharma	Project Director, JICA-CDP, ODA, Hamirpur
8	Dr. Rajinder Verma	Managing Director, H.P. Agriculture Produce & Marketing Board, Khalini, Shimla-2.
9	Mr. Yoshiyuki Ishizaki	Chief Advisor, JICA-TCP, Hamirpur
10	Mr. Matsuda Kohei	Water Management Expert, JICA TCP, Hamirpur
11	Dr. Anand Prashar	Deputy Project Director, SPMU, Hamirpur
12	Dr.Sunil Chauhan	Subject Matter Specialist SPMU, Hamirpur
13	Dr.S.K. Sharma	Subject Matter Specialist, Directorate of Agriculture, Himachal Pradesh, Shimla-5.
14	Dr.Suresh Kapoor	District Project Manager, HPCDP, JICA ODA, Hamirpur
15	Dr. Ms. Daya Katoch	District Project Manager, HPCDP JICA ODA, Palampur
16	Dr. Y.S.Pathania	District Project Manager, HPCDP JICA ODA, Mandi
17	Dr. Pratap Singh	Technical Director, AECOM, Hamirpur
18	Dr.A.S.Rana	Co-Team Leader, PMC, Hamirpur

Draft minutes of 4th JCC meeting held under the Chairmanship of Dr. Onkar Chand Sharma, Principal Secretary (Agri.) to the Government of H.P. Shimla-2, on 12.12.2018 at 4.00pm in the meeting hall of Hotel Centre Point, Dharamsala, Himachal Pradesh

The list of participants is attached at **Attachment-1**.

At the outset, Dr. V. K Sharma, Project Director, HPCDP, JICA-ODA, welcomed the Chairman, Team from JICA India, Chief Project Advisor, JICA CDP ODA and all other participants in the 4th meeting of JCC being convened under JICA TCP Phase-2 Stage-1. Thereafter, the Project Director requested Dr. Anand Prashar, Deputy Project Director, HPCDP JICA ODA, to give brief presentation on the activities taken up by JICA TCP up to November 2018.

Dr. Anand Prashar informed that this is the 4th meeting of JICA TCP being convened under Phase-II, Stage 1. Thereafter, following agenda items were discussed:

Agenda No.1: Confirmation of the Minutes of 3rd JCC meeting held on 07.05.2018:

The minutes of 3rd JCC meeting were circulated to all the participants vide letter No. LDOAZTH-18-007 dated May 15, 2018. No comments were received from any quarter, hence the same were confirmed as such. It was further informed that necessary actions on all the items suggested in 3rd JCC meeting were taken and the same were explained to the participants and were approved. The action taken report is enclosed as per "**Annexure-I of Attachment-2 on Agenda Notes**".

Agenda No.2: Comments provided from JICA India Office on Project Monitoring Sheet (PMS) (up to June 2018)

JCC was informed that some comments from JICA India Office on Project Monitoring Sheet (PMS) up to June 2018 were considered and countermeasures have been taken. Action taken report on comments was explained in detail as per **Annexure-II of Attachment-2** were approved by the house.

Agenda No.3: Presentation on Work Progress of JICA TCP Phase-II up to November 2018.

It was informed that the presentation on work progress of JICA TCP Phase-II from July 2017 to November 2018 under following major fields viz. strengthening technical capacity of DOA/PMU staff for promotion of Crop Diversification (Output-1), compilation of packages of techniques for promotion of crop diversification (Output -2), Identification of effective marketing activities (Output-3), formulation of sustainable plans of DOA to promote crop diversification in the respective five districts viz. Hamirpur, Una, Bilaspur, Mandi and Kangra (Output-4), Gender Issues (Food diversification) and Water Management and O&M were explained in detail as shown in the attached **Annexure-III of Attachment-2**. Finally, the work progress was approved with following observations.

The Principal Secretary (Agri.)

He enquired about the impact of training and what is the outcome of these trainings. Whether the farmers have started the adoption of new technology and have increased their farm income from the infrastructure developed under different schemes and whether the farmers are adopting practical approach.

Dr. V. K. Sharma, Project Director, HP CDP JICA ODA

He informed that training programmes are being organised in consultation with University scientists keeping in view the local requirement of farmers. Our Extension officers are continuously advocating the farmers to adopt new technology thereby the farmers income will definitely increase. Imparting of training is a continuous process and the ultimate goal of these trainings is to persuade the farmers to go for crop diversification and by adopting latest farm practices by the farmers, their income is likely to be increased.

Mr. Ishizaki informed that in the training programmes, emphasis is being laid on proper planning of the activities supported with documentation and supplement the new technology. The monitoring is being done from time to time. Further, monitoring and evaluation on extension activities for farmers, which are arranged by extension officers of PMU, are being conducted. Extension officers have been strongly instructed that purpose as well as outputs / outcomes of extension activities should be clear and documented.

Ms. Mariya WATANABE Representative, JICA India Office,

She confirmed and suggested to closely involve PMU with TCP for taking up different activities such as Outputs-2 and 3.

Dr. V. K. Sharma, Project Director, HP CDP JICA ODA

Considering the current situation, big market is not required. In TCP, market-driven production activities are promoted in order to earn more income.

The Principal Secretary (Agri.)

He enquired about the sustainability of implementation of Output-3 activities.

DPD (Agri.), PMU, HPCDP

Regarding cultivation of off season vegetables, on trial basis we have planned to take up vegetable cultivation in such a way that when these are not readily available in the market and their prices are comparatively higher. Early transplanting of cole crops (during August) fetches good return to the farmers during October. We are persuading the farmers to grow vegetable early season and late season vegetables when the demand of such vegetables is high. The response of the farmers is quite satisfactory for market-driven vegetable cultivation.

Mr. Ishizaki

He informed that these activities have been conducted based on farmers' needs as well as requirement. Farmers are keen to harvest vegetables during the season with higher prices, however they have no experience as well as skills on its countermeasures. We are guiding farmers to sell their crops in those markets where the prices are comparatively higher.

The house appreciated the steps being taken for persuading the farmers to adopt such vegetable crops which are rich from nutrition point of view and suggested that possibility for selling the products by brand name needs to be explored.

The Principal Secretary (Agri.)


He emphasised that the officers who have under gone one-month training in Japan should replicate their experience in the project area and also share with other colleague and farming community. Interaction and discussion during their exposure visit to Japan was very fruitful, and we must work on their strategy, and also learn from their experience.

Finally, Mr. Subrot, JICA India office, gave following suggestions:

- Some bits of video clipping need to be added in the presentation / photographs.
- TCP should guide the PMU to improve the power point presentation level.
- Efforts should be made to convince the farmers about the food diversification and their nutrition value.
- Some training on preparation of business plan is required in the activities of JICA TCP.
- TCP is supplementing the ODA project, and good coordination between JICA TCP and PMU shall further support in achieving the project objectives.

Agenda No.4: Blank Indicators to be specified in the Project Design Matrix.

Indicators to be specified in the Project Design Matrix (PDM) is proposed and attached at **Annexure-IV of Attachment-2 on Agenda Notes**. The Project Director, HPCDP JICA ODA informed that PDM will be finalized in the DC meeting scheduled to be held on 7th January 2019 at Hamirpur. Thereafter, these will be sent to the DOA as well as JICA India for approval.



At the end, Dr J. C. Rana, Chief Project Advisor, HPCDP JICA ODA thanked all the participants with special thanks to Principal Secretary (Agri.) and JICA India Team for attending the meeting and giving their valuable suggestions/guidelines. He expressed that JICA India is providing full cooperation in the implementation of the project in right earnest manner. He assured that whatever suggestions/ guidelines have been given, those shall be adhered to strictly and all out efforts shall be made to implement the activities to achieve all outputs of JICA TCP so as to make this programme successful thereby farmers shall get the desired benefits.

The meeting ended with a vote of thanks to and from the Chair.

Attachment-1

List of participants who participated in the 4th JCC meeting held under the Chairmanship of Dr. Onkar Chand Sharma, Principal Secretary (Agri.) to the Govt. of H.P. Shimla-2, on 12.12.2018 at 4.00pm in the meeting hall of Hotel Centre Point, Dharamsala, Himachal Pradesh

Sr.No.	Name	Position
1	Ms. Mariya WATANABE	Representative, JICA India Office, New Delhi
2	Mr. Subroto Talikdar	Principal Development Specialist, JICA India Office, New Delhi
3.	Dr. J. C. Rana	Chief Project Advisor, JICA-CDP, ODA, Hamirpur
4	Dr. Des Raj Sharma	Director of Agriculture, Himachal Pradesh, Shimla-5.
5	Dr. R. K. Kaundal	Managing Director, Agriculture Produce & Marketing Board, Shimla
6	Dr. Y. P. Thakur,	Director, Extension Education, CSK HPKV, Palampur
7	Dr. D. R. Thakur	Director, SAMETI, Mashobra, Shimla-7
8	Dr. V.K. Sharma	Project Director, JICA-CDP, ODA, Hamirpur
9	Dr. A. S. Rana	Co-Team Leader, PMC, , HPCDP, Hamirpur
10	Dr. Anand Prashar	Deputy Project Director, , SPMU, HPCDP, Hamirpur
11	Dr. Sunil Chauhan	Subject Matter Specialist, SPMU, HPCDP, Hamirpur
12	Dr. Jagit Kumar	Subject Matter Specialist, SPMU, HPCDP, Hamirpur
13	Dr. Ms. Daya Katoch	District Project Manager, Palampur, HPCDP
14	Dr. Vinod Sharma,	District Project Manager, Hamirpur, HPCDP
15	Dr. K. S. Patial	District Project Manager, Mandi, HPCDP
16	Mr. Yoshiyuki ISHIZAKI	Chief Advisor, JICA TCP, Hamirpur
17	Ms. Yoko NAGATA	Farming and Post-harvest Expert, JICA TCP, Hamirpur
18	Ms. Eiri KAKU	Gender/Social Inclusion/Institutional Development Expert, JICA TCP, Hamirpur
19	Ms. Yuko TOGAWA	Project Coordinator/Marketing Support Expert, JICA TCP, Hamirpur

Draft proceeding of 5th JCC meeting held under the Chairmanship of Sh. O.C. Sharma, Principal Secretary (Agri.) to the Govt. of Himachal Pradesh, Shimla-2, on 29th June 2019 at 12.30pm in the meeting hall of Armsdale Building of H.P. Secretariat, Shimla-2.

The list of participants is attached at **Attachment-1**.

At the outset, Dr. V.K. Sharma, Project Director, HPCDP, JICA ODA, welcomed all the participants with special thanks to Ms. Mariya Watanabe, Representative JICA India office. He informed that during this meeting, brief presentation of different activities taken up by JICA TCP Stage-1 of Phase-II Project on crop diversification in Himachal Pradesh (JICA-TCP) under Output-1 to Output-4, Food diversification, Water management and O&M and further action taken on comments received from JICA India office on Project Monitoring Sheet shall be made. Thereafter, he requested Dr. Suresh Kumar Sharma, Subject Matter Specialist, Directorate of Agriculture, H.P. Shimla-5, to start the presentation.

Agenda No.1: Confirmation of the Minutes of 4th JCC meeting held on 12th of December 2018

The minutes of the 4th JCC meeting held on 12th of December 2018 were circulated to all concerned. Since no comments were received from any quarter, hence the same were confirmed as such. It was further informed that necessary actions on all the items suggested in 4th JCC meeting were taken and the same were explained to the committee and were approved. The action taken report is enclosed as per “**Annexure-I of Attachment-2 on Agenda Notes**”.

Agenda No.2: Comments provided from JICA India Office on Project Monitoring Sheet (PMS) (up to December 2018)

JCC was apprised that some comments from JICA India Office on Project Monitoring Sheet (PMS) up to December 2018 were observed and countermeasures have been taken. Action taken report on comments was explained in detail as per **Annexure-II of Attachment-2 on Agenda Notes** were approved by the house.

Agenda No.3: Presentation and Approval of the Final Progress report No.4 of JICA TP Phase-II (Stage-1) up to May 2019

The detailed presentation on different activities taken up by JICA TCP since beginning of Stage-1 under Output-1 Strengthening technical capacity of DOA/PMU staff for promotion of crop diversification, Output-2 Compilation of packages of techniques for promotion of crop diversification, Output-3 Identification of effective marketing activities, Output-4 Formulation of sustainable plans of DOA to promote crop diversification in five districts, Food diversification, and Water management

and O&M was given by Dr. Suresh Kumar Sharma. His presentation is attached at **Annexure-III of Attachment-2 on Agenda Notes.**

The following observations were made/emerged during the discussion:

- The Chairman informed that the EC meeting of JICA ODA and JCC meeting of JICA TCP were held together as per schedule prescribed in the MOU and their activities are mostly co-related. He stressed that JICA TCP and JICA ODA should work with close coordination and give wide publicity about the good works done in the field and those should be replicated not only in the project districts but also in other districts of the State.
- The Chairman stressed the need for documentation of all good activities done in the field and suggested that more and more farming communities be associated with these activities so that by adoption of such practices, farmers increase their income.
- The Chairman further advised that where the TCP has done remarkable work and was successful, that be propagated/replicated in other parts of the State with documentation. The new practices found successful be shared in social media like YouTube/Facebook for replication in other parts.
- Dr. J.C. Rana, Chief Project Advisor, informed that in previous meeting, JICA India has assured that they will depute the team of professional experts for documentation of good works done in sub-projects and requested JICA India representative to look into this aspect.
- Ms. Watanabe assured that she will take care of this issue and will depute the Experts team for documentation/guidance as early as possible.
- The Chairman suggested that more and more efforts should be done to strengthen the production and marketing of produce. He advised that stress is being laid by the Govt. of H.P. state for Zero Budget Natural Farming wherein minimum or no use of chemicals viz. chemical fertilizers, pesticides is advisable and boost for local available farm yard manure or herbs needs to be propagated. He further advised that DOA/PMU/TCP should work in close coordination with ATMA so that real benefit under this farming system should trickle to the farming community.
- Dr. V.K. Sharma, Project Director, HPCDP, JICA ODA informed that already some of the successful and good activities done under JICA TCP are being replicated in the other sites and documentation is also being done.
- Regarding continuation of JICA TCP during Phase-II of JICA ODA, Ms. Watanabe informed that during Phase-II of JICA ODA, possibility for TCP consultancy shall also be explored after the sanction of Phase-II of ODA Loan Project. For continuation of Stage-2 of JICA TCP, Ms. Watanabe suggested that they would start to work within two weeks.
- While discussing activity of market oriented early cultivation of crops, the Chairman enquired that at present whether drip irrigation systems is used or not. The Project Director informed

that mostly drip irrigation is being used in poly house and under Output-3 for efficient use of water. JICA TCP is using drip irrigation in open conditions by using plastic mulching sheets. The Chairman suggested that for proper functioning of drip irrigation systems, check out list be prepared, and countermeasures be taken accordingly.

- The Chairman suggested that food diversification through kitchen gardening concept based on nutritive values should be propagated outside the pilot area /state. He desired that documentation of different activities be done and persuade to the farmers to adopt them.
- Regarding water management, the Chairman suggested that documentation be done for the sub-projects where water is being used judiciously, and the results may be adopted in other areas. He emphasized that the water management in the near future will be very important input for agriculture productivity, therefore concrete steps needs to be taken for judicious and proper planning of water use. Mr. Ishizaki apprehended that EOs may not be able to conduct technical support to farmers on water management and O&M effectively in the field as they have limited information on these subjects. The DOA is required to look in to this aspect. The Chairman desired that interactive module needs to be prepared on judicious and efficient use of every drop of water on the motto “Per Drop More Crop”.
- Mr. Ishizaki informed that presently in the Job profile of Extension Officers, there is no mention regarding technical support on marketing, water management and O&M irrigation systems, and food diversification.
- Dr. Rana, CPA informed that Job Profile of each category already exists in the DOA which needs to be made more effective.
- The Chairman desired that fresh instructions in this behalf be issued.
- Regarding updating the Guidelines prepared during phase-1 of JICA-TCP and handed over to DOA in 2015, Mr. Ishizaki requested that a committee of DOA and PMU may be constituted to look into this aspect and if required the Guidelines be revised based on the current situations. It is expected that a committee should be organized by the next Counterpart meeting in September and have kickoff discussion on updating the Guidelines in the meeting.
- The Chairman asked the Director / PD, HPCDP to look into this matter.

Agenda No.4: Blank Indicators to be specified in the Project Design Matrix.

Indicators to be specified in the Project Design Matrix (PDM) was proposed and attached at **Annexure-IV of Attachment-2 on Agenda Notes**. It was explained that these indicators were discussed and finalized in the District Coordinators meeting on 7th January 2019 at Hamirpur, as PD of HPCDP explained in the previous 4th JCC Meeting on 12th December 2018. Thereafter, these indicators were sent to the DOA for approval.

After detailed discussion, Phase-II Project for Crop Diversification in HP Stage-1, **Progress Report No.4** along with finalized indicators for PDM as shown in **Annexure-IV of Attachment-2 on Agenda Notes** was approved by the Committee.

At the end, Director of Agriculture, thanked all the participants and assured that whatever suggestions/guidelines have been given in the meeting shall be adhered strictly. Besides this close coordination among DOA/PMU/ATMA/TCP shall also be maintained and monitoring would be done from time to time. He assured that with joint coordinated efforts of all concerned agencies, JICA TCP programme shall be made successful.

The meeting ended with a vote of thanks to and from the Chair.

Attachment-1

List of participants who attended the 5th JCC meeting held under the Chairmanship of Sh. O.C. Sharma, Principal Secretary (Agri.) to the Govt. of H.P. Shimla-2, in the meeting hall of Armsdale Building, H.P. Secretariat, Shimla-2

Sr.No.	Name	Designation
1	Ms. Mariya Watanabe	Representative, JICA India, New Delhi
2	Dr. J.C. Rana	Chief Project Advisor, HP CDP JICA ODA, Hamirpur
3	Dr. Rajinder Kumar Verma	Director of Agriculture Himachal Pradesh, Shimla-5.
4	Dr. R.K. Kondal	Managing Director, HP Agriculture Produce and Marketing Board, Shimla-2
5	Dr.V.K.Sharma	Project Director, HPCDP, JICA, ODA, Hamrpur
6	Dr. A.S. Rana	Co-Team Leader, PMC, Hamirpur
7	Dr. Desh Raj Thakur	Director, SAMETI, Mashobra, Shimla
8	Dr. Kishore C. Azad	Deputy Project Director, HPCDP, JICA ODA, Hamirpur
9	Dr. B.D. Sharma	District Project Manager, HPCDP, JICA ODA, Mandi
10	Dr. Suresh Kumar Sharma	Subject Matter Specialist, Directorate of Agriculture, H.P. Shimla-5
11	Dr. Rajesh Sood	District Project Manager, HPCDP, JICA ODA, Kangra Distt
12	Dr. Jagjit Kumar Sharma	Subject Matter Specialist, SPMU, HPCDP, JICA ODA, Hamirpur
13	Mr. Yoshiyuki Ishizaki	JICA TCP Expert, JICA TCP, Hamirpur
14	Ms. Yoko NAGATA	JICA TCP Expert, JICA TCP, Hamirpur
15	Ms. Yuko Togawa	JICA TCP Expert, JICA TCP, Hamirpur

~~Draft~~ minutes of 6th JCC meeting held under the Chairmanship of Sh. O.C. Sharma, Principal Secretary (Agri.) to the Govt. of Himachal Pradesh, Shimla-2, on 10th January 2020 at 4.00 PM in the office Chamber of Principal Secretary (Agri.) H.P. Shimla-2.

The list of participants is attached at **Attachment-1**.

At the outset, Dr. Kishore Chand Azad, Deputy Project Director, HPCDP, JICA ODA, welcomed the participants with special thanks to Ms. Mariya Watanabe, Representative JICA India Office. He informed that during this meeting the brief presentation of different activities to be taken up by JICA TCP during Phase-2 Stage-2 shall be highlighted for approval for JCC. He further informed that in this meeting output wise progress of Stage-2 up to December 2019 and action taken report on the decisions taken during the 5th JCC meeting held on June 2019 shall also be explained in detail. Thereafter, Dr. Suresh Sharma, Subject Matter Specialist, Directorate of Agriculture, H.P. Shimla-5, made the presentation.

Item No.1: Confirmation of minutes of 5th JCC meeting held on 29th June 2019

The minutes of 5th JCC meeting held on 29th of June 2019 were circulated to all concerned vide letter No. LDOAZTH-18-094 dated 6th July 2019. Since no comments were received from any quarter hence the same were confirmed as such. The action taken report is enclosed as per **“Annexure-I of Attachment-2 on Agenda Notes”**

Item No.2: Presentation and discussion on Work Plan and Work progress up to December 2019 of JICA TCP Phase-II (stage-2)

The detailed presentation on different activities to be taken up by JICA TCP Phase II, Stage-2 were highlighted by Dr. Suresh Sharma and also the progress made under Output-1 on strengthening technical capacity of DOA/PMU staff for promotion of crop diversification, Output-2 on compilation of packages of techniques for promotion of crop diversification, Output3 on identification of effective marketing activities, Output-4 on formulation of sustainable plans of DOA to promote crop diversification in five target Districts, food diversification and water management/O&M up to December 2019 were given. His presentation is attached at **Annexures-II and III of Attachment-2 on Agenda Notes**.

The following observations were made during discussion:

- The Chairman informed that the progress made by JICA TCP under different Outputs were quite good with special reference to association of women for kitchen gardening and food diversification activities. He suggested that all these activities should be documented for adoption by the farmers of other districts of the State and can remain reference in future also.

- The Chairman stressed that there is need to ensure that farmers are following the suggestions/ guidelines issued by the TCP on campaign basis and those should be replicated in the whole State.
- Mr. Ishizaki put forth apprehensions about the running of on-going activities after the closure of JICA ODA project. The Chairman desired that modalities should be worked out how the DOA should manage the activities in effective manner. Deputy Project Director informed that SPMU is already working on this issue and chalking out strategy for handing over the different activities to DOA. Director of Agriculture informed that constitution of District Level Committee is under process who will look after all these activities at DOA level. The possibility for making AEO working in DOA of as In charge of the sub-project is also being explored. The DPD informed that the Executive Committee meeting of JICA- ODA is scheduled to be held in February 2020, and they will come up with a proposal in this with regard and also about mobility of Extension Officers so that they can provide support to farmers for crop diversification. Deputy Project Director further informed that 210 schemes constructed by the PMU shall be handed over to the DOA by December 2020. The TCP will continue technical support to DOA Extension Officers till February 2022.
- Mr. Ishizaki informed that in DOA there is shortage of Extension Officers which may hinder the progress to some extent and requested that there is urgent need for filling of vacant posts of EOs (ADOs /AEOs). The Director of Agriculture informed that some posts of EOs are lying vacant and could not be filled up due to the fact that the case is sub-judice. However, efforts are being made to get the vacant posts filled up at the earliest. The Chairman suggested that possibility for hiring of outsource staff may also be explored. Similarly, if possible, the utilizing the services of retired EOs can also be explored.
- The Chairman suggested that the DOA should prepare proposal that the staff posted in HPCDP JICA-ODA project should not be transferred so that the experience gained by them could be shared with the other field functionaries.
- Regarding mobility of extension officers, after discussion it was decided that DOA should come up with a suitable proposal by studying the situations in other Departments so that the problem of mobility of EOs could be solved.
- The Chairman stressed that the International Workshop should be organized in befitting manner. We have requested the Hon'ble Chief Minister to inaugurate the same and some foreign delegates are also participating in the said conference so it should be well arranged.
- Regarding job profile, Director of Agriculture informed that the job profiles of all extension officers exist in the Department which needs to made more effective and additional activities shall also be incorporated.
- Regarding update of guidelines, Director of Agriculture informed that standard guidelines have been prepared based on POP, JICA guidelines and other guidelines available with

DOA/PMU for other schemes. A committee under the Joint Director of Agriculture has been constituted to review all the guidelines and come up with comprehensive guidelines wherein all disciplines are covered. The Director Extension Education, CSKHPKV, Palampur suggested that while reviewing the guidelines, the provision made in the Kharif and Rabi package of practices and vegetable practices may also be kept in view so that standard guidelines are prepared.

- The Chairman suggested that more and more efforts should be made to strengthen the production and marketing of produce. The methods suggested by TCP should be advocated by the EOs to the farmers so that the farmers income may increase manifold. The Director of Agriculture informed that focus is also being laid on contract farming. The integrated approach on forward and back ward linkages is also being advocated.

Further, Ms. Watanabe, Representative JICA India Office, suggested to take action on the following aspects on priority basis:

- Filling up of vacant posts of Extension Officers (ADOs/ AEOs) on priority basis.
- Avoid frequent transfers of Project staff.
- Arrangement of effective mobility for EOs.
- Boosting of marketing activities.
- Proper and effective arrangement of project sites after closure of PMUs of HPCDP, JICA-ODA

After detailed discussion, work plan for Phase II Project for Crop Diversification in HP Stage-2 attached at Annexure-II of Attachment-2 was approved.

At the end, Deputy Project Director, thanked all the participants and assured that whatever suggestions/guidelines have been given in the meeting, those shall be adhered to strictly. He also assured that the PMU will come up with concrete proposal with regard to handing over of project sites to DOA, formulation of standard guidelines, job chart for EOs, capacity development of DOA staff etc. A close coordination among DOA/PMU/ATMA/TCP shall be maintained and monitored from time to time. He assured that with joint efforts of all concerned agencies, JICA TCP programme shall be made successful.

The meeting ended with a vote of thanks to and from the Chair

Attachment-1

List of Participants who attended the 6th JCC Meeting held under the Chairmanship of Sh. Onkar Chand Sharma, Principal Secretary (Agri.) to the Govt. of H.P. Shimla-2, in the Office of Chamber of Principal Secretary (Agri.), H.P. Shimla-2.

Sr.No.	Name	Designation
1	Dr. R.K. Kaundal	Director of Agriculture, HP
2	Ms. Mariya Watanabe	Representative, JICA India Office
3	Dr. K.C. Azad,	Deputy Project Director, HPCDP
4	Pro. Y.P. Thakur,	Director Extension Education, CSKHPKV, Palampur
5	Dr. Suresh Sharma,	Subject Matter Specialist, Directorate of Agriculture, H.P.
6	Dr. Jagjit Kumar Sharma	Subject Matter Specialist, State Project Management Unit, HPCDP
7	Mr. Ishizaki Yoshiyuki	Chief Advisor, JICA TCP Experts Team
8	Ms. Nagata Yoko	Vegetable Cultivation and Post-Harvest Expert, JICA TCP Experts Team

Minutes of 9th Joint Coordination Committee (JCC) meeting through Microsoft Team under JICA TCP Phase-II Stage-2 held under the Chairmanship of Dr. Ajay Sharma, IAS, Secretary (Agriculture) to the Govt. of Himachal Pradesh, Shimla-2 on 12.07.2021 at 11.30 A.M.

The list of participants is attached at **Attachment-1**.

At the outset, Project Director, HP CDP JICA ODA welcomed the participants with special welcome to Dr Ajay Sharma, worthy Secretary (Agriculture) to the Govt. of HP, Ms. Furuyama Kaori, Chief Representative JICA India, Dr. Subroto Talukdar, JICA India, Dr. Roopal Srivashtv, JICA India for sparing their valuable time to attend this meeting. He further informed that Mr. Ishizaki Chief Adviser, JICA TCP will high light different activities taken up under JICA TCP and requested Mr. Ishizaki to start presentation.

Mr. Ishizaki before starting the presentation informed that JICA TCP Phase-2 was started in Himachal Pradesh from February 2017 and will continue till February 2022. The period from February 2017 to 2019 is called Stage-1 and from August 2019 to February 2021 is Stage -2 of JICA-TCP phase-2. The targets fixed under JICA TCP Phase-II, Stage-2 shall be planned to be achieved by December 2021. Mr. Ishizaki further informed that 6th JCC meeting was held on January 11, 2020, thereafter the meeting of 7th and 8th JCC meetings could not be held due to COVID-19 and 9th JCC meeting is being conducted now. Mr. Ishizaki informed that JICA TCP Stage-2 is working on major fields (a) strengthening technical capacity of DOA/PMU staff for promotion of crop diversification (Output-1), (b) compilation of packages of techniques for promotion of crop diversification (Output-2), (c) identification of effective marketing activities (Output-3), (d) formulation of sustainable plans of DOA to promote crop diversification additional activities (Output-4), (e) food diversification and, (f) water management and operation and maintenance. Mr. Ishizaki further informed that 6 Japanese Experts of different disciplines have been working on the above mentions major fields but due to COVID-19 their schedule of visits was cancelled after March 2020. With the improvement of COVID-19 situation in March 2021, Mr. Ishizaki and Ms Nagata visited Himachal Pradesh but again has to leave because of surge in pandemic in May 2021. Now the Japanese Experts will visit India as soon as the COVID-19 situation improves. However, the Japanese experts are continuing to work from Japan and getting the planned activities executed by the local staff. He informed that the Progress Report No. 7 up to June 2021 shall be presented in the meeting for approval. He requested all the participants to share the material for updating the information wherever required. Thereafter following agenda items were discussed:



Agenda No.1: Confirmation of the Minutes of 6th JCC Meeting held on January 11, 2020

The minutes of 6th JCC meeting was circulated to all the members. No comments were received from any quarter, therefore, the same were confirmed as approved. The action taken report is enclosed as per "Annexure-I of Attachment-2 on Agenda Notes".

Agenda No.2: Presentation and Discussion on Progress Report No.7 of JICA TCP Phase-II (Stage-2) and Work Progress up to June 2021

Mr. Ishizaki gave detailed power point presentation for different activities taken up till June 2021 by JICA TCP. His presentation is attached at Annexures-II of Attachment-2 on Agenda Notes.

Output 1: Trainings

Mr. Ishizaki informed that in order to upgrade the technical capacity of DOA/PMU Extension officers, it was proposed to organize 16 training programme during 2020-21 & 2021-22 but in view of COVID-19, we could start training programme from October, 2020 and so far 11 trainings have been arranged and efforts are being made to arrange the remaining training programme shortly. Mr. Ishizaki further informed that PMU has handed over all 210 sub projects to DOA therefore, it is imperative that the DOA extension officer should be well trained for different activities to be taken up in the HPCDP sub project areas. But the participation of DOA Extension Officers in TCP activities is not up to the desired extent which may be due to shortage of EOs in Block offices and requested that DOA should impress upon their Extension officers to participate in the different activities being taken up by TCP experts. He expressed that still EOs of PMU are working in 210 sites, so they can also participate in the training programmes and other different activities being taken up by the TCP so as to upgrade their technical skill.

Output 2: Farming and post-harvest

Mr. Ishizaki highlighted different activities taken up under output 2 as shown in the presentation. It was further informed that other activities like preparation of booklet for 24 exotic vegetable cultivation, compilation of booklet for cooking of exotic vegetable is under process. Compilation of additional materials for picture story on local speciality production is also being done. Impact of pilot activities in each pilot area was also highlighted in the PPTs.

Output 3: Marketing

It was informed that the main focus of Output 3 on effective marketing activities for farm produce is;

- i. Identification , promotion of market oriented production plan by the farmers, promotion of direct sales to local consumers/ local retailers, promotion of vegetable production aim to sell at time of higher prices, Assistance to make production plan for poly houses,

promotion of direct sales to local consumers/local retailers, promotion of cucumber and early cauliflower cultivation by use of mulching sheet and drip irrigation.

- ii. Support the very beginner farmers.
- iii. Trial on anaerobic/ biological soil dis-infestation inside poly house, value adding by means of GAP certification.
- iv. Challenge of entry into niche/particular market in the big city.
- v. Market oriented production planning by farmers,
- vi. support the establishment of a firm system for collective shipment to APMC market yard.

It was expected that DOA extension officers should also participate in the TCP activities being practiced in the farmers field of selected sites so that those could be replicated in the field of other farmers also. Under this output it is also being stressed to support the very beginner farmers for starting commercial production and support on consignment production of off-season vegetables.

Output 4: Sustainable plans of DOA to promote crop diversification in respective five districts

Sustainable plans of DOA to promote crop diversification in five districts are required to be formulated based on achievements of the project and have been explained to DOA in their different meetings. Procedure for preparation of seasonal implementation plan to prepare 5-year crop diversification plan has been prepared and shared with all DDAs/PD ATMAS in monthly DCs meetings and also in the respective DDA offices during their monthly meetings. The block SMS/ADOs were requested to identify all potential areas for vegetable cultivation and mark these areas on the maps in addition to HPCDP sub projects in a particular block. Implementation plan of 2 HPCDP sub projects for Kharif 2021 along with map was required from the blocks and in most of the cases it is still pending. Mr Ishizaki requested the chairman to give directions to DOA to complete this exercise within a time bound schedule as the Kharif season has already started. DOA was suggested to arrange additional schemes/ budget for the promotion of sustainable crop diversification in the State of Himachal Pradesh.

Approach on updating existing guidelines and establishment of framework of preparing standard guidelines was explained in detail. In the Department, different types of guidelines are existing. There is need to review all guidelines and come out with modified model guidelines. A committee was constituted to review the existing guidelines in 2019 but no meeting was convened. There is need to constitute new committee to review the existing guidelines during the month of July 2021 and the Committee should come out with standard guidelines within a fixed time schedule.

Food Diversification

It was informed that food diversification required to be included in the extension officers' activity. It is proposed to promote less popular nutritious vegetable crops for crop

diversification, selling at the HAVI Outlet, development of official pages in internet (Cookpad India), awareness activities to extension staff of DDAs as well as PMU and preparation of material for guidelines.

Water Management, Operation and Maintenance

Some monitoring activities have been done by TCP experts with regard to preparation of check list on MIS, Pump Operation, solar water pumping systems, motor pump to prepare Documents for water management and operation & maintenance of MIS and pumping systems. Preparation of Hindi version of documents is also under process. We have already circulated the check list from planning to operation and maintenance for motor pumps, MIS and solar systems and the feedback received has been incorporated in final Check lists. We have also prepared documents for WM and OM which will be shared with related organisation viz. DDA/ PMU and SDSCOs and requested for their feedback so that final documents can be prepared.

Other activities

(i) Overseas Training in Japan

It was proposed that two overseas trainings in Japan shall be arranged during this year but in view of COVID-19, it is not possible to arrange and hence has been cancelled.

(ii) In country training in India

It was informed that two in country training in India were proposed but in view of COVID-19 these could not be arranged. These will be arranged during the month of September–October subject to normalization of prevailing conditions after discussion with JICA India.

(iii) End line Survey:

The timing for end line survey has been proposed August to October, 2021, through questionnaire with target in 210 sub-project in HPCDP and sampling of 400 farm household (20 sub-project x 20 sample farm house holds/sub project). Necessary action is being taken up for hiring of agency.

Agenda No.3: Deployment of AEOs (as of April 2021)

No. of field extension officers is around half of total sanctioned. It means it is difficult to conduct extension activities, which are rooted in a region. Current deployed AEOs related to 210 sub-projects of HPCDP are shown in Annexure-III of Attachment-2 on Agenda Notes. It is expected that AEOs be deployed for some vacant positions, and extension activities in 210 sub-projects be sustainably conducted.

Agenda No.4 - Additional Job Profiles

Activities on marketing, food diversification, and water management are not included in job profile of extension officers in DOA. Current job profile should be modified, in order to conduct various

extension activities regarding marketing, food diversification, and water management for crop diversification, as shown in **Annexure-IV of Attachment-2 on Agenda Notes.**

Agenda No.5 -Points to be considered for Sustainable Extension Activities

In order to pursue the sustainable extension activities in 210 sub-projects after handing-over from PMU to DOA, it is required that AEOs working under SMS offices should be deployed in the relevant AEO circles where the sub projects of HPCDP exists. Further other essential points to be considered for sustainable extension activities are shown in **Annexure-V of Attachment-2 on Agenda Notes.**

Address of Secretary (Agriculture)

The Secretary (Agriculture) expressed that very comprehensive presentation has been given by Mr. Ishizaki covering all the activities and so far, progress is very good. He appreciated the work done by JICA TCP and suggested action will be taken on the points raised in the last slide as under:

- i. The process for filling up vacant post is already going on and these will be got filled in shortly till then charge will be given to the AEO of adjoining circles to continue TCP activities/ vegetable cultivation
- ii. The convergence of ongoing schemes is being considered at State and Central level wherein new schemes are being identified and focus is laid on crop diversification where sufficient budget provision shall be made.
- iii. The process for finalisation of job profile of extension officers is already going on and job profile for each category shall be got finalize in due course of time.
- iv. The Committee to review and finalise the guideline has been constituted and its meeting shall be convened during July 2021

Address of Mr. Subroto Talukdar, JICA, India highlighted the following issues:

- 1 Stress is required for capacity building of extension officers and application of learnings in the farmers' fields.
- 2 Priority be given on the feedback received from the farming community.
- 3 The practices of frequent transfer of officers required to be stopped.
- 4 BPM/DPM are still using the manual system whereas they should use GIS/MIS. Data collection at the field level should be more comprehensive through GIS/MIS.
- 5 There is need to check whether Extension Officers are able to impart training to farmers and that is required to be checked at higher level also so that training level can be improved. The EOs should use PPTs / training material prepared and supplied by TCP.

Address of Ms Furuyama Kaori:

- 1 Deployment of new Extension officers and improving transportation /mobility facilities to the EOs so that they can frequently visit to the vegetable growers.
- 2 Focus on preparation of 5-year crop diversification plan by preparing seasonal plans.
- 3 TCP is closing in next six month that is by Feb 2022 but there are still works to be carried out and achieve the envisaged targets. Therefore, there is need to look into the aspect of extension of TCP for some period. She suggested that another meeting needs to be convened shortly so as to discuss this issue.

After detailed discussions, the progress report No.7 was approved.

At the end, Project Director, thanked all the participants and special thanks to worthy Secretary (Agriculture), the representative from JICA-India Ms. Furuyama Kaori, Mr. Subroto Talukardar and Mr Roopal Srivastva for sparing their valuable time to attend this meeting and giving suggestions/directions for effective implementation of TCP activities. He expected that the issues raised by Mr. Ishizaki shall be taken care at DOA level. He requested that efforts are required be made to fetch more and more schemes and budget in the Department for crop diversification. The progress presented by JICA TCP was quite satisfactory. The JICA TCP has contributed a lot and have done remarkable work in the field. He assured that all out efforts shall be made to achieve the envisaged target under JICA TCP in the remaining period and make it a success.

The meeting ended with a vote of thanks from and to the Chair.



Attachment-1

List of participants who attended the 9th JCC meeting through Microsoft Team under JICA TCP Phase-II Stage-2 held under the Chairmanship of Dr. Ajay Sharma, IAS, Secretary (Agriculture), to the Govt. of Himachal Pradesh Shimla on 12.07.2021 at 11.30 A.M.

Sr. No.	Name	Position
1	Dr. Suresh Kapoor	Project Director, HPCDP, JICA ODA
2	Dr. Digvijay	Joint Director of Agriculture, DOA
3	Er. Ashwani Bhardwaj	Superintending Engineer (SC), DOA
4	Ms. Furuyama Kaori	Chief Representative JICA India
5	Mr. Subroto Talukdar	JICA India, New Delhi.
6	Mr. Roopal Srivastav	JICA India, New Delhi.
7	Dr. Ashwani Dutta	Director, SAMETI, Mashobra
8	Dr. Vinod Sharma	Representative of Director (Extension), CSKHPKV, Palampur
9	Dr. Ravinder Chauhan	Deputy Project Director, SPMU, HPCDP JICA ODA
10	Dr. Rakesh Dhiman	SMS, SPMU, HPCDP, JICA ODA
11	Mr. Ishizaki Yoshiyuki	Chief Advisor, JICA TCP, Hamirpur
12	Mr. Aoyama Kenta	Marketing Expert, JICA TCP, Hamirpur

Minutes of 10th Joint Coordination Committee (JCC) Meeting under Stage-2 of JICA TCP Phase II held under the Chairmanship of Dr. Ajay Sharma, IAS, Secretary (Agriculture) to the Govt. of Himachal Pradesh at Dharamshala on 16.11.2021 at 5.00pm

The list of participants is attached at [Attachment-1](#).

At the outset, Project Director, HPCDP, JICA ODA welcomed all the participants with special welcome to worthy Secretary (Agriculture) to the Govt. of H.P., Mr. Saito Mitsunori, Chief Representative JICA India office, Ms. Furuyama Kaori, JICA India office, Mr. Subroto Talukdar, JICA India office, Ms. Roopal Srivastav, JICA India office, and Mr. Watanabe Ikko, First Secretary Embassy of Japan, for sparing their valuable time to participate in this JCC meeting. He further informed that Mr. Ishizaki, Chief Advisor, JICA TCP Expert Team, will make presentation and discussion on agenda items of today's meeting and then PD, HPCDP, JICA ODA requested Mr. Ishizaki to start the presentation.

Mr. Ishizaki before starting the presentation informed that JICA TCP Phase-2 was started in Himachal Pradesh from February 2017 and its tenure of 5 years will be completed in February 2022. He further informed that work progress up to October 2021 shall be presented in the meeting for approval. He requested all the participants to give their suggestions/ comments for updating the information wherever required. Thereafter, following agenda items were discussed:

Agenda No.1: Confirmation of the minutes of 9th JCC meeting held on July 12, 2021.

Minutes of the 9th JCC meeting held on July 12, 2021 through Microsoft Teams were circulated to all members and as no comments were received from any member, the same were confirmed and approved. Its Action Taken Report is shown in [Attachment-2](#). Further he briefly highlighted the Action taken report on the issues raised in the previous meeting.

Agenda No. 2: Presentation and discussion on Work Progress up to October 2021.

The work Progress of JICA TCP Phase-II Project (Stage-2) up to October 2021 was presented in the meeting and after discussion it was approved.

Agenda No.3: Extension of JICA TCP Phase II Project.

It was intimated that JICA TCP is going to complete its original schedule in February 2022. There are some delays as well as some missing activities those could not be started due to COVID-19 pandemic during the years of 2020 and 2021. Further assignment schedule of Japanese experts has also been rescheduled, because travel restrictions were issued by Japanese government due to COVID-19. Therefore, it is proposed that JICA TCP may be extended for 8 months in order to complete the activities and achieve the original purpose of the project. Details on extension of JICA TCP Phase II

Project is shown in Attachment-3. Therefore, it is proposed that JICA TCP be extended for 8 months (March 2022 - October 2022), in order to complete the activities and achieve the original purpose of the project. Reasons for extension of JICA TCP are as under:

- Period for field activities of Japanese experts was limited and it was difficult to transfer skills and experiences to Extension officers.
- Technical instructions could not be provided timely and properly to the farmers as a result they could not adopt new techniques/ practices.
- Training, meetings, workshops etc. were restricted and thus no sharing/ feedback.
- Extension activities to be conducted for farmers by the Extension officers of DOA and PMU were confined or cancelled due to lockdowns
- Demand of exotic vegetables from consumers of Delhi and other big cities squeezed as no Volvo bus transport facilities were available.

Ms. Furuyama Kaori, JICA India Office, recommended that in view of COVID-19 pandemic some activities envisaged under the JICA TCP could not be implemented, therefore, extension is utmost required to complete the targets kept under the project documents.

After detailed discussion, the house approved the extension of JICA-TCP for 8 months from March 2022 to 31st October 2022 so as to complete Kharif season 2022 and just initial stage of Rabi season 2022/23, in view of COVID-19 pandemic and the matter of extension of Phase II project for crop diversification (JICA-TCP) be taken up by the DOA at the appropriate level immediately.

Mr. Ishizaki also raised following points:

- i) Assigning responsibility to AEOs in 25 PMU sub-projects and 10 TCP sub-projects to be completed so that farmers could be promoted for crop diversification and operation, maintenance of infrastructure created under HPCDP. The Secretary (Agriculture) informed that the issue of recruitment of AEOs is sub judice as a court case is pending in HP High court. As soon as the court's directions are received, further process for filling up the vacant posts shall be started. However, as a stop gap arrangement, the additional charge should be given to the AEOs of adjoining circle so that work may not suffer. For compliance of this, The Director Agriculture, HP should issue necessary instructions to the DDAs of 5 Districts.
- ii) Authorisation for Marketing, Food Diversification and Water Management in the job profile of extension officers for continuing these activities for farmers. The Managing Director, HP State Agriculture Marketing Board also suggested that keeping in view the



present scenario, there is urgent need for restructuring job profile and training of EOs in all agriculture activities. The Director of Agriculture informed that matter has already been taken up with the Government.

- iii) Implementation of a new scheme for promotion of crop diversification through vegetable cultivation from fiscal year of 2022/23. The Director of Agriculture, HP informed that this matter is under active consideration of the department and proposal has already been taken up with the Govt.

At the end, Project Director, HPCDP JICA ODA, thanked all the participants with special thanks to worthy Secretary (Agriculture) and Mr. Saito Mitsunori for sparing their time and giving valuable suggestions/ directions for effective implementation of TCP activities. He thanked the house for giving approval for the extension of JICA TCP for 8 months and assured that left out activities in view of COVID-19 shall be carried out during the said extended period.

The meeting ended with a vote of thanks from and to the Chair.

A handwritten signature in black ink, consisting of a stylized, cursive name that is difficult to decipher, followed by a long horizontal line extending to the right.

Attachment-1

List of Participants who attended the 10th Joint Coordination Committee (JCC) Meeting under JICA TCP Phase-II, Stage-2 held under the Chairmanship of Dr. Ajay Sharma, IAS, Secretary (Agriculture) to the Govt. of Himachal Pradesh at Dharamshala on 16.11.2021 at 5.00 PM

Sr.No.	Name	Position
1	Dr. Raj Kishan Pruthi, IAS	Director of Agriculture
2	Mr. Mitsunori Saito	Chief Representative, JICA India Office
3	Ms. Kaori Furuyama	Representative, JICA India Office
4	Mr. Subroto Talukar	Representative, JICA India Office
5	Ms. Roopal Srivastav	JICA India Office
6	Mr. Ikko Watanabe	1st Secretary, Embassy of Japan in India
7	Dr. J.C. Rana	Chief Project Advisor, HP CDP JICA ODA
8	Dr. O.P. Sharma	Additional Commissioner, NRM/RFS DA &FW, GOI
9	Mr. Naresh Thakur	Managing Director, H.P. State Agriculture Marketing Board
10	Dr. Ashwani Dutta	Director, SAMETI, Mashobra, Shimla
11	Dr. Satish Paul	Director of Extension Education, CSKHPKV, Palampur
12	Dr. S.P. Dixit	Director of Research CSKHPKV, Palampur
13	Dr. Rakesh Kapila	Prof. and Head, Seed Science, CSKHPKV, Palampur
14	Dr. D.R. Chaudhary	Prof. Vegetable, CSKHPKV, Palampur
15	Dr. Arun Sharma	Scientist of Animal Nutrition, Vice Chancellor Secretariat, CSKHPKV, Palampur
16	Dr. Deepika Sood	SMS Plant Pathology, CSKHPKV, Palampur
17	Dr. Suresh Sharma	Vegetable Specialist, DDA, DOA
19	Dr. Suresh Kapoor	Project Director, HPCDP
18	Dr. Ravinder Chauhn	Deputy Project Director, HPCDP
19	Mr. Yoshiyuki Ishizaki	Chief Advisor, JICA TCP
20	Mr. Kenta Aoyama	Marketing Expert-cum- Project Coordinator, JICA TCP

Draft minutes of 11th Joint Coordination Committee (JCC) meeting under JICA TCP Phase-II, Stage-2 held under the Chairmanship of Sh. Rakesh Kanwar, IAS, Secretary (Agriculture) to the Govt. of Himachal Pradesh at Armsdale meeting hall, HP Secretariat, Shimla-2, on 09.06.2022 at 12.30 PM

The list of participants is attached at **Annexure-1**.

At the outset, Project Director, HPCDP, JICA ODA welcomed the participants with special welcome to worthy Secretary (Agriculture) to the Govt. of H.P., Mr. Kengo Akamine, Senior Representative JICA India, Ms. Kaori Furuyama, Representative, JICA India, Ms. Maria Kato Representative, JICA India Mr. Subroto Talkukdar, Addl. Chief Dev. Specialist, JICA India and Dr. O.P.Sharma, Addl. Commissioner (NRM/RFS) Ministry of Agri. , Govt. of India and other esteemed members for sparing their valuable time to participate in this 11th meeting of JCC under JICA-TCP. He further informed that Mr. Ishizaki, Chief Advisor, JICA TCP will high light the work progress under different activities taken up under JICA TCP up to May 2022 on virtual mode and requested Mr. Ishizaki to start the presentation.

Mr. Ishizaki before starting the presentation informed that JICA TCP Phase-2 was started in Himachal Pradesh from February 2017 and was to wind up during February 2022 but in the 10th meeting of JCC an extension was given to JICA TCP project in view of COVID-19 up to 31st October 2022 to carry out the remaining activities envisaged under TCP project. Mr. Ishizaki further informed that work progress report 31st May 2022 shall be presented in the meeting for approval. He requested all the members to share the views for updating the information wherever required. Thereafter, with the permission of the Chair following agenda items were discussed:

Agenda No.1: Confirmation of the minutes of 10th JCC meeting held on 16th November 2021.

The minutes of the 10th JCC meeting held on 16th November 2022 in physical mode at Dharamsala were circulated to all the members, no comments were received from any member hence the same were confirmed as such.

Mr. Ishizaki gave detailed presentation on the action taken report on the decisions taken in the 10th JCC Meeting held on 16th November 2022 and the same is attached at **Annexure-2**. The Chairman further highlighted the action taken on the following items:

(i) Deployment of EOs:

The Chairman informed that the issue of recruitment of AEOs is still sub-judice as a court case is pending in the HP High Court with regard to qualification of the candidates. However, this issue was discussed at Govt. level and now it has been proposed to fill up 50% vacant posts through Service Selection Board and 50% on batch-wise basis. The proposal will be

submitted to the court and as and when the decision is received , posts of AEOs will be filled. As a stop gap arrangement, Directorate of Agriculture has already issued directions to the Deputy Directors of Agriculture to give additional charge of HPCDP sub projects to the AEOs of adjoining circle so that agricultural extension work may not suffer.

(ii) **New scheme to promote Crop Diversification in HP:**

The Chairman informed that new scheme has already been approved and is being circulated to the field officers shortly.

(iii) **Job Profile of all extension officer:**

The Chairman informed that job profile of extension officers has been approved and shall be circulated during June 2022.

Agenda No. 2: Presentation and discussion on Work Progress up to May 2022

Progress of JICA TCP Phase-II Project (Stage-2) up to May 2022 was highlighted on the following activities:

- **Output-1:** Technical capacity of DOA/PMU staff to promote Crop Diversification practise is strengthened.
- **Output-2** Through activities in Pilot areas, package of techniques to promote crop diversification are compiled.
- **Output-3** Effective marketing activities for farm produce are identified.
- **Output 4:** Sustainable plans of DOA to promote crop diversification in respective 5 districts are formulated based on achievements of the project.
- **Food diversification.**
- **Water Management and Operation and Maintenance.**

In country training and Overseas training:

- (i) Mr. Ishizaki informed that under JICA TCP, it was proposed to be conducted one week in country training in India of DOA officers and progressive farmers but the same could not be conducted in view of COVID-19. Now we are planning to conduct the training during the month of July-August 2022.
- (ii) Mr. Ishizaki further informed that under JICA TCP it was also proposed to be conducted overseas training of officer of DOA but the same could not been conducted in view of COVID-19. Still the pandemic is not over in Japan, so it is difficult to arrange it in physical mode, therefore on the recommendation of JICA it has been planned to conduct it remotely/virtually in the month of August 2022.

The progress up to May 2022 and was adjudged quite satisfactory and was approved in the house and attached at **Annexure-3**.

Mr. Kengo Akamine, Senior Representative JICA India, informed that JICA TCP has achieved almost all the targets envisaged under the project. He requested the DOA to ensure adoption of practices as suggested by the TCP experts and persuade the extension officers to give guidance to the farmers for carrying out different operation in vegetable crops so as to boost their farm income. He stressed that guidelines/manual prepared by the TCP should be followed by the Extension officers and these should be made easy access of the farmers preferably at the DOA sale outlets.

Ms. Kaori Furuyama informed that JICA TCP has achieved the targets kept under the project. There is need to follow the guidelines/manual prepared by the TCP at the EO level. She suggested that these manual and guidelines should be loaded in the DOA/Project website and wide publicity of the same be made. She also requested the DOA to ensure full participation of DOA extension officers in remaining activities of JICA TCP. She stressed that DOA/ PMU should decide the time line to achieve the outcome of PDM. She further informed that JICA TCP is to organise one workshop as desired in the project document and asked Mr. Ishizaki to explore possibility to organise the workshop in the month of September 2022. She thanked the DOA officers for rendering full cooperation to JICA TCP experts to achieve the targets kept under the project.

Chairman thanked Mr. Ishizaki for high lighting the achievements made under the project and also the issues where is to be taken at the DOA level. He directed, that DOA should take immediate action wherever required in a time bound manner. He asked the Project Director to upload the guidelines/manuals prepared by JICA TCP in the DOA as well as project website and give feedback to TCP and HPKV also.

At the end, Project Director HPCDP JICA ODA thanked all the participants with special thanks to worthy Secretary (Agriculture), Mr. Kengo Akamine, Senior Representative JICA India, Ms. Kaori Furuyama, Representative, JICA India, Ms. Maria Kato Representative, JICA India Mr. Subroto Takukdar, Addl. Chief Dev. Specialist, JICA India and Dr. O. P. Sharma, Addl. Commissioner (NRM/RFS) Ministry of Agri. Govt. of India, for sparing their valuable time to give suggestions/guidance to the JICA TCP and DOA officers for effective implementation of TCP activities. He also thanked all other members of JCC for their participation in the meeting.

The meeting ended with a vote of thanks from and to the Chair.

Annexure-1

List of participants who attended the 11th Joint Coordination Committee (JCC) meeting under JICA TCP Phase-II, Stage-2 held under the Chairmanship of Dr. Rakesh Kanwar, IAS, Secretary (Agriculture) to the Govt. of Himachal Pradesh at Armsdale building meeting hall on 09.06.2022 at 00:30 pm

Sr.No.	Name	Position
1	Dr. N.K. Dhiman	Director of Agriculture Himachal Pradesh Shimla-5.
2	Dr. .J.C .Rana,	Chief Project Advisor, HP CDP JICA ODA, Hamirpur
3	Mr. Akamine Kengo	Senior Representative JICA India.
4	Ms. Furuyama Kaori	Representative, JICA India.
5	Ms. Kato Maria	Representative JICA India
6	Mr. Subrotu Talukdar	Addl. Chief Dev. Specialist, JICA India
7	Dr. O.P. Sharma	Addl. Commissioner (NRM & RFS) Govt. of India, Ministry of Agri. New Delhi
8	Mr. Naresh Thakur	Managing Director, HP State Agriculture Marketing Board, Shimla-2.
9	Dr. Suresh Kapoor.	Project Director, HPCDP, JIC ODA, Hamirpur
10	Mr. Ravinder Kumar	Deputy Director (Planning) H.P. Shimla-2.
11	Dr. Suresh Kr. Sharma	Vegetable Specialist, DOA, Shimla
12	Dr. Rajesh Sood	Director, SAMETI, Mashobra
13	Mr. Pradeep Sharma	Finance Officer, HPCDP, JICA ODA, Hamirpur
14	Dr. Sunil Chauhan	District Project Manager, HPCDP, JICA ODA, Hamirpur
15	Dr. Navneet Sood	District Project Manager, HPCDP JICA ODA, Mandi
16	Dr. Ravinder Chauhan	Deputy Project Director, HPCDP, JICA ODA, Hamirpur
17	Dr. Santosh Kumar	District Project Manager, HPCDP JICA ODA, Solan
18	Dr. Ashish Anand	Subject Matter Specialist, SPMU, Hamirpur
19	Dr. Ms Neha Sharma	Agriculture Development Officer, Directorate of Agriculture, HP Shimla-5.
20	Dr. Ms. Dhanika	Agriculture Extension Officer, Directorate of Agriculture, HP Shimla-5.
21	Mr. Ishizaki Yoshiyuki	Chief Advisor, JICA TCP Hamirpur
22	Dr. R.K. Sharma	Agriculture Extension Expert JICA TCP, Hamirpur

Annexure-2

Agenda No.1-Confirmation of the Minutes of 10th JCC Meeting held on 16th November 2021**ACTION TAKEN REPORT**

Action taken report on the decisions taken during the 10th JCC Meeting held on 16th November 2021 is shown as follows:

No.	Action Items	Action Taken
1.	Confirmation of minutes of previous meeting (9th JCC meeting) held on 12th July 2021:	The minutes of 9th JCC meeting held on 12th July 2021 were circulated to all the members concerned vide letter No. Agr. HMR SPMU(F) 10/11-JCC1275 dated 3rd August 2021. No comments were received from any quarter, therefore, the same were confirmed as approved.
2.	<p>Following issues were focused to promote crop diversification and increase farmer's income:</p> <p>2.1 Deployment of AEOs: There are some AEO circles which are vacant. It is expected that extension activities in 210 sub-projects be sustainably conducted for which 25 AEOs are newly required out of which 10 AEOs are required for JICA TCP pilot sites.</p> <p>2.2 New scheme to promote crop diversification in HP: Implementation of a new scheme for promotion of crop diversification through vegetable cultivation from fiscal year of 2022/23 is expected.</p> <p>2.3 Job Profile: It is suggested that the job profiles of all extension officers in the Department needs to be made more effective and additional activities such as marketing of vegetables, food diversification and water management shall also be incorporated.</p>	<p>The issue of recruitment of AEOs is sub judice as a court case is pending in HP High court. As soon as the court's directions are received, further process for filling up the vacant posts could be started. However, as a stop gap arrangement, it is suggested that the additional charge should be given to the AEOs of adjoining circle so that work may not suffer.</p> <p>It is intimated that proposal on a new scheme has already been taken up with the Government for approval.</p> <p>It is suggested that there is urgent need for restructuring job profile and training of EOs in all agriculture activities. It is intimated that matter has already been taken up with the Government for approval.</p>

Agenda No.2

Progress of JICA TCP Phase-II
as of May 2022

1

1. Progress of each output activities

- **【Output-1】**: Technical Capacity of DOA/PMU Staff to Promote Crop Diversification Practices is Strengthened
- **【Output-2】**: Through Activities in Pilot Areas, Packages of Techniques to Promote Crop Diversification Are Compiled
- **【Output-3】**: Effective marketing activities for farm produce are identified
- **【Output-4】**: Sustainable plans of DOA to promote crop diversification in the respective 5 districts are formulated based on achievements of the Project
- Food Diversification
- Water Management and O&M

2

- Training initially scheduled for AEO (11 programmes) is completed
- Following training would be conducted:
 - training related to each TCP output activities
 - on-site training to improve DOA's field work
 - training on market-oriented agriculture (JICA SHEP) (Smallholder Horticulture Empowerment & Promotion)
 - training for non-target districts of TCP (7 districts)
 - dissemination of existing guidelines and training material
- Questionnaire survey for AEO
 - Purpose: confirming effect of TCP training and field work and confirming its utilization for AEO's daily work
 - 214 answers are collected out of 575 people

Output-2 Activities

- Pilot activities at 8 sites are ongoing
- Technical transfer to DOA is also ongoing through implementation of the pilot activities

BPMU	Pilot site	Purpose	Current status
Palampur (Bajjnath)	Hartara	Nursery production, Local speciality	• Nursery production of various vegetable and its sale
Bilaspur	Jhamradiyan	Season-off vegetable	• Cultivation of cucumber in poly house • Cultivation of cauliflower, brinjal, capsicum and tomato in open field
Dehra	Dughiari	Exotic vegetable	• Cultivation of tomato, cucumber and coriander in poly house • Cultivation of cucumber, bitter gourd, brinjal and beans in open field
Hamirpur	Dudhana	Season-off vegetable	• Cultivation of cucumber in poly house • Cultivation of cucumber, tomato and pumpkin in open field
Mandi	Kataula	Exotic vegetable	• Cultivation of capsicum, cauliflower, swiss chard and lettuce in open field
Dharamshala (Nurpur)	Minjh Gram	Season-off vegetable	• Nursery production of various vegetable and its sale
Sarkaghat	Dhamella	Season-off vegetable	• Cultivation of cucumber, cauliflower, onion, tomato, capsicum and brinjal in open field
Una	Sathru	Season-off vegetable	• Nursery production of various vegetable and its sale • Cultivation of tomato, cucumber, brinjal and capsicum in open field

- Below activities are ongoing
- Technical transfer to DOA is also ongoing through implementation of the activities

Activities
Assistance to make a production plan for poly-house
Promotion of Cucumber & Early cauliflower cultivation by use of mulching sheet & drip irrigation
Cultivation of early cucumber + other crops in poly house
Trial - Cucumber + Early cauliflower cultivation in paddy area by use of mulching sheet, furrow irrigation and underground drain
Trial - Anaerobic/Biological Soil Disinfestation inside poly house

Output-4 (Annual plan and 5-year plan)

Up to 2018/19: Annual plan (production/extension cooperated)

DOA → production assistance / various schemes

ATMA → extension (demonstration, training, inspection)



After 2019/20: Annual plan (production/extension separated)

DOA → production assistance / various schemes

ATMA → extension (focusing on **SPNF**)



DOA

RKVY: a scheme related to vegetable production

SPNF: Subhash Palekar Natural Farming



Planning "**5-year plan**" on strengthening extension activities for crop diversification

- Purpose: Dissemination and utilization of guidelines and other materials
- Target: Guidelines are:
- ① Technical Guidelines/Manuals related to extension activities
 - ② Guidelines related to operation of schemes
 - ③ Guidelines/ Manuals/ other literatures prepared under schemes (including HPCDP and TCP)
- Activities: ① Confirming existing Guidelines/Manuals
- ② Utilization of Guidelines/Manuals for extension activities
 - ③ Finding points to be updated through extension activities
- Progress: ① Kick-off meeting for guideline committee was conducted in April
- ② Work schedule confirmed
 - ③ Confirming status of storage of Guidelines/Manuals and status of selecting the person in charge of the storage

Food diversification / Water Management

- Extension activities related to TCP material are on going
- **【Food diversification】**
 - Targeting DOA offices and PD ATMA offices in 5 districts and officers of PMU/DPMU/BPMU
 - Explanation and distribution of recipe book and extension material
 - Assistance for extension activities by using of extension material
- **【Water Management】**
 - Targeting SDSCO in 5 districts and officers of PMU/DPMU/BPMU
 - Training for Water Requirement Calculation (WRC)
 - Monitoring for utilization of irrigation check list

【In-country training in India】

- Training plan will be prepared by TCP and then discussion among DOA and JICA
- 1week training is planned and content is under consideration

【Overseas training in Japan】

- Training will be conducted remotely due to COVID-19
- Preparation in May-June and implementation in July

3. Achievement of PDM (Project output)

Project Output	Indicator	Achievement (as of May 2022)	Remarks
1. Technical capacity of DOA/PMU staff to promote crop diversification practices is strengthened	1.1 Number of techniques provided to farmers by core extension officers (CEOs) is increased	【under monitoring】 - Initially scheduled training for AEO is completed - Technical transfer to AEOs is ongoing through participating TCP activities - AEO's extension activities are mainly conducted at sales centers with their spare time to give instruction and advise to farmers regarding to vegetable cultivation	- Status of AEO's field work to be confirmed through questionnaire survey by WhatsApp
	1.2 Number of techniques provided to farmers by other DOA/PMU staff are increased	【under monitoring】 - Technical transfer is ongoing through regular meeting in each district and SMS office - Status of AEO's extension activities is same as 1.1 above - AEO's extension activities at field are limited due to lack of budget, transportation and number of AEOs	- New scheme in DOA regarding to crop diversification and new employment of AEOs are needed and TCP has been requesting both to DOA
	1.3 Satisfaction degree of farmers on extension services provided by DOA/PMU is improved	【under monitoring】 - It is estimated that farmers in 210 sub-projects (HPCDP Phase I sites) are satisfied with extension services provided by PMU - After HPCDP Phase I is ended, the services are handed over to DOA and it is expected that satisfaction degree of farmers is maintained by DOA's extension services	- Satisfaction degree of farmers will be confirmed through end line survey

3. Achievement of PDM (Project output)

Attachment-2.1.9

Project Output	Indicator	Achievement (as of May 2022)																																																																																																		
2. Through activities in pilot areas, packages of techniques to promote crop diversification are compiled	2.1 5 packages of standardized techniques to promote crop diversification are prepared	<p>[Achieved]</p> <ul style="list-style-type: none"> - Package of standardized techniques are compiled as follow: <ol style="list-style-type: none"> (1) Walk-in poly tunnel (2) Low poly tunnel (3) Use of double tunnel (4) Use of non-woven sheet (5) Improved nursery bed (6) Bed sowing (line sowing) (7) Improved fertilizer allocation (timing and dosage) (8) Insects and disease control 																																																																																																		
	2.2 Indicators of crop diversification (i.e. area under vegetables production and income) are increased in the pilot areas	<p>[Achieved]</p> <ul style="list-style-type: none"> - Area under vegetables production and income in the pilot areas are increased as follows: <table border="1"> <thead> <tr> <th rowspan="2">Pilot Area</th> <th colspan="2">Area (m²)</th> <th colspan="2">Income (Rs.)</th> </tr> <tr> <th>Before</th> <th>After</th> <th>Before</th> <th>After</th> </tr> </thead> <tbody> <tr> <td colspan="5">Stage-1</td> </tr> <tr> <td>Chelleli</td> <td>N/A</td> <td>123</td> <td>N/A</td> <td>23,460</td> </tr> <tr> <td>Gela Kuhal</td> <td>N/A</td> <td>123</td> <td>N/A</td> <td>12,000</td> </tr> <tr> <td>Gabli Kuhl</td> <td>N/A</td> <td>4,860</td> <td>N/A</td> <td>267,000</td> </tr> <tr> <td>Sandral</td> <td>300</td> <td>800</td> <td>N/A</td> <td>18,000</td> </tr> <tr> <td>Jai Khad Dhangadhar</td> <td>8,000</td> <td>9,200</td> <td>N/A</td> <td>316,000</td> </tr> <tr> <td>Johar Dariya</td> <td>N/A</td> <td>30</td> <td>N/A</td> <td>19,735</td> </tr> <tr> <td>Badhera Lower</td> <td>500</td> <td>6,018</td> <td>N/A</td> <td>43,810</td> </tr> <tr> <td>Balhseena</td> <td>N/A</td> <td>129</td> <td>N/A</td> <td>56,500</td> </tr> <tr> <td colspan="5">Stage-2</td> </tr> <tr> <td>Dudhana</td> <td>N/A</td> <td>4,000</td> <td>N/A</td> <td>218,500</td> </tr> <tr> <td>Dughiari</td> <td>N/A</td> <td>505</td> <td>N/A</td> <td>140,600</td> </tr> <tr> <td>Hartara</td> <td>N/A</td> <td>76</td> <td>N/A</td> <td>111,300</td> </tr> <tr> <td>Dhamella</td> <td>N/A</td> <td>5,070</td> <td>N/A</td> <td>335,250</td> </tr> <tr> <td>Kataula</td> <td>800</td> <td>3,235</td> <td>40,000</td> <td>361,750</td> </tr> <tr> <td>Minjh Gram</td> <td>N/A</td> <td>2,523</td> <td>N/A</td> <td>120,500</td> </tr> <tr> <td>Sathru</td> <td>300</td> <td>600</td> <td>N/A</td> <td>79,950</td> </tr> <tr> <td>Ihamradivan</td> <td>N/A</td> <td>4,991</td> <td>N/A</td> <td>182,000</td> </tr> </tbody> </table>	Pilot Area	Area (m ²)		Income (Rs.)		Before	After	Before	After	Stage-1					Chelleli	N/A	123	N/A	23,460	Gela Kuhal	N/A	123	N/A	12,000	Gabli Kuhl	N/A	4,860	N/A	267,000	Sandral	300	800	N/A	18,000	Jai Khad Dhangadhar	8,000	9,200	N/A	316,000	Johar Dariya	N/A	30	N/A	19,735	Badhera Lower	500	6,018	N/A	43,810	Balhseena	N/A	129	N/A	56,500	Stage-2					Dudhana	N/A	4,000	N/A	218,500	Dughiari	N/A	505	N/A	140,600	Hartara	N/A	76	N/A	111,300	Dhamella	N/A	5,070	N/A	335,250	Kataula	800	3,235	40,000	361,750	Minjh Gram	N/A	2,523	N/A	120,500	Sathru	300	600	N/A	79,950	Ihamradivan	N/A	4,991	N/A
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3. Achievement of PDM (Project output)

Project Output	Indicator	Achievement (as of May 2022)
3. Effective marketing activities for farm produce are identified	3.1 Recommendation for effective activities to improve marketing of farm produce are made	<p>[Achieved]</p> <ul style="list-style-type: none"> - Effective activities to improve marketing of farm produce are made as follow: <ol style="list-style-type: none"> (1) Promotion of market-oriented production planning by farmers (2) Promotion of direct sales to local consumers (3) Promotion of collective shipment to APMC market yards (4) Promotion of vegetable production aim to sell at time of higher-price (5) Other <ul style="list-style-type: none"> • Anaerobic/Biological Soil Disinfestation inside poly house • Underground drain
4. Sustainable plans of DOA to promote crop diversification in the respective 5 districts are formulated on achievement of the project	4.1 Five-year-action plans in the respective 5 districts after completion of the project are formulated and approved by DOA	<p>[under monitoring]</p> <ul style="list-style-type: none"> - Draft five-year-action plans for priority areas of 5 districts are under preparation by each DOA office
	4.2 Crop diversification guidelines and training materials are refined	<p>[under monitoring]</p> <ul style="list-style-type: none"> - All existing guidelines for current schemes and other materials will be listed to formulate standard guideline

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3. Achievement of PDM (Project purpose) Attachment-2.1.9

Project Purpose	Indicator	Achievement (as of May 2022)																																																							
Organizational capacity of DOA to promote crop diversification in the 5 districts is strengthened	1. Extension programmes / activities for crop diversification implemented by DOA are improved in the sub-project area under the ODA loan project (8% of trainings to farmers targeted in the annual plans are conducted)	<p>【under monitoring】</p> <table border="1"> <thead> <tr> <th rowspan="2">District</th> <th colspan="3">Sub-project of HPCDP</th> <th colspan="3">Sub-project wise Farmers of HPCDP</th> </tr> <tr> <th>Total</th> <th>with schemes</th> <th>with RKVY</th> <th>Total</th> <th>with RKVY *</th> <th>% of RKVY</th> </tr> </thead> <tbody> <tr> <td>Bilaspur</td> <td>18</td> <td>18</td> <td>15</td> <td>721</td> <td>536</td> <td></td> </tr> <tr> <td>Hamirpur</td> <td>33</td> <td>16</td> <td>9</td> <td>899</td> <td>222</td> <td></td> </tr> <tr> <td>Kangra</td> <td>78</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Mandi</td> <td>62</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Una</td> <td>19</td> <td>18</td> <td>3</td> <td>458</td> <td>89</td> <td></td> </tr> <tr> <td>Total</td> <td>210</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>Note) *: sub-project wise No. of famers</p>	District	Sub-project of HPCDP			Sub-project wise Farmers of HPCDP			Total	with schemes	with RKVY	Total	with RKVY *	% of RKVY	Bilaspur	18	18	15	721	536		Hamirpur	33	16	9	899	222		Kangra	78						Mandi	62						Una	19	18	3	458	89		Total	210					
	District	Sub-project of HPCDP			Sub-project wise Farmers of HPCDP																																																				
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	2. Number of farmers practicing vegetable cultivation in the sub-project area under the ODA loan project is increased by 20%	<p>【Achieved】</p> <p>- Proportion (%) of all farmers practicing vegetable cultivation in the sub-projects is around 70% out of total farmers, while proportion of commercial vegetable farmers is 27% out of total farmers as follows:</p> <table border="1"> <thead> <tr> <th rowspan="2">District</th> <th rowspan="2">Total Farmer (No.)</th> <th colspan="2">After Project Implementation</th> </tr> <tr> <th>Proportion of All Vegetable Farmer (%)</th> <th>Proportion of Commercial Vegetable Farmer (%)</th> </tr> </thead> <tbody> <tr> <td>Bilaspur</td> <td>732</td> <td>83</td> <td>23</td> </tr> <tr> <td>Hamirpur</td> <td>1,167</td> <td>58</td> <td>11</td> </tr> <tr> <td>Mandi</td> <td>4,779</td> <td>74</td> <td>31</td> </tr> <tr> <td>Kangra</td> <td>8,421</td> <td>68</td> <td>27</td> </tr> <tr> <td>Una</td> <td>607</td> <td>76</td> <td>23</td> </tr> <tr> <td>Total</td> <td>15,706</td> <td>70</td> <td>27</td> </tr> </tbody> </table> <p>Note) *: sub-project wise No. of famers</p>	District	Total Farmer (No.)	After Project Implementation		Proportion of All Vegetable Farmer (%)	Proportion of Commercial Vegetable Farmer (%)	Bilaspur	732	83	23	Hamirpur	1,167	58	11	Mandi	4,779	74	31	Kangra	8,421	68	27	Una	607	76	23	Total	15,706	70	27																									
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13

3. Achievement of PDM (Project purpose)

Project Purpose	Indicator	Achievement (as of April 2022)	Remarks
Organizational capacity of DOA to promote crop diversification in the 5 districts is strengthened	2. Number of farmers practicing vegetable cultivation in the sub-project area under the ODA loan project is increased by 20%	<p>(continuing from previous slide)</p> <p>- A number of farmers have limited vegetable cultivation in their kitchen garden, thus there is scarcely vegetable cultivation in the CCA before implementation of the project. It means that number of farmers practicing vegetable cultivation in the sub-projects is increased by over 20% under the ODA loan project</p>	

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3. Achievement of PDM (Project overall goal)

Project Overall Goal	Indicator	Achievement (as of April 2022)	Remarks																																																																				
Crop diversification according to Agro-Ecological situation is promoted in the 5 districts of Himachal Pradesh	1. 15% of area under vegetable cultivation and quantity produced in the 5 districts are increased (against baseline data)	<p>【Not achieved yet】</p> <ul style="list-style-type: none"> - Increment of area and productivity in HPCDP area is shown as follows: <p>(1) Vegetable cultivated area (ha)</p> <table border="1"> <thead> <tr> <th>Item</th> <th>Before in 2009 ①</th> <th>Actual in 2021 ②</th> <th>Increase Rate ②/①</th> </tr> </thead> <tbody> <tr> <td>Irrigation Beneficiary Area</td> <td>2,183</td> <td>4,671</td> <td>2.1 times</td> </tr> <tr> <td>Total vegetable cultivated area in dry season (%) *1</td> <td>170 (8)</td> <td>1,854 (40)</td> <td>10.9 times</td> </tr> <tr> <td>Total vegetable cultivated area in rainy season (%) *1</td> <td>110 (5)</td> <td>1,406 (30)</td> <td>12.8 times</td> </tr> </tbody> </table> <p>(2) Unit yield of major vegetables (ton/ha)</p> <table border="1"> <thead> <tr> <th>Season-wise Major Vegetables</th> <th>Before in 2009 ①</th> <th>Actual in 2021 ②</th> <th>Increase Rate ②/①</th> </tr> </thead> <tbody> <tr> <td colspan="4">Dry season</td> </tr> <tr> <td>Tomato</td> <td>19.0</td> <td>-</td> <td>-</td> </tr> <tr> <td>Root vegetables</td> <td>6.9</td> <td>19.9</td> <td>2.9</td> </tr> <tr> <td>Peas</td> <td>6.2</td> <td>11.1</td> <td>1.8</td> </tr> <tr> <td>Cauliflower</td> <td>9.5</td> <td>18.7</td> <td>2.0</td> </tr> <tr> <td>Other vegetables</td> <td>-</td> <td>17.4</td> <td></td> </tr> <tr> <td colspan="4">Rainy season</td> </tr> <tr> <td>Tomato</td> <td>19.0</td> <td>30.6</td> <td>1.6</td> </tr> <tr> <td>Root vegetables</td> <td>6.9</td> <td>13.8</td> <td>2.0</td> </tr> <tr> <td>Peas</td> <td>6.2</td> <td>12.0</td> <td>1.9</td> </tr> <tr> <td>Cauliflower</td> <td>9.5</td> <td>21.7</td> <td>2.3</td> </tr> <tr> <td>Other vegetables</td> <td>-</td> <td>19.5</td> <td></td> </tr> </tbody> </table> <ul style="list-style-type: none"> - Meanwhile, it is intimated that increment of area and production in 5 Districts within 5 years is around 5%, based on statistical data of DOA. It seems that this slow increment has been caused due to low progress of implementation of irrigation project as well as extension activities. It is expected that this situation should be improved through promotion of construction of new irrigation schemes as well as enhancement of extension activities. 	Item	Before in 2009 ①	Actual in 2021 ②	Increase Rate ②/①	Irrigation Beneficiary Area	2,183	4,671	2.1 times	Total vegetable cultivated area in dry season (%) *1	170 (8)	1,854 (40)	10.9 times	Total vegetable cultivated area in rainy season (%) *1	110 (5)	1,406 (30)	12.8 times	Season-wise Major Vegetables	Before in 2009 ①	Actual in 2021 ②	Increase Rate ②/①	Dry season				Tomato	19.0	-	-	Root vegetables	6.9	19.9	2.9	Peas	6.2	11.1	1.8	Cauliflower	9.5	18.7	2.0	Other vegetables	-	17.4		Rainy season				Tomato	19.0	30.6	1.6	Root vegetables	6.9	13.8	2.0	Peas	6.2	12.0	1.9	Cauliflower	9.5	21.7	2.3	Other vegetables	-	19.5		- Final number will be updated based on statistic material in 2020-21
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3. Achievement of PDM (Project overall goal)

Project Overall Goal	Indicator	Achievement (as of April 2022)	Remarks
Crop diversification according to Agro-Ecological situation is promoted in the 5 districts of Himachal Pradesh	2. 18% of quantity of farm produce marketed within and outside the state is increased (against baseline data)	<p>【Not achieved yet】</p> <ul style="list-style-type: none"> - As mentioned in 1., vegetable production in HPCDP area has significantly increased, while it is intimated that increment of production in 5 Districts within 5 years is around 5%, so that it shows little growth compared to increment of HPCDP area - On the other hand, it is estimated that the increment of vegetable production in 5 districts would be marketed within and outside the state since vegetable production for home consumption is scarce compared to vegetable production for sale 	- Final number will be updated based on statistic material in 2020-21

■ **Problem:**

DOA's EOs hardly conduct extension activities at field and instructs to farmers regarding to crop diversification

■ **Issues and Countermeasures:**

- ① Less field experience of AEOs
 - ⇒ Participation in field activities of JICA TCP
 - ⇒ Implementation of new schemes
- ② No existing schemes in DOA for EO's field activities
 - ⇒ Arrangement of new schemes
- ③ No actions on marketing, FD and WM of EOs
 - ⇒ Additional job files for marketing, FD and WM
- ④ Lack of AEO number and high busyness
 - ⇒ Consideration of priority area / rotation
- ⑤ Limited opportunity for extension activities
 - ⇒ "Sales Centre" as a place of extension activities

Thank You Very Much

Draft minutes of 12th Joint Coordination Committee (JCC) meeting under JICA TCP Phase-II, held under the Chairmanship of Sh. Rakesh Kanwar, IAS, Secretary (Agriculture) to the Govt. of Himachal Pradesh in physical/online at Armsdale meeting hall, HP Secretariat, Shimla-2, on 21.10.2022 at 11.00 AM

The list of participants is attached at **Annexure-1**.

At the outset, Dr. Suresh Sharma, Vegetable Specialist, DOA, Shimla on behalf of Director Agriculture, HP welcomed all the participants with special welcome to worthy Secretary (Agriculture) to the Govt. of H.P., Mr. Watanabe, Senior Representative JICA India, Ms. Kato, Representative, JICA India, Dr. Patel, Addl. Commissioner, AD&FW, Govt. of India, Ministry of Agriculture New Delhi and Dr. O.P. Sharma, Addl. Commissioner (NRM/RFS) Ministry of Agri., Govt. of India, for sparing their valuable time to participate in this meeting. He further informed that JICA TCP shall be closing on 31st October, 2022 and in today's meeting details with regard to Completion Report of TCP activities done during JICA TCP Phase 2 which was executed from March, 2017 to 31st October, 2022 will be discussed. Thereafter, following agenda items were discussed:

Agenda No. 1: Confirmation of the minutes of 11th JCC meeting held on June 9, 2022:

The proceedings of the 11th JCC meeting held on June 9, 2022 in physical/on line were circulated to all members. No comments were received from any quarter therefore, the same were confirmed as such.

Agenda No. 2 Presentation and discussion on the completion report of JICA Phase-II:

Action taken report on the decision taken during the 11th JCC meeting is enclosed at **Annexure-2**.

Regarding deployment of extension officer, the Chairman informed that for extension officer there will be no problem in Una, Bilaspur and Hamirpur District. May be some constraints in Kangra and Mandi district being big and long distance. He suggested that DDA of concerned district and Project Director, HPCDP JICA ODA may manage the work among the extension officer by making internal adjustment till more extension officers are recruited. He further informed that all 210 sub-projects have been handed over to DOA and now DOA is to ensure that extension work may be continued smoothly and all activities should be taken up without any problem. He expressed that all activities should be mapped in such a way that farmer may get maximum benefit by adopting the technology suggested by JICA TCP. There should be close coordination among all executing agencies and they should have a meeting every month to discuss the progress of field activities and minutes

be circulated. Mr. Ishizaki informed that the major problem for the extension officers is mobility as very limited budget has been provided for mobility. The Secretary (Agri.) informed that within the district all resources should be pooled and every one should be made responsible for which by name sub project allotment be done. Dr Suresh Kumar Sharma, Vegetable Specialist informed that a new scheme for Cluster based vegetable development has been prepared under Mukhya Managri Krishi Samvardhan Yojana and under this scheme sufficient provision has been kept for each activity including mobility/ transportation.

Agenda No. 2: Results and conclusion of JICA TCP Phase-II:

Dr. Suresh Sharma highlighted the outputs, major activities under each Output and progress achieved during the project period which is attached at **annexure 3**. Activity-wise explanation was given in detail. After discussion the house expressed that good work has been done by JICA TCP and there is need to proper follow up so that Crop diversification could be promoted in all 210 sub projects of HPCDP, JICA,

Dr. Suresh Sharma further informed that three in country trainings were organised by JICA TC for the extension officers of DOA & PMU and farmers and the same were very helpful to boost the skill of Extension Officer. The extension officers have further shared the same with other extension officers.

The achievement of PDM under each output was highlighted in the meeting which was appreciated.

Agenda No. 3: Recommendation and consideration for further promotion of Crop Diversification in Himachal Pradesh:

The following recommendations and considerations were highlighted for which prompt action is required at the DOA side:

- Conducting extension activities on vegetable cultivation at site by the DOA extension officers of DOA/ PMU
- Communication between DOA, ATMA, HPCDP-2 and other projects should be regular.
- Procedure adopted for preparation of 5 year plan under Output-4 using PDCA cycle should also be used for for Mukhya Mantri Krishi Samvardhan Yojna .
- Establishment of new section for market let extension in DOA.
- Clarification of target farmers and area for extension activities on the block map.
- Recruitment of EOs/Private sector.

Dr. Patel informed that good work has been done by the JICA TCP for capacity building of EOs through Trainings and arranging field activities under Output- 2 and Output-3 and which has further been shared with other extension officers. He suggested that DOA should ensure

deployment of extension officers in all the sub projects or make arrangement in such a way that the sub-project activities may be continued with out any hindrances. By name Extension officers should be made in-charge for each sub-project who may further expand the activities in the adjoining areas.

Dr. O.P. Sharma informed that there is need for close coordination among all executing agencies and the technique developed by JICA TCP should be percolated to other areas also. All extension activities should be integrated so as to make the programme successful and benefit may trickle to the farming community.

Mr. Watanave JICA India thanked for the nice presentation and expressed that good work has been done by JICA TCP. He expressed that HPCDP- JICA Phase-2 has been started in Himachal radish and JICA TCP shall not be there so t all agencies of DOA should support JICA ODA Phase-2 so that the goal fixed under the project could be achieved. Dr. Suresh Sharma informed that there is need to explore possibility for JICA TCP-3. Mr. Watanabe informed that the case be moved thereafter possibility shall be explored.

Ms. Kato informed that guidelines should be uploaded in the DOA / HPCDP website. She also requested that activities undertaken by TCP Teams under Output-2 and 3 should be continued by the EOs of DOA/ PMU and these be expanded to larger areas so that farming community could be benifited. The Secretary (Agri.) desired that these Guidelines should be uploaded in the website today and compliance be reported. The Security audit of DOA site should also be completed as early as possible

Address of Secretary (Agri.)

- The Secretary (Agri.) desired to know the date by which final recommendations shall be given. Mr. Ishizaki informed that by 31st October, 2022, final recommendations shall be given.
- It was desired to issue orders to the Extension Officers of adjacent arras for all 210 sub projects by name by the DOA so that the EOs are held responsible for carrying out extension activities for the promotion of vegetable cultivation. The action should be taken up the DOA with in a weeks and orientationmeeting of EOs shall also be done.The DOA should submit the compliance report within 10 days.
- Regarding availability of Extension material in 80 Sale centres of 5 distts ,it was informed that the same will be made available with 10 days.State. Further it was desired that if the material is in English, its hindi version be prepared and supplied and compliance be reports

immediately. The entire material should also be uploaded in the website by 31st October, 2022. He also stressed that the material should be properly displayed / kept for future use.

- Regarding non availability of mobility budget, this matter should be taken up by DOA as soon as possible and if required necessary provisions should be made..
- Continuity of activities in 210 sub-projects be ensured, and a committee be formulated to ensure proper monitoring. Clusters of 2-3 nearby sub-projects should be formulated. At district level Coordination Committee meetings be arranged before 5th of each month in each district and report be submitted by 10th of each month.
- The learning from JICA TCP be replicated in the adjoining fields also in right earnest manner to have good impact of the activities and farmers are benefitted.
- The Secretary (Agri.) thanked all the officers associated since inception of the Project or have left/ retired for their cooperation and dedication in achieving the envisaged targets in pite of Covid-19 and requested that we should always look forward for their guidance and support in the future also.
- The learnings of Phase-I should be taken up in the Phase-2 of HPCDP so that good results could be achieved.

At the end, Project Director HPCDP JICA ODA thanked all the participants with special thanks to worthy Secretary (Agriculture), Mr. Watanabe, Senior Representative JICA India, Ms. Kato, Representative, JICA India, , , Addl. Chief Dev. Specialist, JICA India , Dr. O. P. Sharma, Addl. Commissioner (NRM/RFS) Ministry of Agri. Govt. of India, & Dr. Patel, Deputy Commissioner, DA &FW, Krishi bhawan, New Delhi for sparing their valuable time to give suggestions/guidance to the JICA TCP and DOA officers for effective implementation of TCP activities. He also thanked Director Extension Education, HPKV, Palampur, Director Sameti, Mashobra and all the participants present in physical and online mode for rendering their full support for successful completion of JICA TCP activities and achieving the envisaged target.

The meeting ended with a vote of thanks from and to the Chair.

Annexure-1

List of participants who attended the 12th Joint Coordination Committee (JCC) meeting under JICA TCP Phase-II, held under the Chairmanship of Mr. Rakesh Kanwar, IAS, Secretary (Agriculture) to the Govt. of Himachal Pradesh at Armsdale building meeting hall on 21.10.2022 at 11 AM

Sr.No.	Name	Position
1	Mr. Naresh KumarThakur	Managing Director, H.P. State Agriculture. Marketing Board
2	Mr.Watanabe (Online)	Senior Representative JICA India. Delhi
3	Ms. Maria Kato (Online)	Representative JICA India
4	Dr. O.P. Sharma (Online)	Addl. Commissioner (NRM & RFS) Govt. of India, Ministry of Agri. New Delhi
5	Dr. Patel (Online)	Deputy Commissioner (NRM&RFS) Govt. of India, Ministry of Agri. New Delhi.
6	Dr. Sunil Chauhan	Project Director, HPCDP, JICa- ODA, Hamirpur
7	D. Raghubir Singh	Joint Director of Agriculture, Himachal Pradesh, Shimla-5.
8	Dr. Suresh Kr. Sharma	Vegetable Specialist, DOA, Shimla
9	Dr. Rajesh Kaushik	Director, SAMETI, Mashobra
10	Dr. Vinod Sharma	Director (Extension Education) CSK HPKV, Palampur
11	Dr. Neha Sharma	Agriculture Development Officer, Directorate of Agriculture, HP Shimla-5.
12	Dr. Dhanika	Agriculture Extension Officer, Directorate of Agriculture, HP Shimla-5.
13	Mr. Ishizaki	Chief Advisor, JICA TCP Expert Team, Hamirpur
14	Ms.Ozawa Asami	JICA TCP Expert, Hamirpur
15	Mr. Kenta Aoyama (Online)	Marketing Expert JICA TCP Hamirpur
16	Dr. R.K. Sharma	Agriculture Extension Expert JICA TCP, Hamirpur

*2.2 Activities to Achieve Output-1:
Technical Capacity of DOA/PMU Staff
to Promote Crop Diversification
Practices is Strengthened*

Progress and Schedule on Implementation of Training Programmes for CEOs during the Period of the Stage-I

Training Subjects	2017				2018												2019			
	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May		
1 Micro-irrigation systems & estimation of crop water requirement				H U K	B M															
2 Protected cultivation (including fertigation) 2days							K H U		B M											
3 Vegetables cultivation (exotic)			H K U																	
4 IPM (including bio-chemicals)							H K B U	M U												
5 Weed management (including mulching)	H K M		B U																	
6 Organic farming and certification process (organic fertilizer application)	H K M	K U B																		
7 Post-harvest techniques											K		H M	U B						
8 Innovative techniques (training, pruning,staking ,seedling raising etc.)													U B	M H K						
9 Marketing strategies to overcome marketing problems																	U			
10 Promotion, strengthening, and management of SHG / farmers' groups																				
11 Planning, implementation, monitoring and evaluation (CDP, APO)																				
12 Farm mechanization																				
13 Training for 7 Districts																				

Note: B: Bilaspur District, H: Hamirpur District, K: Kangra District, M: Mandi District, U: Una District

Implementation Schedule of Training Programmes in JICA TCP Stage 2

Training Programme	2020												2021												2022		
	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.			
1 Water Management and O&M																											
2 Protected Cultivation of Vegetables																											
3 Farming Practices for Common Vegetables																											
4 Farming Practices for Exotic Vegetable																											
5 Nutrient Management in Vegetables and Farming Practices for Fodder Crops																											
6 Post-harvest Value Addition, Processing Techniques and Marketing of Vegetables																											
7 Natural Farming for Vegetables																											
8 Management of Crop Plan and Crop Calendar for Vegetables																											
9 Coordination & Management of FPO and SHEP Approach																											
10 Farm Mechanization																											
11 PDCA & HRD																											
12 Output-2																											
13 Output-3																											
14 Food Diversification																											
15 Water Management and O&M																											
16 Orientation Training																											

Note:
 (1) B: Bāsapur District, H: Hamirpur District, K: Kangra District
 M: Mandi District, U: Una District
 Source) JICA TCP Experts' Team, December 2021

(2) ← Tentative period for implementation of training programme
 (3) → conducted already

1. Title:	Organic Farming and Certification Processes (Organic fertilization application)	
2. Target:	Core Extension Officers (CEOs) from: DOA Hamirpur : (From Block offices total .) DPMU, Hamirpur: SMS-1, ADO-1,AE-1,AO-1(Toatl- 4No.) BPMU, Hamirpur: BPM-1, AE-1, AO-1,ADO-1,AEO-1 (total 5No.) Grand Total : No.	
3. Date:	December 18, 2017	
4. Venue:	Conference Hall, SPMU, HPCDP,JICA-ODA, Hamirpur	
5. Objectives:	To acquire information from Resource Persons on the following subjects: i.Organic farming prospects in HP and processes under NPOP ii. Procedure for organic certification iii. Formulation & use of organic inputs iv. Nutrient management under organic farming v. Marketing of organic produce	
6. Materials to be used	(1) PPTs (2) Training material (3) Others to be prepared	
7. Expected Outputs	1) Awareness of key implementers (CEOs) of PMU and DOA is increased. (2) Awareness of other implementers (EOs) of PMU and DOA is increased by sharing of training material & learnings in their weekly/monthly meeting. (3) Training of famers by the EOs about organic farming (4) Adoption of organic farming by the farmers of	
8. Time Schedule:		
Time	Subjects	Speaker
10:00 -10:30	Introduction ,Pre evaluation	JICA-TCP Expert
10:30 -11:30	Session 1	-Resource Person
11:30 -11:40	TEA BREAK	
11:40 -12:40	Session 2	-Resource Person
12:40 -13:40	Sesssion-3	-Resource Person
13:40 -14:25	LUNCH BREAK	
14:25 -15:15	Session 4	-Resource Person
15:15 -15:25	TEA BREAK	
15:25-16:15	Session 5	Resource Person
16:15-16:45	Discussion & Post evaluation	JICA-TCP Experts & Resource Persons

**DEPARTMENT OF AGRICULTURE,
THE STATE GOVERNMENT OF HIMACHAL PRADESH**

**PHASE II PROJECT
FOR
CROP DIVERSIFICATION
IN
HIMACHAL PRADESH**

**REPORT
OF
TRAINING ON
ORGANIC FARMING FOR CORE EXTENSION OFFICERS S
OF DISTRICT ??????**

Month Day, Year

Prepared By Name

Report of Training
on
Organic Farming for District Core Extension Officers of District ?????

I. Background of Implementation of the Training

In this part, background of implementation of the training should be described briefly.

II. Schedule for District #####

(1) Duration: 1 day (??, 2017)

(2) Number of participants: ??? persons (refer Attachment-01)

1) DOA #####: - participants

2) DPMU #####: - participants

3) BPMU ##### : - participants

Please refer the attachment

(3) Venue and accommodation: #####

II. Objectives

Objectives should be described.

III. Main agenda in training.

Major agenda in training should be attached.

IV. Time Schedule of Workshop on #####, 2017

Time	Subjects	Speaker
10:00 -10:30	Introduction of the Project Initialization & Time schedule	-JICA Expert
10:30 -11:30	-Session 1	-Resource Person
11:30-11:40	Tea break	
11:40 -12:40	-Session 2	-Resource Person
12:40 -13:40	-Session 3	-Resource Person
13:40 -14:25	LUNCH	
14:25 -15:15	-Session 4	-Resource Person
15:15-15:25	TEA BREAK	
15:25 -16:15	-Session 5	-Resource Person
16:15 -17:00	Evaluation & Feed back Interaction regarding adoption to the relevant extension activities as well as sharing skills, experiences, etc. obtained from activities	JICA-TCP Experts & Resource Persons

V. Contents in the Training

- (1) (refer Attachment-02)
Text
- (2) (refer Attachment-03)
Text
- (3) (refer Attachment-04)
Text
- (4) (refer Attachment-05)
Text
- (5) (refer Attachment-06)
Text
- (6) (refer Attachment-07)
Text

Depending on the subjects, please arrange attachments

VII. Conclusion and Action to be taken

Outputs, outcomes and their future commitments should be described.

VIII. Attachments

- Attachment-01: List of Participants
- Attachment-02: Power Point Presentation on
- Attachment-03:
?
?
?
- Attachment-##: Photo Album of Workshop

Photo Album

Training Title: _____

Subject: Activities under Output-2**Venue:** Balhseena, Chelleli, Johar Dariya, Badhera Lower, Sandral, Gela, Jail Khad

S. No.1: Demonstration on raised nursery bed preparation, Gela Kuhal, 03/11/2017



S. No. 2: Demonstration on Pak-Choi nursery sowing, Gela Kuhal, 03/11/2017



S. No. 3: Walk-in tunnel installation, Chelleli, 15/11/2017



S. No. 4: Walk-in tunnel installation, Balhseena, 16/11/2017



S. No. 5: Demonstration on Broccoli, Chinese cabbage, Pak-Choi transplanting, Sandral, 21/11/2017



S. No. 6: Field visit to check the status of exotic vegetables, Sandral, 21/11/2017

Attachment-2.2.6 Feedbacks and Countermeasures

(1) Organic Farming & Certification

Feedback	Districts	Reasons	Countermeasures
1. Training should be practical type (field oriented).	Hamirpur, Bilaspur	- Extension officers need more practical skills for their extension activities in the field.	- Additional hands-on training (practical training) should be considered in 2018/19. - Subjects for hands-on training should be proposed from DCs as well as CEOs.
2. POP on organic farming be provided for farmers use.	Hamirpur	- POP for organic farming is not practical.	- Additional hands-on training (practical training) should be considered in 2018/19. - Subjects for hands-on training should be proposed from DCs as well as CEOs.
3. More topics were covered in less time	Kangra	Topics & Time schedule not prepared as per actual requirement	- Topics for other training programmes should be confirmed by DCs as well as CEOs again in March
4. Poor time management by Resource person	Kangra	- Time schedule is not considered. - Some lecture need more time. - Lecture did not start on schedule.	- Time schedule should be reminded to the Resource Persons as well as participants.
5. At least 2-3 resource persons should be involved	Hamirpur, Kangra	- Professionalism should be respected.	- Only Expert of particular subject should be involved.
6. Duration of training should be 2-3 days	Hamirpur, Kangra, Bilaspur, Mandi	- 2-3 days is required, if hands-on training is included.	- Considering schedule of CEOs, possibility of arrangement of 2 to 3 day training should be checked.

(2) Weed Management

Feedback	Districts	Reasons	Countermeasures
1. On field training on calibration of Spray machines	Una	- They have no experience to do its calibration It is not mentioned in POP as only general recommendation is given to add 750 litre water for spray in 1 ha. area	- Additional hands-on training (practical training) should be considered in 2018/19. - Subjects for hands-on training should be proposed from DCs as well as CEOs.
2. Training on operation & maintenance of Spray machines	Una	- They have no idea to do operation and maintenance of spray machines. - They have no training of farmers on operation and	- Additional training should be considered in 2018/19. - Subjects for hands-on training should be proposed from DCs as well as CEOs.

		maintenance of spray machines.	
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(3) Exotic Vegetable Cultivation and Nursery Raising

Feedback	Districts	Reasons	Countermeasures
1. Training on cooking & use of exotic vegetables in Indian system	Una , Bilaspur	- Extension Officers have no experience in use of Exotic vegetables in cooking/ consuming them	- Practical training on preparation and use of exotic vegies
2. Training on strategies for marketing of vegetables	Kangra, Una, Bilaspur	EOs are not aware of potential markets for exotic vegies, quality parameters, grading, packaging	Training & EVs of CEOs on potential markets/ buyers
3. Field visit to identify the exotic vegetables & practical training	Una , Bilaspur	- They have no experience to visit fields of advanced farmers, regarding cultivation of exotic vegetables.	- Field visit should be considered in 2018/19. - Subjects for field visits should be proposed from DCs as well as CEOs.
4. Time schedule very busy	Una, Bilaspur, Kangra	- Some lecture took more time due to more number of crops and queries of participants - Number of topics were more - Resource persons took more time to address the queries	- Training schedule be prepared after discussion with Resource Persons Topics be decided after consultation with Resource Persons Time schedule should be reminded to resource persons as well as participants.

(4) Micro Irrigation Systems

Feedback	Districts	Reasons	Countermeasures
1. Such trainings should be in the field so that we can practically do the exercises.	Mandi, Hamirpur	- Extension Officers have less idea about MIS, components, field layout , operation and maintenance etc.	- Hands on training /Practical training in field conditions and giving chance to EOs to do the things themselves.
2. The duration should be 2-3 days and the training should be arranged at the block/ field level.	Mandi, Kangra, Hamirpur	EOs have very less knowledge of this subject and operation, maintenance of MISs.	On farm training & EVs of CEOs to successful sites.
3. Such trainings be arranged frequently.	Mandi, Bilaspur	- They have no / less experience on MIS.	- More trainings be considered in 2018/19.
4. The training should be more practically than theoretical.	Hamirpur, Kangra	The EOs are from Agriculture side and have very less experience on these subjects.	- Training should be arranged at successful site and the topics be discussed there. -Topics be decided after consultation with Resource

				Persons
5. There should be appropriate number of Resource Persons minimum two.	Hamirpur, Una	Only 1 resource Person covered all the 5 subjects and the trainees want to listen other speaker.		The University will be requested to provide more Resource Persons
6 Engineering staff (JE/CE) should also be involved in the training.	Hamirpur, Kangra	The designing and construction of the irrigation schemes is done by the engineering staff and EOs are not involved during the construction stage.		-The matter will be discussed with the DCs. -Trainings to Engineering staff could be considered during 2018-19

(5) Integrated Pest management in Vegetable Crops

Feedback	Districts	Reasons	Countermeasures
1. Such trainings should be both theoretical and practical so as to identify the insects & diseases and do some field exercises.	Kangra, Mandi	- Extension Officers have less idea about ETL, farmer friendly insects, damaging life stage of insects.	- Hands on training /Practical training in field conditions and giving chance to EOs to identify the insects .
2. The duration should be 2-3 days and the training should be arranged at the block/ field level.	Kangra, Hamirpur	EOs have very less knowledge of this subject and management of pests by other means.	On farm training & EVs of CEOs to successful sites.
3. Samples of bio pesticides, pheromones traps etc should be shown to the participants.	Hamirpur, mandi	- They have no / less experience on preparation and use of such farmers friendly pesticides.	- More trainings be considered in 2018/19.
4. Information on latest and safe pesticides should be provided .	Hamirpur,	The EOs have no / less information of latest / banned pesticides.	- The DoA may arrange the list on periodical basis.
5. More focus on natural (Zero budget) / organic management of pests should be given.	Kangra, Hamirpur, Una, Mandi	Priority sector of the DoA.	The DoA may arrange more trainings to the CEOs.
6 Hard copies of the training material be provided for future reference.	Hamirpur, Kangra	They require for future reference.	-Soft copies have been provided to all the DCs.
7. Training on INM	Mandi		

(6) Protected cultivation of vegetable crops

Feedback	Districts	Reasons	Countermeasures
1. Such trainings should be in the field so that we can practically do bed preparation, mulching, transplanting, irrigation etc.	Kangra, Hamirpur	- Extension Officers have no /less experience about Protected cultivation, components, field layout , operation and maintenance etc. EOs have very less knowledge of field practices.	- Hands on training /Practical training in field conditions and giving chance to EOs to do the things themselves. On farm training & EVs of CEOs to successful sites.
2. The duration should be 2-3 days .	Kangra, Hamirpur, Una	- The EOs have no experience of crop cultivation.	- More trainings be considered in 2018/19.
3. Field visits to successful sites should be arranged	Kangra	The farmers are getting same prices as of open conditions though the quality is good.	- Training should be arranged at successful site and the topics be discussed there. -Topics be decided after consultation with Resource Persons
4. The training on marketing of Indoor vegetables should be arranged so that farmers could get better prices.	Kangra, Mandi	To fresh up the knowledge and interact with the Resource Persons regarding field problems.	The University will be requested to provide more Resource Persons
5. Trainings should be arranged repeatedly i.e after 1 or 2 years to refresh the learnings of EOs.	Kangra, Una	The designing and construction of the irrigation schemes is done by the engineering staff and EOs are not involved during the construction stage.	-The matter will be discussed with the DCs. -Trainings to Engineering staff could be considered during 2018-19
6 Manual / booklet on the subject should be provided.	Kangra, Bilaspur, Mandi	Theoretically / ppt it is difficult to understand the stages of crop growth and important tips for successful cultivation in the field.	Resource persons will be requested to provide some video clips and will be shared with the EOs.
7 Video clips of success stories be shown	Una		

(7) Promotion, management of SHG/FGs

Feedback	Districts	Reasons	Countermeasures
1. The schedule of training is very busy, so it should be for 2 days	Una	- The topics to be covered were more so Resource Person took more time.	- The resource Persons will be requested to design the contents as simple which can be used by groups.
2. Interaction with successful SHGs/FPOs	Una	- For experience sharing and their approach for success.	-Will be discussed with DC members and Resource persons

(8) Post Harvest Techniques

Feedback	Districts	Reasons	Countermeasures
1. The participants requested for providing on Farm training on, cooking and right method of consumption of potential vegetables for Kangra district so that demand could be increased.	Kangra	1. The consumers are not aware of how to use potential vegetables and as a result these vegetables are not becoming popular.	Training on cooking and use of exotic vegetables will be considered in the 2 nd Stage of TCP-II
2. Identification of potential markets for vegetables and training on grading, packaging is also needed.	Kangra	2. The consumers are not aware of potential markets for Exotic vegetables and grading, packaging for transportation.	Market survey and Training on grading and packaging of exotic vegetables will be considered in the 2 nd Stage of TCP-II

JICA TCP Project Phase II
Questionnaire Survey for Core Extension Officers

You can answer these questions just in 10 min.

In this questionnaire, your WhatsApp number and your name are not recorded in your reply.

Therefore, please give your true opinion toward our following questions.

Q-1 Are you an officer in DOA (Directorate, DDA, ATMA, SDSCO, Marketing Board/APMC, University, KVK, etc.) now?

(Mark one answer)

- 1.1 Yes, I'm an officer now. ()
- 1.2 No, I retired. ()
- 1.3 No, I'm not an officer in DOA now. ()

Q-2 Attention (Mark one answer)

- 2.1 If you marked "1.1" in Q-1, please go to Q-3.
- 2.2 If you marked "1.2" or "1.3" in Q-1, please go to Q-6.

Q-3 Your Position / designation:

- 3.1 SMS ()
- 3.2 DAO ()
- 3.3 ADO ()
- 3.4 AEO ()
- 3.5 AADO ()
- 3.6 AE ()
- 3.7 AO ()
- 3.8 BTM ()
- 3.9 ATM ()
- 3.10 Others ()

Q-4 District of your current office:

- 4.1 Bilaspur ()
- 4.2 Hamirpur ()
- 4.3 Kangra ()
- 4.4 Mandi ()
- 4.5 Una ()
- 4.6 Other District ()

Q-5 Your office is under:

- 5.1 Directorate, Shimla ()
- 5.2 DDA office ()
- 5.3 ATMA office ()
- 5.4 PMU office of HPCDP ()
- 5.5 SDSCO office ()
- 5.6 Others ()

Q-6 How many times did you participate in training programme of JICA TCP in 3 years (2017, 2018 and 2019)?

- 6.1 None ()
- 6.2 1 to 5 training ()
- 6.3 6 to 10 training ()
- 6.4 More than 11 trainings ()

Q-7 How many times did you participate in training programme of JICA TCP in 2 years (2020 and 2021)?

- 7.1 None ()
- 7.2 1 to 5 training ()
- 7.3 6 to 10 training ()
- 7.4 More than 11 trainings ()

Q-8 Did you get useful knowledge and experience about techniques to be provided to farmers from training programme of JICA TCP (Mark one answer)?

- 8.1 Yes, I got. ()
- 8.2 No, it's not new for me. ()
- 8.3 No comments ()

Q-9 Did you attend any training programmes arranged by DOA from Apr. 2019 to Mar. 2020?

- 9.1 Yes ()
- 9.2 No ()

Q-10 Did you attend any training Programmes arranged by DOA from Apr. 2020 to Mar. 2021?

- 10.1 Yes ()
- 10.2 No ()

Q-11 In the training programmes arranged by JICA TCP, please mark training subjects which

are beneficial to you. (Mark max. 5 subjects)

- 11.1 Water management ()
- 11.2 Protected cultivation ()
- 11.3 Farming practices for Common vegetables ()
- 11.4 Farming practices for Exotic vegetables ()
- 11.5 Nutrient Management ()
- 11.6 Post-harvesting and Processing ()
- 11.7 Organic farming ()
- 11.8 Natural Farming ()
- 11.9 Crop planning ()
- 11.10 IPM in vegetables ()
- 11.11 FPO ()
- 11.12 SHEP Approach ()
- 11.13 Farm Mechanization ()
- 11.14 PDCA ()
- 11.15 Field Activities for Output-2 ()
- 11.16 Field Activities for Output-3 ()
- 11.17 Food Diversification ()
- 11.18 Field Training for MIS ()
- 11.19 Field Training for Maintenance of Water Pump ()
- 11.20 Others ()

Q-12 After participating in training programme of JICA TCP, did you share your experience with other extension officers in your office?

- 12.1 Yes ()
- 12.2 No ()

Q-13 If "Yes" in Q-12, how did you share? (Mark all that apply)

- 13.1 I replied no in Q-12 ()
- 13.2 Sharing in monthly meeting ()
- 13.3 Sharing in weekly meeting ()
- 13.4 Circulation of training material ()
- 13.5 Others ()

Q-14 If "Yes" in Q-12, do you think that other staff got more techniques to be provided to farmers from your sharing (Mark one answer)?

- 14.1 I replied no in Q-12 ()
- 14.2 Yes, all staff got. ()

- 14.3 Yes, some staff got. ()
- 14.4 No, they couldn't get. ()
- 14.5 I'm not sure. ()

Q-15 Where do you keep materials which you received in training programmes?

(Mark one answer)

- 15.1 with me ()
- 15.2 Library in the office ()
- 15.3 Others ()

Q-16 In your office, do you have a staff who is in charge of managing training materials and other references for extension activities?

(Mark one answer)

- 16.1 Yes, we have. ()
- 16.2 No, we don't have. ()
- 16.3 No comments ()

Q-17 Have you applied the learnings/experience from training programme of JICA TCP in your extension activities?

- 17.1 Yes ()
- 17.2 No ()

Q-18 If "Yes" in Q-17, where have you applied the learnings? (Mark all that apply)

- 18.1 I replied "No" in Q-17. ()
- 18.2 In farmers' field ()
- 18.3 In Sales Centre ()
- 18.4 In my office ()
- 18.5 Through phone ()
- 18.6 Others ()

Q-19 If "Yes" in Q-17, have you applied the learnings in the existing Central / State Sponsored Schemes except HPCDP?

- 19.1 I replied "No" in Q-17. ()
- 19.2 Yes ()
- 19.3 No ()

Q-20 If "No" in Q-17, please indicate your reasons? (Mark all that apply)

- 20.1 I replied "Yes" in Q-17 ()

- 20.2 No schemes for applying my learnings /experience ()
- 20.3 No time due to busy in Sales Centre ()
- 20.4 No time due to management of other work load ()
- 20.5 Others ()

Q-21 Whether are there any sub-projects handed over from HPCDP in your block?

- 21.1 Yes ()
- 21.2 No ()

Q-22 If "Yes" in Q-21, have you conducted any activities of the existing schemes in sub-projects which were handed over from PMU?

- 22.1 I replied "No" in Q-21. ()
- 22.2 Yes ()
- 22.3 No ()

Q-23 If "Yes" in Q-22, where have you applied it? (Mark all that apply)

- 23.1 I replied "NO" in Q-22. ()
- 23.2 In farmers' field ()
- 23.3 In Sales Center ()
- 23.4 In my office ()
- 23.5 Through phone ()
- 23.6 Others ()

Q-24 Have you prepared action plan, which specify purpose, activities, and outputs, before undertaking your extension activities in the existing schemes? (Mark one answer)

- 24.1 Always ()
- 24.2 Sometimes ()
- 24.3 Never ()

Q-25 Regarding vegetable cultivation, which kind of skills do you want to master?

(Mark max. 3 subjects)

- 25.1 Raising of seedlings ()
- 25.2 Transplanting / sowing ()
- 25.3 Pruning / thinning / training ()
- 25.4 Method of fertilizer application ()
- 25.5 Method of irrigations ()
- 25.6 Identification of insects and diseases ()
- 25.7 Utilization of agro-chemicals ()

- | | | |
|-------|------------------------------|-----|
| 25.8 | Utilization of bio-chemicals | () |
| 25.9 | Seed production | () |
| 25.10 | Grafting | () |
| 25.11 | GAP | () |
| 25.12 | Soil Analysis | () |
| 25.13 | Others | () |
| 25.14 | Not required | () |

Q-26 Which reasons / constraints restrict your field extension activities?

(Mark max. 3 reasons/constraints)

- | | | |
|------|-------------------------------------|-----|
| 26.1 | No restriction /disturbance | () |
| 26.2 | Management of Sales Centre | () |
| 26.3 | Sales norm of farm inputs | () |
| 26.4 | No transportation /travelling means | () |
| 26.5 | No fuel allowance | () |
| 26.6 | Less TA/DA | () |
| 26.7 | Less Extension Officers | () |
| 26.8 | Less availability of computers | () |
| 26.9 | Others | () |

Thank you very much for your time and cooperation.

*2.3 Activities to Achieve Output-2:
Through Activities in Pilot Areas,
Packages of Techniques
to Promote Crop Diversification
are Compiled*

Proposal for pilot activity in BPMU site

Name of proposed activity					
Category of proposed activity (✓one)	Agriculture	Food processing	Handicraft	Marketing	Services
Name of product/service from proposed activity					
Name of farmer/group					
Address					
Mobile No.					
Name of sub-project site					
Irrigation Scheme (✓one)	Flow irrigation	Lift irrigation	Shallow tube well		
Total area of farm land					
Existing activities	Area/quantity	Experience (years)	Marketing strategy	Existing resources	
Vegetable cultivation					
Fruit cultivation					
Food grains cultivation					
Animal husbandry					
Natural resources' collection					
Agro/food processing					
Handicraft production					
Contents of proposed pilot activity:					
Extension staff's comments:					

Signature of farmer/group leader _____

5. Expected Income and Expenditure (Yearly basis)

Category	Income Particular	
	1st Year	2nd Year
Expenditure		
.....		
.....		
.....		
.....		
.....		
.....		
.....		
Income		
.....		
.....		
.....		
.....		
Gain/Loss		

List of members in the group and the responsibility

S. No.	Name of member	Responsibility
1		Leader
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		

Selection Criteria for Pilot Activities

Name of farmer/farmers group/SHG:

Name of the scheme:

Type of the activity (v): Agriculture Food Processing Marketing Others

Name of the activity:


Type of Activity		(1 Point)	(2 points)	(3 points)	(4 points)	Total Score
Existing Activities						
Resource Availability	Categories	Poor	Fair	Good	Excellent	
	Machinery (points)					
	Raw Material (points)					
	Labour (points)					
	Infrastructure (points)					
Experience	Categories	< 1 Year	1-2 Years	3-4 Years	>5 Years	
	Points					
Marketability	Categories	Outside state	Nearby city	Local market	From farm	
	Points					
Target Customers	Categories	In APMC	In village	In nearby town	Through direct marketing	
	Points					
Purpose (Necessity)	Categories	Hobby	Part time job	Full time job		
	Points					
Management (Operations)	Categories	Layman	Skilled labour	Self-able		
	Points					
Total score						
Future Activities						
Target Market	Categories	APMC	Village	Nearby town	Through direct marketing	Big town
Target Customers	Categories	In APMC	In village	In nearby town	Through direct marketing	In big town
Cost:						
Profit:						

Purpose:	
Constraints:	
Comment on farmers Attitude:	

Signature of the extension staff

Signature of BPM

Activity Record

District	Una													
BPMU	Una													
Sub-project	Badhera Lower													
Irrigation type	Tubewell													
Location	Block-Haroli On Una-Hoshiarpur Road(About 12 KM from District Headquarter)													
Agro-climatic Condition	Fall under Zone-1, (Altitude 369 mt. amsl).													
Soil type	Sandy Loam soil													
No. of concerned farmer/woman	Five													
Applied techniques	Polytunnel seedling Raising , Transplanting , Nutrition and weed management , Pest and Disease Management													
Input	Poly Tunnel Seed, FYM, Chemicals, PPM etc													
Cropping schedule/processing schedule	Name of crop / product	8	9	10	11	12	1	2	3	4	5	6	7	
	Turnip (Early)													
	Cabbage (Early)													
	Pea													
	Cauliflower (Main)													
Marketing strategy (Target consumers)	Roadside sale / local consumers	Tibetan communities/ Hotels/Restaurants				Tourist places								
	✓													
Present status (Area & Income)	Area under Vegetables:-1.20(Ha), Income :-Rs.50000/Season													
Expected outcome (Quantity & Income)	Quantity:- 4 Quintals, Income:- 50000													
Expected technical package for crop diversification	Package of Practices for seedling raising and manual/procedures for cultivation of cabbage, cauliflower and Turnip													

*2.4 Activities to Achieve Output-3:
Effective Marketing Activities
for Farm Produce are Identified*

Problems and opinions about solution: Sorted into categories

Results of the discussion in the 2nd & 3rd DC Committee Meeting

Source	Problems & Ideas for solution	OK	Delete	Clarify to informant	Further discussion/ In-depth survey	Interpretation / Opinion /
Hamirpur	1 Problems relating to improper act/behavior in AMPC market yard 1) Price making by auction is done improperly, and need APMC's supervision.				X	CA plays two roles; 1) CA to carry out auction, 2) Trader to buy/assort vegetables and sell to wholesalers/retailers. In addition, if volume of produce brought by producer is small, pricing by auction is practically infeasible, then pricing by negotiation is applied. Discussions did not stick to the case of 1) for local produce, hence, opinions are mixed. In general, pricing by auction is transparent. It may need to strengthen the APMC's supervision.
Hamirpur	2 Issues relating to price information service / market information service 1) To use better method of dissemination; such as mobile group message, website, digital display in big villages				X	No clear information on whether the current MIS (contents of information, method of dissemination) meet the farmers' needs or not. Study of the current MIS and user's needs to be made.
Hamirpur	2) To disseminate information on price forecasting		X			Judged as not possible to forecast tomorrow prices.
Una	3) To teach farmers the price trend/fluctuation. To train farmers to do marketing research by himself	X				
Bilaspur	3 Problems relating to AMPC market yard 1) Receiving (buying) capacity of AMPC market yard is limited. Sometimes difficult to sell all.	X				
Una	2) False weighing by middleman		X			There was false weighing before introducing digital scale. Now all weighing done by digital scale and periodic inspection/calibration/certification is executed.
Una Palampur Dehra	4 Issues relating to grading by farmers < Problems/causes are not explained in the papers > 1) To let farmers aware about importance of proper packing, grading, labelling by training. To provide for practical training to farmers	X				Considering the selling-buying method of most kinds of vegetables at retail shops (consumer select what he/she wants in a heap), there is no consumers' needs for grading by size/appearance. Some say there are cases of retail sales by grading by size, but so far, such cases are not seen. Study to clarify which vegetables have traders' needs and /or consumers' needs for grading by size/appearance. ** Work to remove bad (unsalable) ones is not grading; it is cleaning/rejecting.
Hamirpur	5 Problems relating to storage 1) Inadequate storage facility cause heavy loss			X		To clarify : which vegetable, which season, where it happened ?
Hamirpur Mandi, Palampur	2) < Problems and causes are not explained in the paper, or not understandable > To provide cold storage / CA storage / Collection center / warehouse			X		To clarify : informant's idea . To get information about collection centers of HPCDP-JICA-ODA. Costs for operation and maintenance should be well considered about cold storage.
Bajjnath	3) To provide cold storage facility and packaging material for tomatoes to mitigate quality deterioration before reaching the market.	X				
Nurpur	4) To provide special transport and storage facilities; since there are seasonal supply-demand gaps.			X		What kinds of vegetables are in mind ? Or just general opinion ?
Nurpur	5) A major proportion of agricultural produce are damaged either by rats or rains. To expand the APMC market yards and allied facilities (storage/warehouse)				X	
Una, Mandi, Bajjnath	6 Problems relating to packing / packaging 1) Many damages during transportation from village to APMC market yard. To use proper container / packaging material	X				

Source	Problems & Ideas for solution	OK	Delete	Clarify to informant	Further discussion/ In-depth survey	Interpretation / Opinion /
Dehra	2) To provide training on proper packaging to producers in practical shape at APMC.	X				
	7 Problems relating to transportation					
Una	1) Many damages during transportation from village to APMC market To make road condition better	X				
Bajjnath	2) Farmers use traditional practices for carrying produce [Thathi village. Poor road linkage approx.6-7kms] To provide road facility (to build better road ?); To promote transport by mobile vans			X		
	8 Issues relating to new selling outlet / alternative way of selling					
Hamirpur	1) To start daily Apni mandi at some points in city on different days	X				
Hamirpur	2) To initiate selling to hotels or restaurants	X				
Hamirpur, Bilaspur,	3) To initiate group farming and/or group shipment	X				Very important issue. A key to strengthen bargaining power / to change the selling way.
Bilaspur, Nurpur	4) To initiate contract farming				X	
Bilaspur, Palampur	5) To initiate home delivery by farmers in nearby area		X			
Dehra	6) To promote collective sales center/cold storage by producers; where far away from main road and individual surplus is small				X	
Mandi	7) Traders directly buy produce from producers but rates are very low. To let aware producer with the APMC.			X		Is this telling the situation in Balh Velly (large tomato producing area)??
Nurpur	8) To initiate retail business (shop) by farmer with support of other farmers.	X				
Bajjnath	9) To initiate direct sale to consumers [Cauliflower, Peas]	X				
Dehra	10) To provide places/shops in the market to producer	X				
Nurpur	11) To establish a cooperative marketing wing; under which procurement and marketing should be done.	X				
Nurpur	To support farmers to form an association to get information about the market situation.	X				
Bajjnath	12) To introduce value addition (processing unit) [Turmeric]	X				It is not easy for SHGs/farmers to fulfill the requirement of FSSAI. It may better to produce semi-processed products to supply to food-processing industry; producers of retail products (spices: sun-dried, tomato: puree).
	9 Issues relating to glut of vegetables / very low price of vegetables / limited local demand				X	In case of Hamirpur, glut situation occurs on cauliflower in winter, about in two month period, because of cheaper supply from Panjab state. It is necessary to clarify the situation at each district/locality: which vegetable, when and how it occurs.
Hamirpur	1) To advice farmers what/when/how much to produce	X				
Hamirpur	2) To implement regulation(s) for what/when/how much to produce (quota system)		X			
Hamirpur	3) To give minimum support price to producers		X			Suggestion to the government ?
Hamirpur	4) To control / regulate the inflow of vegetables from Panjab during winter		X			
Hamirpur,	5) To provide for cold storage / collection center to farmers				X	Economical relevance/feasibility should be considered.
Una	6) To grow early-sowing vegetables to get good price	X				

Source	Problems & Ideas for solution	OK	Delete	Clarify to informant	Further discussion/ In-depth survey	Interpretation / Opinion /
Una	7) To build storage facility in the village			X	X	Considering the perishable nature of vegetables, necessity of storage can be discussed only after specifying target vegetables.
Bilaspur	8) To set up of industry/institutions in order to have institutional		X			Suggestion to the government ?
Una, Bilaspur,	9) To go for processing/value addition, To make radish pickles in large-scale by SHGs [Dehra]	X			X	In general, processors seek cheap material, and it is hard to expect better price when supplying to processors as material. Processing by farmers themselves is realistic or not ?
Mandi	10) To make gap in sowing time [Peas and Potatoes]	X				
Mandi, Dehra	11) To introduce early/late maturity variety [Mandi: Peas and Potatoes] [Dehra: Cauliflower]	X				Point to consider: availability of good quality seeds .
10 Problems / issues relating to small-scale processing by SHGs						
Palampur	1) Very low price of processed food made by SHGs: To use proper labels; To publicized the products widely.			X		Usually price of SHG products are higher in the market.
Bajnath	2) Quantity of produce is less: To promote collective production, and product certification			X		It is not easy for SHGs/farmers to fulfill the requirement of FSSAI. It may better to produce semi-processed products to supply to the producers of retail products (spices: sun-dried, tomato: puree).
11 Problems on vegetable production						
Hamirpur, Nurpur	1) Wild animal and monkey, Stray cattle	To deal with these problems by another OUTPUTs in the Project, if possible.				
Hamirpur	2) Non-availability of labour, high rates of labour					
Hamirpur	3) Climatic changes leads to change in sowing time for some vegetables, so farmer unable to catch the demand of market.					
Una	4) Some farmers do not use certified seed / improved variety, so that price is low.					
Bilaspur	5) Rain fed farming: Irrigation facilities for round the year production					
Mandi	6) Lack of quality produce; due to i) follow traditional cultivation skill, ii) poor seed quality, iii) Improper practices such as seed treatment, fertilizer and disease management					
Dehar	7) Less production as compared to farmers use advanced techniques; due to marginal farmers still practice old farming methods,					
12 Others						
Una	1) Most of farmers borrow money from private money lender for production of agriculture; since they are uneducated.		X			This observation must be a case of migrant farmers in Swan river area in Una.
13 Consumer needs						
Bilaspur, Hamirpur, Palampur	1) Regular supply of fresh vegetables, Easy to buy fresh vegetables. - To start Apni mandi with car parking; near to main road & towns. - To initiate home delivery.					
Bilaspur	2) Well packed & free from any chemical; Information about use of chemicals to be shown					
Dehar	3) Organic produce, GAP certified produce ::: People are getting more health cautious now					

Observation and Opinion about Problem & Solution related to Vegetable Marketing

Category 1: Glut of vegetables / low price of vegetables

Opinions about solution	Opinions provided by:
To advice farmers what/when/how much to produce	Hamirpur,
To introduce early/late sowing/maturity variety *	Una, Mandi: peas, potatoes
To make gap in sowing time	Dehra: cauliflower
To go for processing/value addition **	Una, Bilaspur, Dehra
To make radish pickles in large-scale by SHGs [Dehra]	
To build storage facility in the village	Una
To provide for cold storage ***/ collection center to farmers	Hamirpur, Dehra

* Point to consider: Availability of quality seeds.

** Point to consider: Whether SHGs/farmers can fulfill the requirement of FSSAI ?

*** Point to consider: Economical relevance.

Category 2: Selling outlet / alternative way of selling

Opinions about solution	Opinions provided by:
< To promote the retail sale >	
To start daily Apni mandi at some points in city on different days.	Hamirpur, Bilaspur
To initiate retail business (shop) by farmer with support of other farmers.	Nurpur Dehra
To provide places/shops in the market to producer	
To initiate direct sale to consumers	Bajnath
To initiate selling to hotels or restaurants	Hamirpur
< To promote the collective selling/marketing >	
To initiate group farming and/or group shipment	Hamirpur, Bilaspur, Dehra
To promote collective sales center/cold storage by producers; where far away from main road and individual surplus is small	Dehra
To establish a cooperative marketing wing; under which procurement and marketing should be done.	Nurpur
< To promote the contract farming >	
To initiate contract farming	Bilaspur, Nurpur
< Others >	
To introduce value addition (processing unit) [Turmeric]	Bajnath

Category 3: Storage

Opinions about solution	Opinions provided by:
Inadequate storage facility cause heavy loss. To build adequate storage.	Hamirpur
To provide cold storage / CA storage / collection center / warehouse *	Hamirpur, Mandi, Palampur
To provide cold storage facility and packaging material for tomatoes to mitigate quality deterioration before reaching the market.	Bijnath

To provide special transport and storage facilities; since there is seasonal supply-demand gaps.	Nurpur
A major proportion of agricultural produce are damaged either by rats or rains. To expand the APMC market yards and allied facilities	Nurpur

* Category and causes are not explained in the given papers.

Category 4: Damages during transportation

Opinions about solution	Opinions provided by:
To use proper container / packaging material	Una, Mandi, Baijnath
To provide training on proper packaging to producers in practical shape at APMC.	Dehra
To make road condition better	Una

Category 5: Transportation (poor road linkage)

Opinions about solution	Opinions provided by:
Farmers use traditional practices for carrying produce. [Thathi village, poor road linkage approx. 6-7kms] To provide road facility (to build better road ?) and to promote transport by mobile vans	Baijnath

Category 6: Grading by producers

Opinions about solution	Opinions provided by:
To let farmers aware about importance of proper packing, grading, labelling by training. To provide for practical training to farmers.	Una, Palampur, Dehra

Category 7: Small-scale processing by SHGs / farmers

Category	Opinions provided by:
Very low price of processed food made by SHGs	Palampur

* Need the clarification

Category 8: AMPC market yards

Category	Opinions provided by:
Receiving (buying) capacity of AMPC market yard is limited. Sometimes difficult to sell all.	Bilaspur

Category 9: Market Information / Price Information service

Opinions about solution	Opinions provided by:
To use better method of dissemination; such as mobile group message, website, digital display in big villages	Hamirpur
To teach farmers the price trend/fluctuation. To train farmers to do marketing research by himself	Una

Category 10: Problem on vegetable production

Categorys	Opinions provided by:
Wild animal and monkey, Stray cattle	Hamirpur, Nurpur
Non-availability of labour, high rates of labour	Hamirpur
Climatic changes leads to change in sowing time for some vegetables, so farmer unable to catch the demand of market.	Hamirpur
Some farmers do not use certified seed / improved variety, so that price is low.	Una
Lack of quality produce; due to i) follow traditional cultivation skill, ii) poor seed quality, iii) Improper practices such as seed treatment, fertilizer and disease management	Mandi
Less production as compared to farmers use advanced techniques; due to marginal farmers still practice old farming methods	Dehar

Category 11: Consumer needs

Needs	Opinions provided by:
Easy to buy fresh vegetables; Regular supply of fresh vegetables. - To start Apni mandi with car parking; near to main road & towns. - To initiate home delivery.	Bilaspur, Hamirpur, Palampur
Well packed & free from any chemical; Information about use of chemicals to be shown	Bilaspur
Organic produce, GAP certified produce ::: People are getting more health cautious now	Dehar

//

Result of the Questionnaire Survey on Consumer Preference and Purchasing Behavior of Vegetables in Hamirpur of SPMU staff

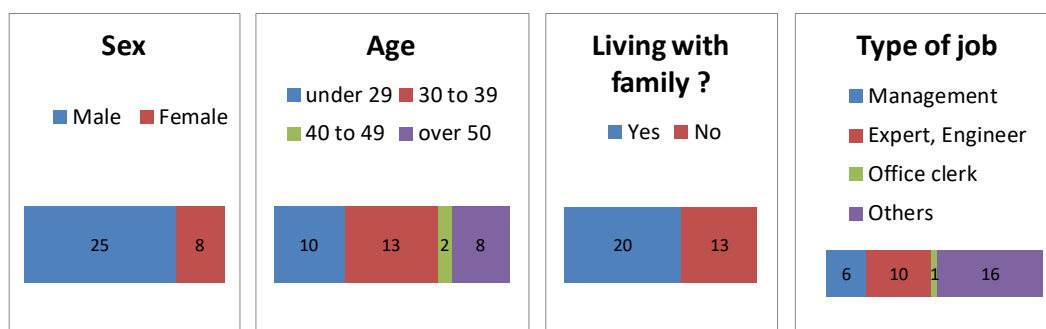
Purpose : It was frequently-heard that “people worry about food safety of vegetables from Panjab”, “people in Hamirpur prefer (pay more money) to local vegetables because they are fresh and safe”; not only from the staff of PMU/DOA but also from car drivers and other people.

Therefore, this small-scale survey was conducted to check the concern/needs about safe vegetables of SPMU staff. Purchasing behavior also combined in the survey.

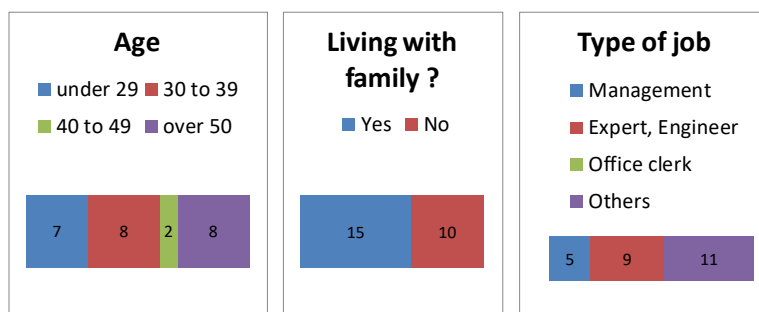
Survey period : 25 May - 10 June, including the preparation of questionnaire, data input/analysis. Distribute and collection of questionnaire sheets was done in 30 May.

Informants : SPMU staff, total number of informants was 33. Their attribution is as follows:

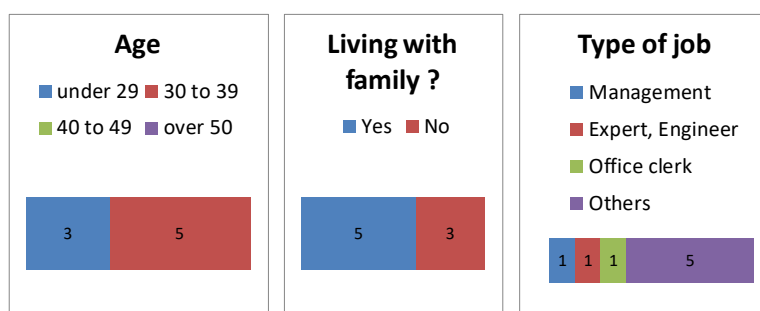
All



Male informants



Female informants



Collected data and results of primary analysis:

Questions	Response alternative	Numbers of answers					% of answers				
		All	Male	Female	Job 1&2	Job 3&4	All	Male	Female	Job 1&2	Job 3&4
1 How often do you (your family) buy vegetables in a week ?	1 - 2 times/week	3	3	0	3	0	9%	12%	0%	19%	0%
	3 - 4 times/week	18	13	5	5	13	55%	52%	63%	31%	76%
	Almost every day	12	9	3	8	4	36%	36%	38%	50%	24%
	Total	33	25	8	16	17					
2 Where do you buy vegetables usually ?	Shop (sell only fruit & vegetables)	32	24	8	15	17	97%	96%	100%	94%	100%
	Shop (sundries store)	1	1	0	1	0	3%	4%	0%	6%	0%
	Home delivery	0	0	0	0	0	0%	0%	0%	0%	0%
	Others	0	0	0	0	0	0%	0%	0%	0%	0%
	Total	33	25	8	16	17					
3 How much Rs. do you use at a time usually ?	1 - 50 Rs	6	4	2	4	2	18%	16%	25%	25%	12%
	50 - 100 Rs	19	14	5	8	11	58%	56%	63%	50%	65%
	100 - 200 Rs	6	6	0	3	3	18%	24%	0%	19%	18%
	200 - 300 Rs	1	1	0	1	0	3%	4%	0%	6%	0%
	over 300 Rs	1	0	1	0	1	3%	0%	13%	0%	6%
	Total	33	25	8	16	17					
4-1 Do you buy vegetables mostly at the same shop ?	Yes	12	11	1	7	5	36%	44%	13%	44%	29%
	No	21	14	7	9	12	64%	56%	88%	56%	71%
Total	33	25	8	16	17						
4-2 If you answer "Yes" above; Why do you buy at the same shop?	Quality is good	9	8	1	6	3					
	Many kinds of vegetables are available	7	6	1	4	3					
	Price is reasonable/cheap	6	5	1	4	2					
	Convenient to go (nearby house, etc.)	5	5	0	3	2					
	No cheating of weight	2	2	0	1	1					
	Shop of friend/relative	1	1	0	0	1					
	No particular reason	0	0	0	0	0					
	Others	0	0	0	0	0					
	Number of informants	12	11	1	7	5					
5-1 Are you satisfied with the quality of vegetables sold in the shops ?	Yes, always OK	4	4	0	3	1	12%	16%	0%	19%	6%
	Yes, most times OK	27	19	8	12	15	82%	76%	100%	75%	88%
	So-so, sometime not OK	2	2	0	1	1	6%	8%	0%	6%	6%
	No, often not OK	0	0	0	0	0	0%	0%	0%	0%	0%
	No, always not OK	0	0	0	0	0	0%	0%	0%	0%	0%
Total	33	25	8	16	17						
5-2 If you say "not satisfied" (chose 3, 4 or 5), please select the reasons why.	Not fresh	2	2	0	1	1					
	Not sure about safety (free from pesticide residue)	2	2	0	1	1					
	Bad color	1	1	0	0	1					
	Too small /too big	1	1	0	1	0					
	Dirty / damaged	0	0	0	0	0					
	Bad shape	0	0	0	0	0					
	Not packed like one in supermarket	0	0	0	0	0					
	Others (	0	0	0	0	0					
	Number of informants	2	2	0	1	1					
6 When you buy vegetables, how do you chose one in a heap? What are the important points for you to choose?	Freshness	32	24	8	16	16					
	Cleanliness	16	14	2	8	8					
	Good size	8	5	3	5	3					
	Good color	5	5	0	2	3					
	Good shape	2	1	1	1	1					
	Others (	0	0	0	0	0					
	Number of informants	33	25	8	16	17					
7 Do you bargain the price ?	Yes, always	2	2	0	0	2					
	Yes, sometimes	20	16	4	7	13					
	No	10	7	3	9	1					
	Total	32	25	7	16	16					

Questions	Response alternative	Numbers of answers					% of answers				
		All	Male	Female	Job 1&2	Job 3&4	All	Male	Female	Job 1&2	Job 3&4
8-1 Vegetables are seasonal item. Do you satisfied with available kinds of vegetables in the market in winter time ?	Yes	25	19	6	13	12	76%	76%	75%	81%	71%
	So-so	7	6	1	3	4	21%	24%	13%	19%	24%
	No	1	0	1	0	1	3%	0%	13%	0%	6%
	Total	33	25	8	16	17					
8-2 If you say "So-so", "No" above, Which vegetables do you want in winter time ?	Bhindi	3	2	1	1	2					
	Gourd	2	1	1	1	1					
	Water melon	2	1	1	1	1					
	Cucumber	1	1	0	0	1					
	Pumpkin	1	1	0	0	1					
	Capcicum	1	1	0	0	1					
	Brinjal	0	0	0	0	0					
	Others (	0	0	0	0	0					
	Number of informants	4									
9 Do you feel anxious about the pesticide residue in vegetables ?	Yes, seriously	22	14	8	10	12	67%	56%	100%	63%	71%
	Yes, sometimes	6	6	0	4	2	18%	24%	0%	25%	12%
	No	5	5	0	2	3	15%	20%	0%	13%	18%
	Total	33	25	8	16	17					
10 Which vegetable do you buy ?											
Case 1 - Cucumber	1. 15 Rs/kg. Produced in Panjab	0	0	0	0	0					
	2. 15 Rs/kg. Produced around Hamirpur, Freshness/looks are same as Panjab made.	25	18	7	14	11					
Case 2 - Tomato	1. 20 Rs/kg. Produced in Panjab	1	1	0	0	1					
	2. 25 Rs/kg. Produced around Hamirpur,	23	17	6	14	9					
Case 3 - Brinjal	1. 20 Rs/kg. Produced around Hamirpur	5	3	2	1	4					
	2. 25 Rs/kg. Produced around Hamirpur, Freshness/looks are same as above. Assured the safety (proper use of pesticide) by government authority.	20	16	4	14	6					

JICA-TCP Phase II

Output-3 : Effective marketing activities for farm produce are identified (Marketing component)

Explanatory paper on 1st draft of Plans for Promotion and Ideas of Candidate activities for Stage 1

June 2017

WORD version (16 June 2017)

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Preface : Purpose of this paper

This paper is prepared for the purpose of explaining the 1st draft of Plans for Promotion and ideas of candidate activities for Stage 1 to the District Coordinators (DCs) for the JICA TCP II.

The contents of plan shown in this paper are still draft (suggestions) and I expect to have the feedback.

Situation of each sub-project sites are not same in terms of vegetable production, location, human resources, farmers' motivation and etc. If there are specific issues which may hard to address with the ways and means (candidate activities) shown in this paper, or if you have ideas of better ways to address the development issues, please provide your proposal.

Of course, opinion/objection on the setting (my understanding) of key issues and direction of promotion is also welcome.

Please note that a chapter for describe/summarize the current situations of vegetable production and marketing, problems, etc. in the target area is not attached in this paper. Because I believe that the DCs know the current situations well, although the interpretation of problem is sometimes different from mine.

BAN Yoshihiro
JICA TCP II Marketing expert
05 June 2017

1. Project design of marketing component in the JICA-TCP II

In order to enhance the farm income through shifting from self-subsistence crop cultivation to diversified agriculture by adopting cash crops such as vegetables cultivation, to be more specific by developing of necessary infrastructure such as irrigation facilities and farm access roads, in parallel with technical training for farmers on vegetable cultivation, food grain cultivation and post-harvesting technology, HPCDP (JICA-ODA) was launched in 2011 in the target area of five districts.

HPCDP targets to newly develop or rehabilitate the 210 irrigation schemes in the area, and has completed the development of approximately 131 schemes as on April 2017. However, adaptations of cash crops such as vegetables cultivation in these developed schemes have only just begun.

Phase II Project for Crop Diversification in Himachal Pradesh (JICA-TCP II, 2017-2022) is a technical assistance program for the purpose to strengthen the organizational capacity of DOA/PMU to promote crop diversification in the 5 districts, as it is to support the implementation of the HPCDP.

Project design of marketing component of JICA-TCP II is stipulated by the Record of Discussion (R/D) as follows;

Activity-1	Collect information and analyze the current situation and issues regarding marketing of farm produce in the target areas and <u>make plans for promotion</u> .
Activity-2	List up <u>candidate activities</u> to promote marketing of farm produce through seminars and meetings with various stakeholders including private companies and farmers (groups).
Activity-3	Select higher priority activities to be supported by the Project from the list prepared.
Activity-4	Implement selected activities in collaboration with APMC
Activity-5	Conduct monitoring and evaluation of progress and achievement of activities undertaken.



Output 3	Effective marketing activities for farm produce (vegetables) are identified.
----------	--

The words of plans for promotion in the R/D are read as plans for promotion of crop diversification in viewpoint of marketing.

2. Aims of Plans for Promotion

(1) Objectives of planning

Objectives of planning are as follows;

- To clarify the current and foreseeable problems/difficulties, and then to formulate supportive measures to overcome or avoid such problems.
- To identify the direction of promotion of vegetable production and sales based on the actual needs from the markets, and then to formulate supportive measures to materialize the set-direction.

(2) Key issues and proposed ways and means

1) To increase of farmers' selling price

To promote crop diversification, economic motivation for vegetable production should be maintained or enhanced. Thus, one of key issues is an increase of farmers' selling price. Under-mentioned four means for increase of farmers' selling price are proposed in this plan. For each of selling method to promote, means to pursue the realization are indicated with ✓.

Selling method to promote	Direction of promotion				Conditions of sub-project sites
	Means for increase of farmers' selling price				
	Seasonal price trends	Direct sales and freshness	Value-adding by safeness	Enhance bargaining power	
Direct sales to local consumers	✓	✓	✓		Not far from towns and Small outputs (early stage)
Direct sales to local retailers; contract-base	✓	✓	✓		
Collective shipment to APMC market yards	✓			✓	Far from towns or Large outputs
Direct sales to buyers of niche/particular kind of market in big city		✓	✓		Stable production and Experienced in contract-based shipping



Branding of
"Made in 5-districts" produce

(Note) It is nothing special that produce are adequately cleaned, sorted and packed in accordance with buyers/market requirements. And it is not considered as a mean to increase selling price.

2) To create mindset about market-oriented vegetable farming

Farmers of most of the sub-project sites have been practiced subsistence farming and in general, farmers' commercial spirit is low. Therefore, another key issue is to enhance farmers' mindset/behavior to address the buyer's requirements and market opportunities proactively.

It is observed/sensed that many people think "try selling harvested produce at better price is marketing". It can be a kind of definition/understanding of what is marketing. However, I suggest changing it "to think what/when/how to grow farm produce which can be sold at better price is marketing".

Or to put it another way, marketing in vegetable farming is sowing seeds. When someone sows a seed, harvest (time, volume, what kind in shape/size/color/etc.) and time of selling after some months is almost fixed. If everybody go for same crop/variety and sow seeds at same time, cheap price is very natural and it is predictable to experienced farmers.

To create the mindset about market-oriented vegetable farming, it is suggested to add a sales plan as a new item of CDP, and to let farmers start thinking of "what, where/who, when and how" to sell their produce before sowing seeds. And gradually guide farmers to think of "what/when/how to grow farm

produce which they can sell at better price”.

(3) Strengthen the organizational capacity of DOA/PMU to promote crop diversification

As shown in the R/D, “Activity-4: Implementation of selected activities in collaboration with APMC” shall be commenced in October, 2017. Organizational capacity of DOA/PMU in the area of marketing shall be strengthen through the implementation of the selected activities.

Ideas of candidate activities for Stage 1 are planned on the premise of “to be implemented by PMU, target sub-project sites”. It is assumed that in the Stage 2, some activities are to be implemented by DDAs to target commercial vegetable farmers who are not in the sub-project sites.

3. Plans of Promotion (1st draft)

Suggested direction of promotion and ideas of candidate activities for Stage 1 (activities to start in Stage 1) are listed in the following table. For details, refer to the next section of this paper.

Please note the followings points before reading the details.

- Direction of promotion (A, B, C, F) are shown in implementation order; i.e. in priority order.
- Only initial activities to be taken under each direction of promotion are planned.
- Implementation site and preconditions (tentative) are shown in each activity.

Direction of promotion and Ideas of candidate activities for Stage 1

Tentative title of candidate activities for Stage 1		Remarks
Direction A: Promotion of sales planning by farmers		
A-1	Support the practice of preparing the sales plan by farmers	
Direction B: Promotion of direct sales to local consumers / local retailers		
B1-1	Support the installation of simplified roofed stall for retailing	
B2-1	Support the formation/enhancement of business relation with retailers	
Direction C: Promotion of collective shipment when selling at APMC market yards		
C-1	Support the establishment of a firm system for collective shipment to AMPC market yards	
Direction D: Promotion of vegetable production aim to sell at time of higher-price		
D-1	Development of time-shifted cultivation method aim to sell at time of higher-price	
(1)	Farmers' trial - trial cultivation of early/late varieties in open fields	
(2)	PMU's trial - use of cultivation environment control technology	
D-2	Promote the use of developed time-shifted cultivation method	If methods are made
Direction E: Challenge the value-adding by means of GAP certification		
E-1	Verification of effects on value-adding by means of GAP certification	Detail planning and initial works only
Direction F: Challenge the entry into niche/particular kind of market in the big city (Delhi)		
F-1	Market survey to gather information of distributors and their requirements, etc.	

Situations of all sub-project sites are not same in terms of vegetable production, location, human resources, and farmers’ motivation etc. Therefore, it is proposed to use “application & screening method” to determine the implementation site of each activity.

The procedure of determining the implementation site of each activity shall be as follows:

1. Review/examine the situations of sub-project sites ----- by BPMU
2. Select candidate activities to be implemented ----- by BPMU
3. Make proposal ----- by BPMU
4. Screening (selection) ----- by JICA-TCP II & SPMU

Whole process and time frame for determining the activities for Stage 1 is illustrated as below.

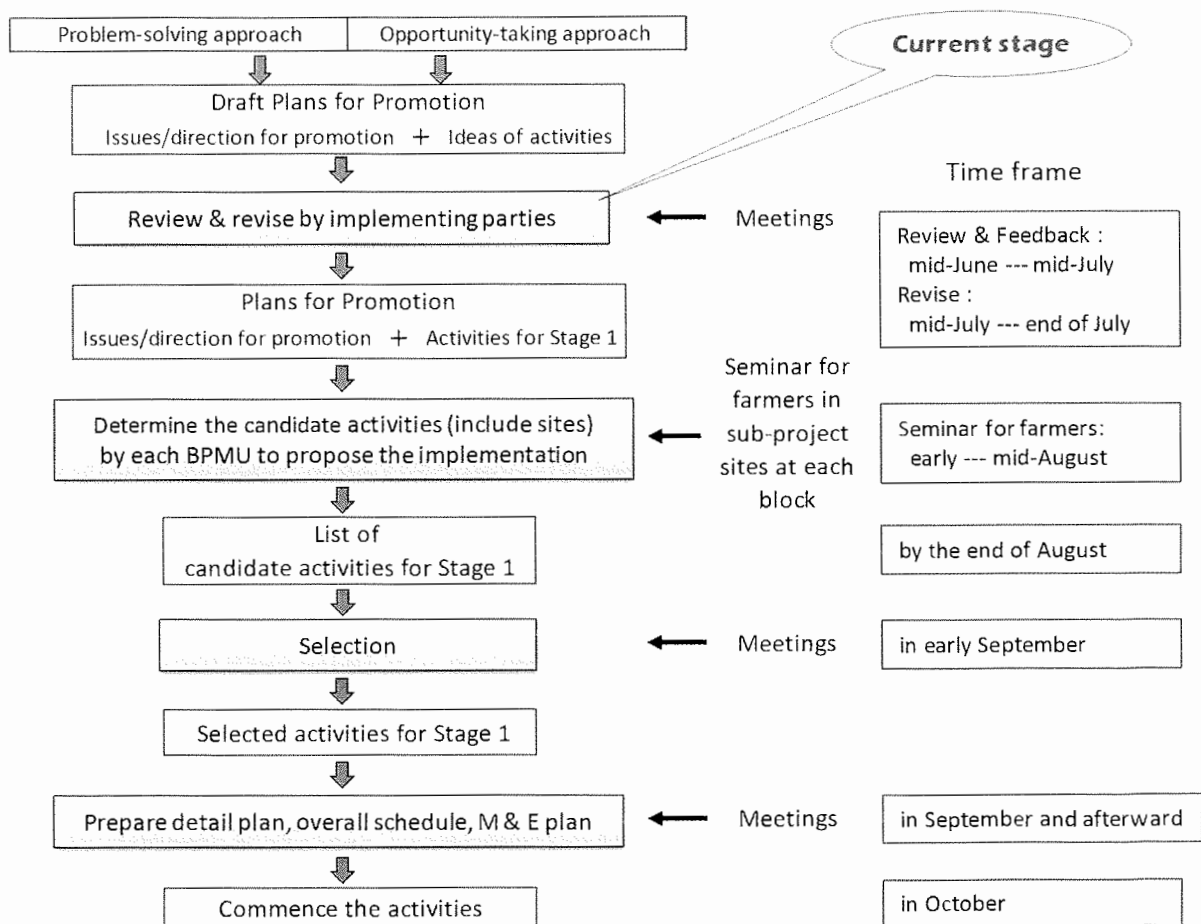


Chart: Process and time frame for determining the activities for Stage1

(1) Issue and Direction of Promotion

Situation at sub-project sites / Issues	Direction of Promotion	Sequence
<p>Most of sub-project sites have been practicing subsistence farming and, in general, farmers' commercial spirit is low.</p> <p>Preparing of a sales plan (behavior to think of ways to sell produce before sowing seeds) is not practiced. Sales plan is not a part of current CDP.</p> <p>Mind/behavior to proactive address the buyer's requirements or market opportunities should be enhanced.</p>	<p>A. Promotion of sales planning by farmers</p>	<p>↓</p>
<p>Many sites have just stated vegetable production on small-scale, i.e. produce is less.</p> <p>To maintain/enhance farmers' motivation to produce vegetables, outlet/method of selling small-volume produce by which farmers must gain better profit than selling at APMC market yard is important.</p>	<p>B. Promotion of direct sales to local consumers / retailers</p>	<p>↓</p>
<p>•In case the direct sale to local consumers/retailers is difficult to practice due to site location;</p> <p>•In case the volume of produce exceed the limit of direct sale to local consumers/retailers;</p> <p>Vegetables are to be sold at APMC market yards. To gain bargaining power and reduce transportation cost, collective shipment is necessary.</p>	<p>C. Promotion of collective shipment when selling at APMC market yards</p> <p>(Establishment of system of collective selling, Strengthening of bargaining power, Reduction of transportation cost)</p>	<p>↓</p>
<p>There are clear seasonal trend in vegetables prices</p>	<p>D. Promotion of vegetable production aim to sell at time of higher-price</p>	<p>↓</p>
<p>There is a clear need of local consumers for safe-vegetables.</p>	<p>E. Challenge the value-adding by means of GAP certification</p> <p>(It must lead to a branding of "vegetables made in the 5-disticts")</p>	<p>↓</p>
<p>There is a clear need of big-city consumers for safe-vegetables.</p> <p>There is a need for exotic vegetables in big-cities; exotic vegetables are hard to sell at local markets.</p>	<p>F. Challenge the entry into niche/particular kind of market in the big city (Delhi)</p>	<p>↓</p>
<p>Many sites just stated vegetable production, i.e. some farmers do not know commonly-applied practices.</p>	<p>G. Training for beginners of vegetable production</p> <ul style="list-style-type: none"> - Appropriate (i.e. based on buyers requirements) partial treatment, cleaning, sorting and packaging before shipment - Reduction of damage occur during truck transportation (tomatoes) <p><i>* Implement the above training when implement the B: Promotion of direct sales to local consumers/retailers, and C: Promotion of collective shipment when selling at APMC market yards.</i></p>	<p>↓</p>

Situation at sub-project sites / Issues	Direction of Promotion	Sequence
<p>Some says that lack of cold storage is a problem. However, there is no actual problem caused by lack of cold storages at present.</p>	<p>H. Introduction of cold storage facility for farmers' use</p> <p><i>* Assist the introduction of cold storage only after confirming the necessity and economical relevance case-by-case in the course of implementing the B: Promotion of direct sales to local consumers/retailers.</i></p>	
	<p>I. Other supportive measures suggested</p> <ul style="list-style-type: none"> - Countermeasure against monkey problem: Promote installation of electric fence by use of DOA subsidy scheme. - Countermeasure against labor-shortage problem : Promote introduction of labor-saving equipment (hand tiller) by use of DOA subsidy scheme. - Feeder road problem at specific sites: Construct feeder road as it is planned by HPCDP. - Installation of roofed area, cold storage for retailers of very-perishable leafy vegetables at APMC Una market yard; where retailing by producers (of non sub-project sites) is commonly practiced. 	

(2) Candidate Activities for Stage 1 (ideas)

Direction	A Promotion of sales planning by farmers
Aim / intent	<p>The intent of this plan is to change farmers' mindset from selling to marketing, and to generate a mind of market-oriented vegetable farming.</p> <p>As a new item of CDP, add a sales strategy/sales plan, and to let farmers think of "what, where/who, when and how" to sell their produce at time of making production plan.</p> <p>Prepared sale plans (decisions made by farmers about way of selling produce) shall be used for identifying the implementation sites for another plans (B1-1, B2-1, C).</p> <p>First-time of plaining can be a simple one (what, where/who and how), and gradually enhance the contents/detail. In case the farmers want to carry out a market survey/visit, support the execution by means of cost-cover, advice and accompanying the survey.</p> <p>After the outcomes (new cultivation methods) of "Promotion of vegetable production aim to sell at time of higher-price (D)" are gained, promote the production and sales planning by utilizing the outcomes.</p>
Activity	A-1 Support the practice of preparing the sales plan by farmers
Implementation site	Completed sub-project sites [compulsory for all sub-project sites]
Type of support	Give guidance by extension officers [Continuing support]
Implementation process	<ol style="list-style-type: none"> 1. Prepare items/format of sales plan 2. Prepare a guideline (points to consider) 3. Explanatory meeting for extension officers 4. Sales planning by farmers at each site; with help from extension officers 5. Report made-plans to SPMU, Check the made-plans by SPMU
Organizational framework for the implementation	<ul style="list-style-type: none"> - No particular change in the organizational framework of PMU is required. - Needless to add, appointment of persons responsible is precondition for implementing this plan.

Direction	B1 Promotion of direct sales to local consumers
Aim / intent	<p>Selling vegetables at roadside stall is commonly practiced by farmers. Certain sub-project sites also practice the roadside sale by group and gain better profit since the customers appreciate the value of freshness and cut out the middleman. Promote the roadside sales in nearby sub-project site by means of providing materials for a simplified/tentative but roofed stall, only if there is a promising place to attract customers in sufficient numbers.</p> <p>By using logo and/or by design/appearance, make the stalls discriminable with other roadside stalls.</p> <p>When request made by farmers and need is confirmed by assessment, assist them with provision of tools for handling harvested produce and temporary storage space (newly build or renovation) .</p> <p>Provide the training/on-site instruction on proper commodification (partial cutting, washing, sorting) and display method on needed basis.</p> <p>Regarding the introduction of a cold storage, necessity and economical relevance of using a cold storage for keeping freshness of leafy vegetables shall be checked case-by-case after starting the retail business.</p>

Activity	B1-1 Support the installation of simplified roofed stall for retailing
Implementation site	Sub-project sites which farmers decide to retail vegetables at roadside stall in the sales planning. [applying & screening method]
Precondition	<ul style="list-style-type: none"> - Roadside retailing should be practiced as group work; need not do it by all farmers. - There is a promising place to attract customers in sufficient numbers in nearby sub-project site. - Production items are appropriate for retailing; promising items/assortment to attract customers.
Type of support	Provision of free materials for a simplified roofed stall, Give guidance on installation of stall by extension officers [one-shot support], Provision of handling tools, temporary storage space, if needed.
Implementation process	<ol style="list-style-type: none"> 1. Make a common design of simplified roofed stall; unitized/package system, parasol roof 2. Stipulate preconditions for application, terms of beneficiary's burden. 3. Decide method/procedure of distributing notice, receiving applications, and screening 4. Prepare notice paper and documented procedures and instructions. 5. Distribute notice, receive applications, and do screening 6. Procurement of materials, delivery, give guidance on installation 7. Periodic monitoring and reporting by extension officers

Organizational framework for the implementation	<ul style="list-style-type: none"> - No particular change in the organizational framework of PMU is required. - Needless to add, appointment of persons responsible is precondition for implementing this plan.
Remarks	This plan shall complement the HPCDP's ESTABLISHING RETAIL MARKETING LINKAGE; giving chances to the sub-project sites to have one more alternative outlet.

Direction	B2 Promotion of direct sales to local retailers
Aim / intent	<p>Support the formation/enhancement of business relation with retailers.</p> <p>Assist to hold business meetings with candidate buyers (retailers) to enter into contract-style business. Starting time of the support should be before sowing to materialize the vegetable production base on buyer's requirements.</p> <p>In addition, support/encourage a steadily and timely business meeting with buyers to promote the preparation of production plan based on buyer's requirements.</p> <p>When request made by farmers and need is confirmed by assessment, assist them with provision of tools for handling harvested produce and temporary storage space (newly build or renovation) .</p> <p>Provide the training/on-site instruction on proper commodification (partial cutting, washing, sorting, packing) as needed basis.</p> <p>Regarding the introduction of a cold storage, necessity and economical relevance of using a cold storage for keeping freshness of leafy vegetables shall be checked case-by-case after starting the business.</p>
Activity	B2-1 Support the formation/enhancement of business relation with retailers
Implementation site	Sub-project sites which farmers decide to sell vegetables to nearby retailers in the sales planning. [applying & screening method]
Precondition	Selling to retailers should be practiced as group work; need not do it by all farmers.
Type of support	Give guidance/assistance to hold business meetings with (candidate) buyers. Provision of handling tools, temporary storage space, if needed.
Implementation process	<ol style="list-style-type: none"> 1. Stipulate preconditions for application, terms of beneficiary's burden. 2. Decide method/procedure of distributing notice, receiving applications, and screening 3. Prepare notice paper and documented procedures and instructions. 4. Distribute notice, receive applications, and do screening 5. Meeting with beneficiary group: set target buyers, days of business meetings, preparation of business proposition 6. Attend business meetings as adviser 7. Periodic monitoring and reporting by extension officers

Organizational framework for the implementation	<ul style="list-style-type: none"> - No particular change in the organizational framework of PMU is required. - Needless to add, appointment of persons responsible is precondition for implementing this plan.
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Direction	C Promotion of collective shipment when selling at APMC market yards
Aim / intent	<p>As applicable cases for this promotion direction, following two cases are assumed:</p> <p>1) In case the direct sales to local consumers/retailers is hard to practice in view of site location;</p> <p>2) In case the volume of produce exceed the limit of direct sales to local consumers/retailers;</p> <p>This plan aims to establish a firm system for collective shipment to AMPC market yards as well as aims to strengthen bargaining power and to reduce transportation cost. It is frequently-heard some say to eliminate middleman (C/A). However, C/A perform important functions in marketing system; such as collection/assorting/distribution/price finding/financing/data providing/etc. In addition, many of commercial vegetable farmers have good/steady relationships with C/A to market their produce effectively. What farmers have to is to ship an adequate volume of vegetable each time, and to establish a good relationship through steady/frequent shipments. What PMU have to is to assist farmers to start steady/frequent shipments.</p> <p>Promote the planned production to ship to APMC (items, volume, harvest time interval). Assist to determine the market yard to ship, and to make pre-arrangement with C/A. Also, assist the formation of systems to gather produce effectively, to check quality, etc.</p> <p>Provide plastic crates for tomato shipment, also provide training/on-site instruction on proper commodification (partial cutting, washing, sorting, packing) as needed basis.</p>
Activity	C-1 Support the establishment of a firm system for collective shipment to AMPC market yards
Implementation site	Sub-project sites which farmers decide to sell vegetable at APMC market yards in the sales planning. [applying & screening method]
Precondition	Selling to AMPC market yards should be practiced as group work; need not do it by all farmers.
Type of support	<p>Guidance/advice by extension officer: Production planning, Formation of systems (e.g. collection, quality check, etc.), Selection of market yards, etc.</p> <p>Subsidy: Meeting with C/As, etc.</p> <p>Provision equipment: Plastic crates (for tomato only)</p> <p>Training: Partial cutting, washing, sorting, packing, as needed basis.</p>

Implementation process	<ol style="list-style-type: none"> 1. Finalize the contents of the support activities in this plan. 2. Decide method/procedure of distributing notice, receiving applications, and screening. 3. Prepare notice paper and documented procedures and instructions. 4. Distribute notice, receive applications, and do screening. 5. Production planning by farmers; with help from extension officers 6. Execute the production plan by farmers; with guidance from extension officers. 7. Determine the market yard to ship, and make pre-arrangement with C/A by farmers. 8-1. Provision of plastic crates (tomato) 8-2. Training on partial cutting, washing, sorting and packing; as needed basis. 9. On-site guidance by extension officers at first-time shipment. 10. Periodic monitoring and reporting by extension officers
Organizational framework for the implementation	<ul style="list-style-type: none"> - No particular change in the organizational framework of PMU is required. - Needless to add, appointment of persons responsible is precondition for implementing this plan.

Direction	D Promotion of vegetable production aim to sell at time of higher-price
Aim / intent	<p>Under PMU's initiative, develop the time-shifted cultivation method to enable harvest at time of higher-price, and promote the use of developed methods in the sub-projects sites. Also, promote the installation of polyhouse.</p> <p>Examples of target vegetables cum target harvest time are as follows.</p> <p>Coriander, Spinach: Aug. -Sep. Cabbage: Aug - Oct.</p> <p>Tomato, Capsicum: Aug. - Oct. Cucumber: Nov.</p> <p>Development means that introduction and adjustment of existing technology fit to the climate condition in the 5 districts.</p> <p>Two (2) ways of development are considered: 1) Farmers' trial - trial with early/late varieties in open fields, 2) PMU's research test - use of cultivation environment control technology.</p>
Activity	D-1 Development of time-shifted cultivation method aim to sell at time of higher-price
Sub-Activity	(1) Farmers' trial - trial cultivation of early/late varieties in open fields
Implementation site	Sub-project sites which have decent experiences/results of production and skill of vegetable cultivation; but not including the sites in highland in Mandi and Kangra districts which produce off-season vegetables now (climatic condition is different)
Implementation process	<p>1. Planning the trial cultivation</p> <ul style="list-style-type: none"> - Set target vegetables cum target harvest time based on the price data of past 5 years - Collect information of referable cases in India (varieties, cultivation technique) - Collect detailed meteorological data in HP state - Examine possible time-shift by use of early/late varieties - Prepare farmers' trial plan (draft) for each target vegetable - Determine sites and participating farmers. - Discussion with the participating farmers and finalize the trial plan <p>2. Implementing the trial cultivation</p> <ul style="list-style-type: none"> - Procure and provide necessary materials - seeds, fertilizer, etc. - Conduct the trial cultivation, Give on-site guidance, Monitoring by extension officers - Review and analysis of the results
Organizational framework for the implementation	<ul style="list-style-type: none"> - No particular change in the organizational framework of PMU is required. - Needless to add, appointment of persons responsible is precondition for implementing this plan.
Remarks	<p>Decent experiences/results of production and skill of vegetable cultivation are required.</p> <p>If there is no such sub-project site, it may be implemented with/by commercial farmers outside of the sites.</p>

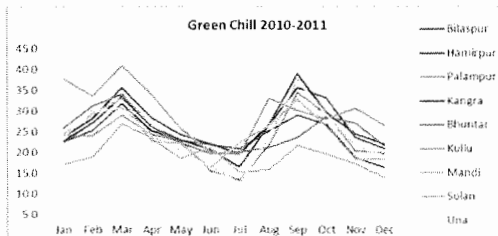
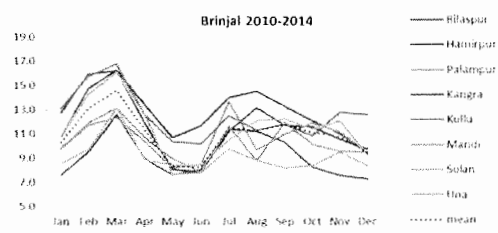
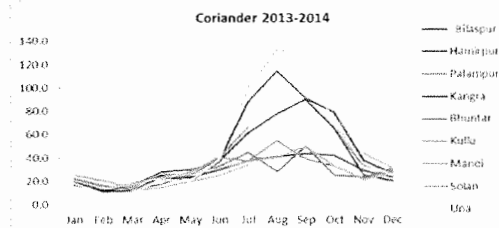
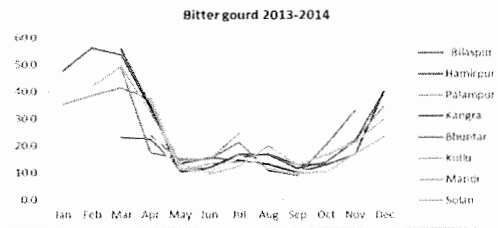
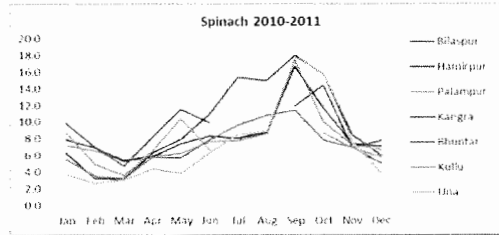
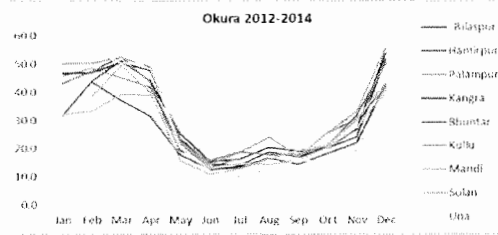
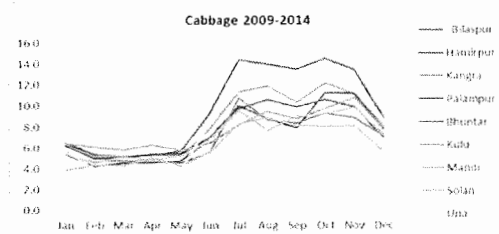
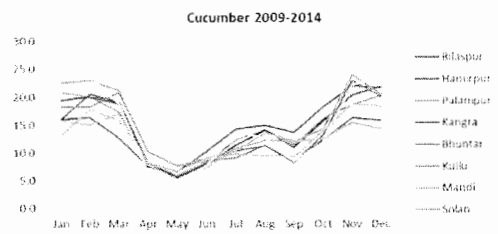
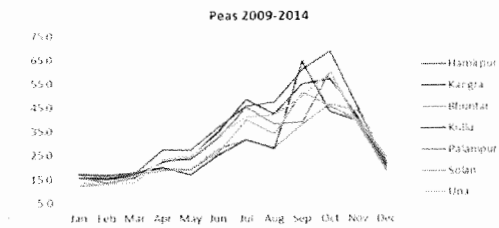
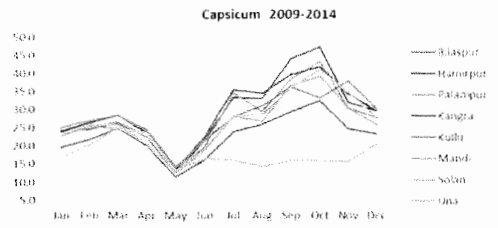
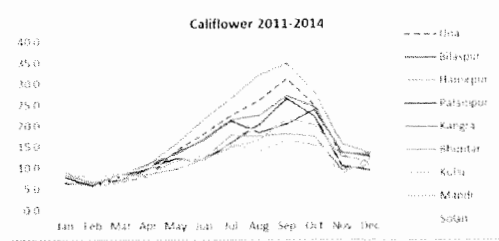
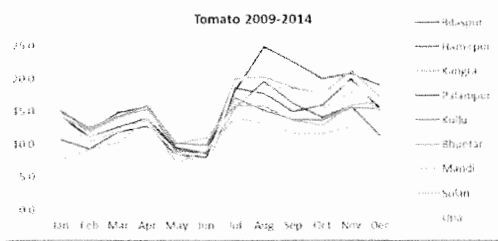
Sub-Activity	(2) PMU's trial - use of cultivation environment control technology
Implementation site	Sub-project sites which have decent experiences/results of production and skill of vegetable cultivation; but not including the sites in highland in Mandi and Kangra districts which produce off-season vegetables now (climatic condition is different)
Implementation process	<ol style="list-style-type: none"> 1. Setting up of organizational framework for the implementation <ul style="list-style-type: none"> • Set up a technical group to work out planning and implementing this trial. 2. Planning the trial cultivation <ul style="list-style-type: none"> • Set target vegetables/varieties cum target harvest time; utilize the results of farmers' trial for variety selection. • Gather examples of time-shifted cultivation technology used in Japan as reference • Examine applicable cultivation environment control technology such as: <ul style="list-style-type: none"> - For open field: rain-protection by plastic film, soil water control by high mound/film mulch, soil temperature control by mulching, etc. - For polyhouse: heat-retention by inner curtain, heating tool, etc. • Examine stable production technique such as pest management, watering, etc. • Prepare trial plan for each target vegetable/variety 3. Implementing the trial cultivation <ul style="list-style-type: none"> • Determine sites and participating farmers • Procure necessary materials - seeds, fertilizer, plastic film, etc. • Conduct the trial cultivation, Give on-site guidance, Monitoring by extension officers • Review and analysis of the results 4. Determining the time-shift methods to promote in the sub-projects sites <ul style="list-style-type: none"> • Determining the time-shift methods based on the results of the trials • Prepare a cultivation manual
Organizational framework for the implementation	Setting up of a technical group to examine applicable technology is necessary. If PMU has no competent personnel resources, external experts must be used for setting up.
Remarks	Decent experiences/results of production and skill of vegetable cultivation are required. If there is no such sub-project site, it may be implemented with commercial farmers outside of the sites.

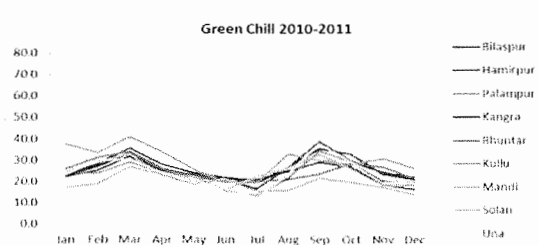
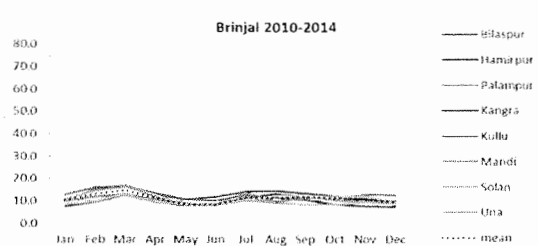
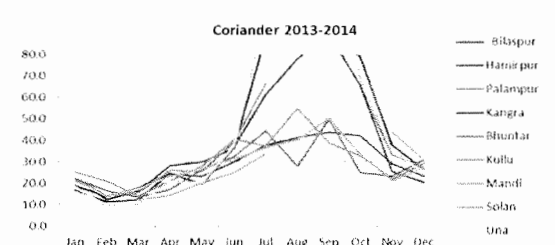
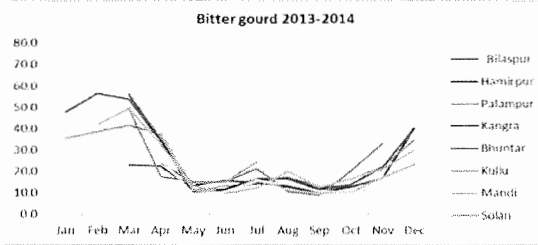
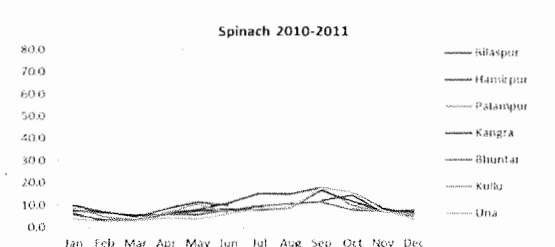
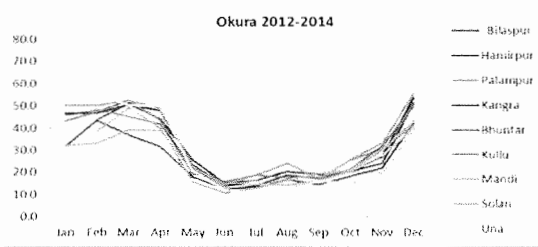
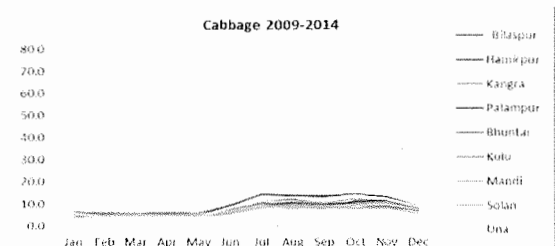
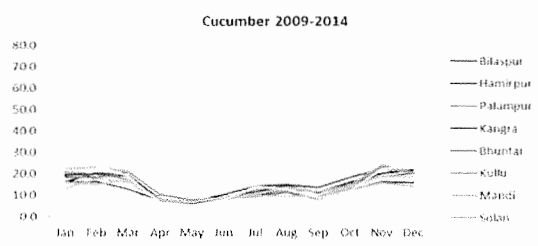
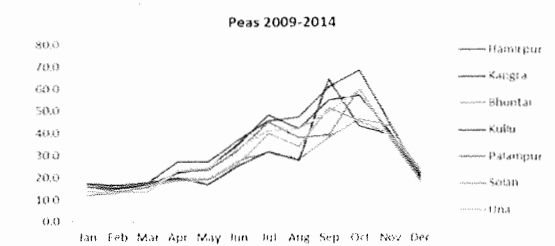
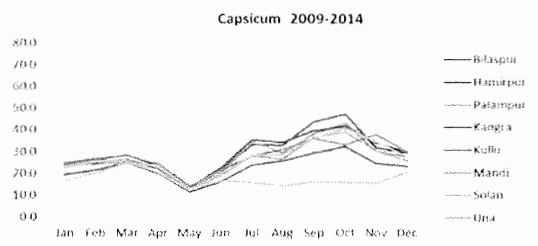
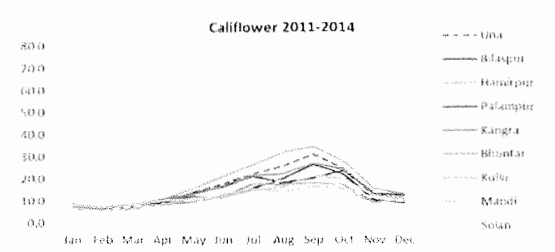
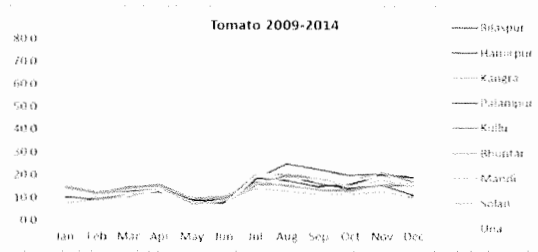
Activity	D-2 Promote the use of developed time-shifted cultivation method
Implementation site	All sub-project sites; other than the sites in highland in Mandi and Kangra districts which produce off-season vegetables now. Give priority to the sub-project sites which have decent experiences/past results of production and skill of vegetable cultivation.
Precondition	
Type of support	Guidance by extension officers : making CDP (production plan) Training and on-site guidance by extension officer: application of developed methods Subsidy and/or provision of materials
Implementation process	<ol style="list-style-type: none"> 1. Promote the use of developed methods in the sub-projects sites <ul style="list-style-type: none"> • Make CDP (production plan) by taking seasonal price trend and developed methods into consideration. • Draw the extension plan, Budgeting • TOT training by use of cultivation manual prepared in D-1 • Set up demonstration fields, Conduct technical training • Provide the seeds and other materials 2. Promote the installation of polyhouse <ol style="list-style-type: none"> 1) Promote installation of polyhouse by use of DOA subsidy scheme 2) Introduction of low-cost and self-build type polyhouse <ul style="list-style-type: none"> • Build some polyhouses for display and test use • Establish a subsidy scheme for installation costs • Training on installation method, Operation of subsidy scheme
Organizational framework for the implementation	<ul style="list-style-type: none"> - No particular change in the organizational framework of PMU is required. - Needless to add, appointment of persons responsible is precondition for implementing this plan.
Remarks	Regarding 2) Introduction of low-cost and self-build type polyhouse, JICA-TCP II shall provide an idea (example) for discussions at a time of detail planning.

Direction	E Challenge the value-adding by means of GAP certification
Aim / intent	<p>There is no previous example of value-adding on fresh vegetables by means of GAP certification in the consumer market in India, Therefore, it is hard to say how much of the price up is expectable.</p> <p>At first, assist limited number of competent farmers to get GAP certification (INDGAP) and check the actual price increase in the local market.</p> <p>It is necessary to handle/sell GAP certified produce with others. GAP certified vegetables are to retail at retail shop (stall) to be set up by HPCDP or to retail by favor of retailer in town.</p>
Activity	E-1 Verification of effects on value-adding by means of GAP certification
Implementation site	Sub-project sites which practice a direct sale to local consumers/retailers. Sub-project site is not far from district town or retail shop of HPCDP.
Precondition	Farm is managed by competent personnel (graduate, worked for company/government office, etc.), and he/she has willingness to challenge the GAP certification.
Type of support	Financial/technical assist to attain the GAP certification. Arrange way(s) of retailing.
Implementation process	<ol style="list-style-type: none"> 1. Assist to attain the GAP certification. <ol style="list-style-type: none"> 1) Selection of competent farmers 2) Selection of INDGAP consultants, Conclusion of training contract (training for PMU staff) 3) Implementation of GAP training for PMU staff 4) Conclusion of consulting/assisting contract for attaining the GAP certification with INDGAP consultants 5) Implementation of consulting/assisting for attaining the GAP certification 6) Assist/give guidance by PMU staff; documentation, how to conform to the requirements 7) Application to CB, Conclusion of contract for auditing 8) Auditing by CB 2. Retail the GAP certified vegetables at local market <ol style="list-style-type: none"> 1) Make production plan, Produce vegetables, Conduct required works by GAP 2) Arrange place(s) of retailing 3) Retailing of produce, Monitoring by PMU staff 3. Planning next step (Supportive plan/scheme for attaining GAP certification)
Organizational framework for the implementation	
Activity	E-2 Implementation of supportive plan/scheme for attaining GAP certification
Activity	E-3 Establishment of sales channels in big cities, Branding the vegetables "made in 5 districts"

Direction	F	Challenge the entry into niche/particular kind of market in the big city (Delhi)
Aim / intent	<p>Doing business with distributor in big city who supply specific kind/quality of vegetables to particular customers is too hard for small-scale beginner farmers. Considering the current state of vegetable production in most of the sub-project sites, entry into niche/particular kind of market in the big city is a challenge to be made after implementing the above-mentioned plans for promotion; after becoming real commercial farmers.</p> <p>Therefore, no supportive measures for farmers are planned now.</p> <p>As a preparatory activity, a plan for marketing survey to gather essential information such as candidate distributors to make linkage is planned. Next step shall be planned based on the results of survey.</p>	
Activity	F-1	Market survey to gather information of distributors and their requirements, etc.
Implementation process	<ol style="list-style-type: none"> 1. Appointment of persons responsible 2. Preparation of survey plan <ul style="list-style-type: none"> • Determine the contents/items, information sources, places to visits, etc. • Preliminary collection of information by Web, Telephone, etc. • Derive survey hypothesis • Make survey plan 3. Implement the survey 4. Review and analysis, Plan next step 	
Organizational framework for the implementation	- Appointment of persons responsible is precondition for implementing this plan.	

For Reference : Seasonal price trend





JICA TCP II : Output-3**Points to remember when you prepare a feedback****1. When you state an opinion:**

There is no designated format.

You can type (insert) your opinion in the original Word files. But please make it capable of distinguish by means of changing font/color or adding marker, etc.

Or you can simply type it in a separate Word file.

2. When you propose another activity:

Please describe an activity in the same format in the original Word file (file name: 3 (2) Ideas of Candidate activities 0616.docx).

For example, if you have an idea of alternative activity to contribute the B1: Promotion of direct sales to local consumers, make and use the format as below.

Direction	B1	Promotion of direct sales to local consumers
Aim / intent		
Activity	B1-X Tentative title	
Implementation site	Please indicate the names of sub-project sites / place, if possible.	
Precondition		
Type of support		
Implementation process		
Organizational framework for the implementation		
Remarks		

3. When you propose another issue and direction for promotion:

Please describe an issue and direction in the same format in the original Word file (file name: 3 (1) Direction of Promotion 0616.docx). Use the format as below.

Situation at sub-project sites / Issues	Direction of Promotion

4. When you propose another issue & direction for promotion and activities:

Please use the both formats as below.

Situation at sub-project sites / Issues	Direction of Promotion

Direction

Aim / intent

Activity	
Implementation site	Please indicate the names of sub-project sites / place, if possible.
Precondition	
Type of support	
Implementation process	
Organizational framework for the implementation	
Remarks	

5. When you inquiry about the contents of the Explanatory paper

There is no designated format.

Please simply ask Y. Ban, JICA TCP Expert by e-mail (conban@omicnet.com).

Or you may phone to Amit Kumar, JICA TCP assistant (94186 05558).

6. Submission of your opinion and proposal

Please e-mail a Word file or PDF file before 15 July to:

- Yoshihiro Ban, JICA TCP Expert, e-mail: conban@omicnet.com
- Amit Kumar, JICA TCP assistant, e-mail: amitagnihotri1980@gmail.com

Thank you.

Suggested Additional Activities by AMPC Secretaries

Aim / intent	Marketing is a collective activity. When it is associated with farmers, there is a need to organize them in co-operative or in federation structure for effective marketing the dissemination of market information.	
Activity	A2	Creation of farmer's co-operative/ federation
Implementation site	Completed sub-project sites	
Precondition	Land of farmers should fall in project blocks	
Type of support	Consultancy, legal, financial or any other	
Implementation process	Identify the farmers Register their legal body Assign responsibilities Evaluation and feedback	
Organizational framework for the implementation	Legal help for registering the cooperative/federation is required Seed capital/ finance may be provided	
Remarks	To organize the farmers in a legal entity is important as marketing is a specialized activity and special delegation/ responsibility need to be assigned. They can also be organized into Farmer producer companies later on depending upon volume.	

Aim / intent	Linking of GAP certified produce with electronic National Agricultural Market (e-NAM)	
Activity	E4	Registering the GAP certified producers with e- Nam and electronic auction of produce
Implementation site	APMC Yards having e-NAM facility	
Precondition	Produce of farmers is having properly graded sorted of GAP Certified	
Type of support	Technological	
Implementation process	Registration of farmers on e-NAM portal Bringing of produce to APMC Yard Assaying of Produce Electronic auction Settlement and delivery	
Organizational framework for the implementation	Already existing e-NAM platform is to be used	
Remarks	It will be beneficial for high value produce to identify potential buyers and proper price discovery	

Summary of the Results of the Site Survey

Note: Selection of activity/sub-project by JICA TCP after the site survey shown in this paper may differ from the one shown in the main text of Progress Report No.1, since the determination may be altered in course of detail planning; responding to a change of situation/farmers' opinion/etc. and finding of new facts.

Date of Site survey and meeting with farmers to select activities/sites

BPMU	Selected sub-projects by BPMU after the seminar	Date of Survey by JICA TCP expert and BPMU
Bajjnath	Gabli Kuhl, Thathi	Sep. 11, 2017
Nurpur	Minjh Gram, Johar Dariya	Sep. 12, 2017
Dehra	Dhugiari, Gela Kuhl, Dadu Kuhl Pagdandi Kuhl	Sep. 13, 2017
Bilaspur	Parohi, Nalwar Kotlu, Chhiber Ballu	Sep. 15, 2017
	Balhseena, Fagog Dol Lasawa	Sep. 20, 2017
Mandi	Chho Nalla, Kandi Nalah	Sep. 18, 2017
	Biaru Khad, Batheri	Sep. 19, 2017
Una	Badhera Lower	Sep. 09, 2017
	Nagar Chowki	Nov. 22, 2017
Hamirpur	Chelleli	Sep. 06, 2017
	Panjahli	Sep. 23, 2017
Sarkaghat	Kanger Kothi, Thana Mohin, Lahra	Oct. 18, 2017

Note : Site survey has not yet conducted at 4 sub-projects (Rani Kuhl, Jarlakouri, Krishna Nagar and Deot-1) out of 28 sites (as of 30 Nov.)

1. Bajjnath

Selection by BPMU after the seminar

		B1-1	B2-1	C-1	D-1(1)	D-1(2)	E-1
Rani Kuhl			✓	✓	✓		
Gabli Kuhl	★	✓	✓	✓	✓		
Thathi			✓	✓	✓		

Gabli Kuhl

B1-1 3 places (locations) for retailing are proposed; where farmer / farmers have been used for retailing; 2 places have bamboo-made table and 1 place have no such facility. All locations are OK but they may be a little closer to each other.

Provide support for enhance the sales with better-looking outlet for 3 groups (3 outlets, 3-4 families/group), one outlet may be a permanent type.

B2-1, C-1 Farmers sell to at roadside, to retailers and to APMC. Farmers' needs to change current methods are not observed now. Keep watch on the situation of production/sales and farmers' needs.

- D-1(1) Early-cauliflower has been sown by support of BPMU.
Further support for spring-summer harvest crops is to be covered by Output-2.

Thathi

- B2-1 Explore what support / intervention is applicable after implementing the C-1.
- C-1 a) Build a collection point at the end of cemented road and b) provide weighing-scale and plastic crates to smoothen / enhance the collection & shipment to AMPC sub-market yard Baijnath, after completion of road improvement work; which start soon and complete in about 4 months period.
- D-1(1) Support of BPMU has been provided.
Explore what varieties/techniques are applicable / suitable; to the high altitude place; for spring-summer harvest crops.
- D-1(2) Provide poly-tunnels (DOA type, 4m x 1.5m x 1m (H), total 16 unit, 3 - 5 units/village x 4 villages) for heat-retention; to promote the growth of cauliflower seedlings in late-October/November and afterward. This test is requested by BPMU.

Rani Kuhl

This sub-project is very near to the sites of BPMU Dehra, i.e. mode of production/marketing must be similar to them. Therefore, lowest priority is given among the 3 sites. Survey shall be made in December.

Determination by JICA TCP after the survey

		B1-1	B2-1	C-1	D-1(1)	D-1(2)	E-1
Rani Kuhl			?	?	?		
Gabli Kuhl	★	◎	△	△	× (by output-2)		
Thathi			△	○	△	◎	

◎Do implement it; quickly

○Do implement it; when time comes

△Keep watch on the situation of production/sale. Depending on the future discussion with farmers

×No implementation (No farmers' needs/willingness)

? Not yet surveyed.

2. Nurpur

Selection by BPMU after the seminar

		B1-1	B2-1	C-1	D-1(1)	D-1(2)	E-1
Minjh Gram		✓	✓		✓		
Johar Dariya	★	✓	✓				

Minjh Gram

- B1-1 Farmers say there is only one possible/good place for retailing along the national road; that is at Minji Gram village side. However, BPMU suggests another place at Kotel?? village side (ホテル). Consider both of the places as target location. BPMU's priority is given to the Minji Gram village side.

B2-1 Explore what support / intervention is applicable after implementing the B1-1 and state of vegetable production from now. Tentative ideas are; a) group marketing by use of collection point in the villages, b) enter into the business with Green leaf (Increase the number of farmers who sell to Green leaf).

D-1(1) Advance farmers (4 farmers) who sell to Green leaf grow early-variety of cauliflower. Explore what challenge (new variety testing) is applicable for spring-summer harvest crops with farmers. Refer (copy) the activity of Output-2 at Johar Dariya.

Johar Dariya

B1-1 Place (location) for retailing along the national road is OK. It must be possible to set two stalls at the place; face each other across the road.

B2-1 Explore what support / intervention is applicable after implementing the B1-1 and state of vegetable production from now.

Determination by JICA TCP after the survey

		B1-1	B2-1	C-1	D-1(1)	D-1(2)	E-1
Minjh Gram		◎	△		○		
Johar Dariya	★	◎	△				

◎Do implement it; quickly

○Do implement it; when time comes

△Keep watch on the situation of production/sale. Depending on the future discussion with farmers

×No implementation (No farmers' needs/willingness)

3. Dehra

Selection by BPMU after the seminar

		B1-1	B2-1	C-1	D-1(1)	D-1(2)	E-1
Dhugiari			✓		✓		
Gela Kuhal	★	✓	✓	✓			
Dadu Kuhal				✓			
Pagdandi Kuhal		✓	✓	✓	✓	✓	

Dhugiari

By way of comparison among the selected 4 sub-projects, Dhugiari is a little far from national road. Most of farms are just started vegetable production and no retailers have yet come to village to buy vegetable (production is limited).

Currently, 4 families sell (retail) vegetables at Daramshara; carry by bus; visit houses/sell at certain points (roadside). It seemed that other farmers (women) think to do same way of selling; or to rely on these 4 famers.

B2-1 Keep watch on the state of vegetable production and selling. Do meeting with farmers in December.

D-1(1) Explore what challenge (new variety testing) is applicable for spring-summer harvest crops

with farmers. Refer the support/intervention to be made by the Output-2 at Gela Kuhal.

Gela Kuhal

- B1-1 Private land of the moderator is proposed and its location is OK. Confirm the agreement of the moderator to use an outlet collectively with other farmers, and then plan to build a permanent-type outlet. Number of beneficiaries (users of outlet) is unknown now.
- B2-1 Retailers come to village to buy vegetables. No farmers' needs.
- C-1 Farmers' needs to change current selling methods are not observed now. Keep watch on the situation of production/sales and farmers' needs.

Dadu Kuhal

- C-1 No farmers' needs (No problem to ship vegetables to APMC market yards).

Pagdandi Kuhal

- B1-1 Place (location) for retailing (inside of hospital area) is OK. Target beneficiaries (users of stall) are 7 - 8 farmers who do retailing already.
- B2-1 Retailers come to buy vegetables. No farmers' needs.
- C-1 Almost all farmers of Sadapul Tanda village have own-car to carry his/her produce to AMPC market yard; a short distance away. There is a coordination to regulate shipping volume. No farmers' needs to change current methods.
- It is said that farmers in Sadapul village (north side) use hired-cars (less car-owners). And only the KVA president (one person from Sadapul village) participated the meeting. Therefore, confirm the situation / needs when the opportunity comes.
- D-1(1) Support of BPMU has been provided; four poly-tunnels for early-cauliflower (seeded already). Explore what challenge (new variety testing) is applicable for spring-summer harvest crops with farmers. Refer the support/intervention to be made by the Output-2 at Gela Kuhal.
- D-1(2) Discuss with BPM what improvement/techniques are applicable for spring-summer harvest crops.

Determination by JICA TCP after the survey

		B1-1	B2-1	C-1	D-1(1)	D-1(2)	E-1
Dhugiari			△		○		
Gela Kuhal	★	◎	×	△			
Dadu Kuhal				×			
Pagdandi Kuhal		◎	×	×/?	○	○	

◎Do implement it; quickly

○Do implement it; when time comes

△Keep watch on the situation of production/sale. Depending on the future discussion with farmers

×No implementation (No farmers' needs/willingness)

? Not yet surveyed.

4. Bilaspur

Selection by BPMU after the seminar

		B1-1	B2-1	C-1	D-1(1)	D-1(2)	E-1
Parohi				✓			
Nalwar Kotlu		✓	✓		✓	✓	
Chhiber Ballu		✓	✓		✓	✓	
Balhseena	★	✓	✓		✓	✓	
Fogog Dol Lasawa			✓		✓	✓	

Parohi

C-1 HPCDP Collection Center will be built in the village. Provide weighing-scale and plastic creates to smoothen / enhance the shipment to AMPC market yards in Bilaspur, Ludhiana, Nangal after the construction of collection center.

Nalwar Kotlu

B1-1 Two places are proposed by farmers. One is the roof-shade (bamboo posts, no table) built by the farmer who has farm land & house nearby. This farmer refuses to share-use the place. Another is at bus-stop; where one vegetable shop exists; illegal wooden-wall permanent hut (not used now).

Make a look of wooden-wall hut better by painting and provide tables, etc. But do not indicate the project logo/name on the wall. Number of beneficiaries (users of outlet) is unknown now.

B2-1 Farmers' needs to change current selling methods are not observed now. Keep watch on the situation of production/sales and farmers' needs. JICA TCP provides support when produce increase and necessity (farmers' idea) to ship to AMPC in Panjab state arise.

D-1(1) Already early and late varieties are used.

D-1(2) Discuss with BPMU what improvement/techniques are applicable for spring-summer harvest crops. It may hard to find the rooms of technical intervention for tomato since the yield is very high.

Chhiber Ballu

Sales of vegetable started last year at very small scale; sold to retailers in Ghumarwin town.

B1-1 Farmers intend to sell to retailers in Ghumarwin town as they did it last year. No interest in retailing at roadside.

B2-1 Based on the request made by farmers in the meeting, a) Build a collection point (simple hut; no walls; cemented floor) in the village and b) provide weighing-scale and plastic creates to smoothen / enhance the collection & shipment to Ghumawin. Offered place for collection point is OK.

D-1(1) Early-variety cauliflower has seeded already. Explore what challenge (new variety testing) is applicable for spring-summer harvest crops with farmers.

Refer the support/intervention to be made by the Output-2 at Balh Seena.

** To check : What support did BPM provide? Poly-tunnels were provided?*

D-1(2) Discuss with BPMU what improvement/techniques are applicable for spring-summer harvest crops.

Balhseena

B1-1 No possible/good place for retailing.

B1-2, C-1 Farmers intend to sell to retailers in Belh Seena town, Shahtalai town, Barsar town; by individual or by group. HPCDP Collection center will be built in the village. Provide weighing-scale and plastic creates to smoothen / enhance the collection and shipment to above towns; Provide those equipment before the construction of collection center.

D-1(1) To be covered by Output-2

D-1(2) To be covered by Output-2

Fogog Dol Lasawa

B2-1 Farmers intend to sell to retailers in Belh Seena town, Bertin town, Shahtalai town. JICA TCP suggested a collection point in the village and group shipping in the meeting, and to discuss it by the vegetable growing farmers (6 -7 farmers).

D-1(1) Early-variety cauliflower has seeded already. Explore what challenge (new variety testing) is applicable for spring-summer harvest crops with farmers.

Refer the support/intervention to be made by the Output-2 at Balh Seena.

** To check : What support did BPM provide? Poly-tunnels were provided?*

D-1(2) Discuss with BPMU what improvement/techniques are applicable for spring-summer harvest crops.

Determination by JICA TCP after the survey

		B1-1	B2-1	C-1	D-1(1)	D-1(2)	E-1
Parohi				○			
Nalwar Kotlu		◎	△		×	△	
Chhiber Ballu		×	◎		○	△	
Balhseena	★	×	◎		×	×	
Fogog Dol Lasawa			△		○	○	

◎Do implement it; quickly

○Do implement it; when time comes

△Keep watch on the situation of production/sale. Depending on the future discussion with farmers

×No implementation (No farmers' needs/willingness, Not practicable location)

5. Mandi

Selection by BPMU after the seminar

	B1-1	B2-1	C-1	D-1(1)	D-1(2)	E-1
Chho Nalla	✓	✓	✓	✓		
Kandi Nalah	✓	✓	✓	✓		
Biaru Khad	✓	✓	✓	✓		
Batheri		✓	✓	✓		

Chho Nalla

B1-1 Not practicable. No consumers.

B2-1 Not practicable.

C-1, D-1(1) No needs on current crops.

Farmers have idea to start Broccoli production but have no access to Chandigarh and Delhi market, because the traders come to Chonala have no access to these cities; have access only to cities in Panjab state.

Therefore, JICA TCP offer to support them to conduct a market survey (business discussion with C/A) in Chandigarh APMC market yard, and it shall be conducted in February 2018.

Kandi Nalah

B1-1 Not practicable. No consumers.

B2-1 Not practicable.

C-1, D-1(1) Same as Chonala

Biaru Khad

* Construction of irrigation system has not yet completed.

* Solidarity among farmers is weak. JICA TCP requested to the KVA secretary (lady) to form a group of vegetable growers.

B1-1, B2-1 Not practicable. Kataula is small town and there are four vegetable shops.

C-1 Explore the possibility to make intervention on tomato/garlic marketing.

D-1(1) Discuss with BPM what improvement/techniques are applicable for spring-summer harvest crops. Not only testing of new varieties, testing of heating/ heat-retention /protection from rain /protection from insects/etc. (D-1 (2)) may be considered.

※ Challenge to capture the market of new IIT campus:

Large construction of new IIT campus is on-going nearby Kataula town. Explore the possibility to make a retail shop in the campus or near the gate.

Batheri

* Irrigation system needs to be repaired (broken by public works). No water now.

* Motivator said that to collect information and prepare a production plan of Batheri.

* Winter season is foggy and less sunshine. Farmers say that wheat and beat are only crops possible to grow.

- B2-1 Not practicable.
- C-1 JICA TCP suggested to make collection point(s) in the village and group shipping in the meeting, and to discuss it by vegetable growing farmers.
- D-1(1) Same as Bairu Khad
- ※ Challenge to capture the market of new IIT campus:
Same as Bairu Khad

Determination by JICA TCP after the survey

		B1-1	B2-1	C-1	D-1(1)	D-1(2)	E-1
Chho Nalla		×	×	○ (Chandigarh market survey)	×		
Kandi Nalah		×	×	○ (Chandigarh market survey)	×		
Biaru Khad		○ (IIT)	×	△	△	△	
Batheri		○ (IIT)	×	△	△	△	

◎Do implement it; quickly

○Do implement it; when time comes

△Keep watch on the situation of production/sale. Depending on the future discussion with farmers

×No implementation (No farmers' needs/willingness, Not practicable location)

6. Una

Selection by BPMU after the seminar

		B1-1	B2-1	C-1	D-1(1)	D-1(2)	E-1
Badhera Lower	★	✓		✓	✓		
Jarlakouri			✓	✓	✓		
Nagar Chowki		✓			✓		
Krishna Nagar				✓			

Badhera Lower

B1-1 Permanent type. Location for retailing is OK. Offered place for retailing is private land of the most serious farmer; adjacent to his house/farm land. Confirm his agreement to use the outlet collectively with other farmers, and then plan to build a permanent-type outlet.

C-1 ??

D-1(1) To be covered by Output-2

Nagar Chowki

B1-1 Not far from main road, but traffic is observed as “not-so-busy”. There is one vegetable shop on the main road.

Vegetable production is very limited. Only one farmer grows vegetables for sales purpose in poly-houses, and sell at AMPC market yard (probably carry by owner-driven car). Vegetable production in open-field is scarce due to monkey problems.

Farmers did not show much interested in retailing by mobile cart. Construction of the collection center is on-going on main road; not far from the site. Since there is space to park cars, it must be used as retail outlet.

D-1(1) First, monkey problem should be solved.

Others

Determination by JICA TCP after the survey

		B1-1	B2-1	C-1	D-1(1)	D-1(2)	E-1
Badhera Lower	★	◎		?	× (by output-2)		
Jaralakouri			?	?	?		
Nagar Chowki		× (utilize collection center)			△		
Krishna Nagar				?			

◎Do implement it; quickly

○Do implement it; when time comes

△Keep watch on the situation of production/sale. Depending on the future discussion with farmers

×No implementation (No farmers' needs/willingness, Not practicable location)

? Not yet surveyed, Not yet discussed with farmer/BPMU

7. Hamirpur

Selection by BPMU after the seminar

		B1-1	B2-1	C-1	D-1(1)	D-1(2)	E-1
Deot-1			✓		✓	✓	
Chelleli	★		✓		✓	✓	
Panjahli			✓		✓	✓	

Panjahli

B2-1 No necessity of support; because the vegetable production is very limited.

D-1 (1), (2) JICA TCP suggested to try (to make efforts) time-shifted production to get better price under the support of JICA TCP. But no interest was shown in the meeting. Therefore, informed them to discuss and make their decision by the end of November.

Chelleli

B2-1 Provide support to explore what challenge (improvement) is applicable.

D-1 (1), (2) To be covered by Output-2

Determination by TCP after the survey

		B1-1	B2-1	C-1	D-1(1)	D-1(2)	E-1
Deot-1			?		?	?	
Chelleli	★		○		× (by output-2)	× (by output-2)	

Panjahli			×		△	△	
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◎Do implement it; quickly

○Do implement it; when time comes

△Keep watch on the situation of production/sale. Depending on the future discussion with farmers

×No implementation (No farmers' needs/willingness, Not practicable location)

? Not yet surveyed.

8. Sarkaghat

Selection by BPMU after the seminar & after narrowing down from 10 sub-projects to 3 sub-projects

	B1-1	B2-1	C-1	D-1(1)	D-1(2)	E-1
Kanger Kothi	✓	✓		✓		
Thana Mohin	✓	✓		✓		
Lahra		✓		✓		

After the seminar BPMU selected 10 sub-projects. JICA requested to narrow down the sites in consideration of the BPMU's manpower, etc. BPMU finally selected above 3 sub-projects and 3 kinds of the support.

JICA TCP (local staff) made site survey on 18 October.

Kanger Kothi

B1-1 Not practicable due limited traffic on local road; far (1.5 -2 km) from main road.

B2-1 5 - 7 households grow vegetables among 42 households, and production is limited: largest farmer use 1.5 knal (1 farmer) and others are 0.5 - 1 knal. Only one farmer who use 1.5 knal sell his surplus produce at Sarkaghat town (10-15 km to Sarkaghat).

D-1 (1) One farmer who use 1.5 knal grow a little-early cauliflower in this time.

Others Ladies are more interested in SHG activity.

Lahra

B1-1 Not practicable. Far from the main road.

B2-1 10 - 11 households grow vegetables among 64 households; 2 - 3 farmers have been grown vegetables for years; others grow mainly ginger/colocasia.

There is small market place at the main road and there are some vegetable shops. Retailers/traders (sometime consumers also) come to buy vegetables to the site.

D-1 (1) 2 - 3 farmers have been grown vegetables for years and one farmer grow early cauliflower in this time.

Thana Mohin

B1-1 Location is OK; 100-200m to main road (Jaff-Sarkaghat national road), but vegetable production is limited and production skill is low (beginners). 10 households grow vegetables among 55 households; 2 farmers use 2 knal for vegetables production, others are kitchen garden. No commercial farmers.

B2-1 There is market area and vegetable shops on the national road.

D-1 (1) Vegetable production is still for home-use, and skill is low.

Others Ladies are more interested in SHG activity; made vermicelli from wheat, badi from colocasia stem, etc. (costs of production :7500Rp, sales turnover 28000Rp).

Determination by TCP after the survey

		B1-1	B2-1	C-1	D-1(1)	D-1(2)	E-1
Kanger Kothi		×	△		△		
Thana Mohin		△	△		△		
Lahra			△		○		

◎Do implement it; quickly

○Do implement it; when time comes

△Keep watch on the situation of production/sale. Depending on the future discussion with farmers

×No implementation (No farmers' needs/willingness, Not practicable location)

//end

Summary of the results of the site survey conducted in March - April 2018

2 types of site survey to select activities/sub-projects were conducted in March 2018; 1) First-time survey of candidate sub-projects and 2) Follow-up survey to check the state of vegetable production.

1) First-time survey of candidate sub-projects

First-time of site surveys by JICA TCP and BPMU were conducted in Hamirpur, Sarkaghat and Una.

Remaining 2 sub-projects (Jarlakouri and Krishna Nagar) were surveyed in Una.

In case of Sarkaghat, BPMU requested to TCP to add the sub-project Damella where farmers has been growing vegetable for commercial purpose by using their irrigation facility and construction of irrigation facility by HPCDP is about to complete.

In case of Hamirpur, no activities of Output-3 have yet taken off in the selected sub-projects due to limited vegetable production and farmers have no serious desire to increase production. In this situation TCP requested to BPMU Hamirpur to re-select the candidate sites, and 4 sub-projects (namely Baleta Khurd, Manjra, Manjru and Samlog) which they say the top 4 sub-projects in terms of vegetable production were nominated for new candidate sites.

Date of Site survey and meeting with farmers

BPMU	Selected sub-projects by BPMU	Date of Survey
Una	Jarлакouri	22 March
	Krishna Nagar	22 March
Sarkaghat	Damella	23 March
Hamirpur	Baleta Khurd	26 March
	Manjra	26 March
	Manjru	27 March
	Samlog	To be conducted in April/May

Note : Site survey of Rani Kuhl - Baijnath has not yet conducted, and it will be made in May.

2) Follow-up survey to check the state of vegetable production

Follow-up surveys by JICA TCP and BPMU were conducted in Sarkaghat and Hamirpur.

Date of Site survey and meeting with farmers

BPMU	Selected sub-projects by BPMU	Date of Survey
Sarkaghat	Kanger Kothi	23 March
	Thana Mohin	24 March
	Lahra	24 March
	Ukhla *	24 March
Hamirpur	Deot-1	06 April
	Panjahli	06 April

* Ukhla is not the BPMU selected sub-project. JICA TCP visited Ukhla in April 2017, therefore the survey of this time is considered as a follow-up survey.

Results of the Site Survey

1. Hamirpur

(1) Current state of vegetable production (spring-summer crops) in the selected sub-projects

Chelleli (Output-2 pilot project site)

- Nos. of farmers supported by Output-2: Current (active) participants is 4 (initial participants was 6)
- Kinds of vegetable now in the fields: Bitter gourd, Cucumber, Tomato, Chili, Capsicum, Okura, Pumpkin, Squash
- Total area of above vegetables: max. 15 kanal (0.6 ha)
- Kinds of vegetable now in Poly-houses owned by 2 participants: Tomato, Okura
- Method of selling: Mainly sell at home to villagers or sell to retailers in nearby town; Occasionally farmers hire a small car together to carry produce to retailers.

Deot-1

- CCA is 17ha, and target area for vegetable cultivation is 2ha.
- 5 farmers produce vegetable for commercial purpose.
- Currently okra (0.25ha), garlic (0.5ha) and onion (in small area) are grown.
- Production plan for coming season (start May-June) is; ginger 1ha, turmeric 0.5ha, colocasia + okra 0.7ha (total 2.2ha). * cropping time of those roots crops is same as rain-fed cultivation.
- Tomato, capsicum, gourd, pumpkin, etc. are still difficult to grow due to monkey.
- JICA TCP proposed "Trial of okra fencing", however farmers showed no interest.

Panjahli

- One elder farmer started a vegetable production by contract farming (a kind of farmland lease; 50%-50% method) in the village but outside of CCA. He got 50QT of cauliflower in this season.
- Currently, no other farmers practice the contract farming in the village.
- Vegetable producing now: cauliflower and peas (just harvest completed), okra, cucumber, bottle gourd, bitter gourd, etc. Tomato is in poly-house.
- Two (2) farmers grow coriander for selling purpose; one in 0.5 kanal and another in 1.5 kanal.
- JICA TCP proposed "Trial of coriander cultivation under rain protection", and those 2 farmers agreed to try it in small-scale; to compare it with current method.

(2) Current state of vegetable production in the new candidate sub-projects

Baleta Khurd

CCA 5.41 ha

* Construction was completed in Feb. 2018, and test is on-going. Time of handover is June/July.

Beneficiary household 35 household

There are 9 commercial farmers who own tube-well irrigation facility (there are 15 tube-wells); total irrigable area is ???; irrigable area (vegetable producing area) of the largest farmer is about 2 ha. Variety

of vegetable are produced and shipped to APMC Hamirpur; by collective way (share truck fee); by those 9 farmers. No poly-house cultivation is practiced.

- Target area for vegetable production under CCA: 1.5 ha (1.0 ha vegetable + 0.5 ha ginger)
- Number of household who will newly go for commercial production: ????
- Method of selling produce from CCA: APMC market yards; by collective way; advanced 9 farmers shall take a lead in marketing.

* BPMU has already provided seeds of eggplant, bitter gourd.

* No poly-house cultivation is practiced → Arrange a visit to Amit's farm to show them the advantages of poly-house in June-July.

Manjra

CCA 26 ha

* Construction was started in 2013. Test is to start in April and after harvesting wheat.

Farmers are frustrated & very angry with the slow & long-period of construction work.

However, desire for commercial production of vegetables is apparent.

Beneficiary household 35 household

There is 1 commercial farmer who own well irrigation facility, 15 kanal (0.6 ha) vegetable field and poly-houses (about 1000m²; by DOA subsidy; roof sheet is broken now); having 12 years experiences in vegetable farming.

- Target area for vegetable production under CCA: No plan/idea yet.
- Number of household who will newly go for commercial production: ????
- Method of selling produce from CCA: ????

Manjru

CCA 15.69 ha

Beneficiary household 33 household

* Pumps to be installed in April; Construction is scheduled to complete in April 2018, and test is in May-June; after harvesting wheat.

There is no commercial grower now. 5 farmers have well (2 well + 3 tube well) but grow vegetables for home use. 3 farmers grow Okura in 3 kanal/farmer.

Out of 5 farmers, 1 own 1000m² poly-house (now roof-sheet is broken) and has experience in flower production (3 years) and in color capsicum production (2 years; @2.5 QT/each shipment; to Delhi). He also has contacts to traders in some APMC market yards.

- Idea of vegetable production under CCA after the completion; after rainy season in 2018:
8 to 10 farmers x 2 to 8 kanal/farmer ==> assume 40- 50 kanal (2 ha) in total
BPMU suggestion: Colocasia, ginger, foot yam, turmeric

*Colocasia, ginger => assured demand in the village.

* BPMU hope that Swan project buys turmeric

- Number of household who will newly go for commercial production: ????

- Method of selling produce from CCA: 1) Sell to villagers, 2) Sell to retailers in near towns, 3) APMC Hamirpur by group * There are 4-5 jeeps (transporters) in the village.

Determination by TCP after the survey (As of 06 April 2018)

		B1-1	B2-1	C-1	D-1(1)	D-1(2)	E-1
Deot-1			×		×	×	
Chelleli	★		△		(by output-2)	(by output-2)	
Panjahli			△		△	⊙	
Baleta Khurd		×	×	△	×	○ (Use of poly-house)	
Manjra		×	△	△	△	△	
Manjru		×	△	△	△	△	
Samlog		?	?	?	?	?	

⊙ Do implement it; quickly

○ Do implement it; when time comes

△ Keep watch on the situation of production/sale. Depending on the future discussion with farmers

× No implementation (No farmers' needs/willingness, Not practicable location)

? Not yet surveyed.

Idea of Intervention (tentative)

Panjahli	Trial of Coriander production in July-Aug under high-tunnel (Rain protection)	
Baleta Khurd Manjra Manjru	<i>To explore after the completion of irrigation; in July-Aug</i>	
Samlog	<i>Site survey has not yet conducted.</i>	

2. Una

(1) Current state of vegetable production (spring-summer crops) in the BPMU selected sub-projects

Jaralakouri

CCA 16.8 ha; Current area for vegetable production is about 4 ha in total

Household 35 households; 15 households produce vegetables for sale purpose

* 4-5 households had tube well before the HPCDP. There were no commercial vegetable growers before the HPCDP.

Major vegetables grown now, and marketing plan

Potato 45 kanal To ship to AMPC market yard in Una or Hoshiarpur; Individually

Garlic 40 kanal To ship to AMPC market yard in Una or Hoshiarpur; Individually

Onion (red) 15 kanal To sell to local consumers. High demands. "Nasik Red" variety

Okura 5-7 kanal To sell to local consumers

* There is one trader come to buy "small bulb of garlic".

* Profit per kanal is probably highest for garlic.

* Crop after onion/garlic is maize.

Risk of damage by Nilgai is a main factor to prevent farmers from starting fruit/leaf vegetable production. Also, small amount is difficult to sell at APMC.

B2-1, C-1

Potato and garlic are shipped to AMPC market yard in Una or Hoshiarpur; individually. Onion and okura are easy to sell to local consumers. Farmers' needs to change current methods are not observed now.

D-1(1)

Local demand of fruit/leaf vegetable is prospective but farmers are afraid the damage by Nilgai

Krishna Nagar

CCA 8.95 ha

Household 26 households; 5 households produce vegetables

Vegetables sold in last season

Colocasia (20 QT / 1 farmer) Sold to local consumers. Highest demands

Ginger (3-4 QT / 1 farmer) Sold to local consumers

Onion (3-5 QT / 5 farmers) Sold to local consumers

Potato (50 QT / 5 farmers) Young potato; plant in Aug. and harvest in Oct (before Diwali); traders come to buy it. Good price 22 Rs/kg.

* Risk of damage by Monkey and Nilgai is a main factor to prevent farmers from starting fruit/leaf vegetable production.

* No garlic production for sale purpose (home use only)

* Young potato must be able to grow in other sub-projects nearby; Nagar Chowki, Lander Lamdym, Suri, Berrian; where plowing is possible in July (in rainy season)

* Cropping pattern: Young potato / Aug-Oct → Wheat / Nov-April → Green manure / May-July

Determination by JICA TCP after the survey (As of 31 March 2018)

		B1-1	B2-1	C-1	D-1(1)	D-1(2)	E-1
Badhera Lower	★	⊙		×	(by output-2)		
Jarлакouri			×	×	×		
Nagar Chowki		×		△ (utilize collection center)	△		
Krishna Nagar		×			△		

⊙ Do implement it; quickly

○ Do implement it; when time comes

△ Keep watch on the situation of production/sale. Depending on the future discussion with farmers

× No implementation (No farmers' needs/willingness, Not practicable location)

? Not yet surveyed, Not yet discussed with farmer/BPMU

Idea of Intervention / Promotion (As of 10 April)

Nagar Chowki	Enhance (extend) the good price produce “Young potato for Diwali demand” to other sub-projects → Utilization of collection center ?? & Branding of “Young” potato ??
Krishna Nagar	
other sub-projects nearby Krishna Nagar	

3. Sarkaghat

(1) Current state of vegetable production (spring-summer crops) in the selected sub-projects

Kanger Kothi

CCA	9.55 ha	
Household	29 households	
Household who grow vegetables; regular seller of vegetable		8

Construction of irrigation facility was completed in Sep. 2017.

Farmers just started vegetable cultivation, and scale of production is still very small; for example; 1 farmer grew following vegetables in 2 kanal + in poly-house; and amount of sales was 4,000 Rs (200 kg x 20-30 Rs/kg); sold to villagers; retailers in Sarkaghat town (8km to Sarkaghat town)
okura 300m², tomato 50 plants, ,onion, garlic, colocasia, cucumber in poly-house

- Target area for vegetable production under CCA: 2 ha
- Number of household who will newly go for commercial production: 8-10 households
- Method of selling produce from CCA: Sell to villagers; retailers in Sarkaghat town

Thana Mohin

CCA	7.49 ha	
Household	41 households	
Household who grow vegetables; regular seller of vegetable		??

- Target area for vegetable production under CCA: No target/no idea
- Number of household who will grow vegetables for selling purpose: 3-4 households
- Method of selling produce :

Current land use is almost 100% wheat; vegetable field is very limited (about 1 kanal; garlic, peas, okura)
Crop after wheat will be ginger, turmeric, colocasia (planned area is ???)

Last year 3-4 farmers grew vegetables for home consumption, and 3-4 farmers may grow vegetables for sales in this year.

Farming by retired persons. No strong intention/desire for commercial vegetable production is observed.

Lahra

CCA	ha	
Household	households	
Household who grow vegetables; regular seller of vegetable		??

Construction of irrigation facility was completed in Jan. 2018.

Only one farmer grew vegetable for selling in the village before HPCDP ????

Vegetables produced : Cauliflower 5-6 kanal by 3-4 farmers and small area for broccoli, radish, tomato

Vegetables to grow from now : Cucumber, bottle gourd, bitter gourd,

- Target area for vegetable production under CCA: ??
- Number of household who will grow vegetables for selling purpose: ??
- Method of selling produce : Sell to villagers; retailers in Trifalghat town (1km from village)

Ukhla *

Visited in spare time after Lahra.

Current area for vegetable cultivation was not checked in detail. However, it was apparent that cultivation area and kinds of vegetables grown were widely increased compared to the state in April in 2017.

Last year, farmers said that “We were still beginner of vegetable farming. Grow colocasia, turmeric, etc. because those crops were storable and because of monkey risk”. However, farmers explicitly say no monkey problem.

Farmers showed clear intent to increase vegetable production. Farmers showed their interest in early cauliflower cultivation and requested on-site guidance for plug-tray seedling production, etc.

(2) Current state of vegetable production in the new candidate sub-projects

Damella

CCA 8 ha

Household 53 households (increased from 34 households)

Household who grow vegetables 6

Construction is scheduled to complete in 1-2 months.

There are 6 commercial vegetable growers who own pump irrigation facility which covers about 1 ha, and they grow vegetables for 5 years. Vegetables now in the field: Peas, bottle gourd, cucumber, tomato.

Cropping pattern:

Bottle gourd/cucumber/tomato (March/April - July/August) → Cole crops/peas x 2 times

Method of selling:

Tomato (same harvest time as Solan) was sold to traders at village (traders from outside, in the village)

Winter crops such as Cauliflower were sold to retailers; 10-15 retailers on the road to Sarkaghat, 15-20 retailers on the road to Jaff (about 25km)

- Target area for vegetable production under CCA: 3-4 ha (about 50% of CCA)
- Number of household who will newly go for commercial production: 15-20 households
- Method of selling produce from CCA: No clear idea about how to sell large volume was heard from the meeting participant (5 vegetable growers; all male).
- It is observed that method of seedling production (capsicum) should be improved.

Determination by TCP after the survey (As of 31 March, 2018)

	B1-1	B2-1	C-1	D-1(1)	D-1(2)	E-1
Kanger Kothi	×	△		△		
Thana Mohin	×	×		△		
Lahra		×		△	△	
Damella			○		◎ (to be handled by output-2)	
Ukhal			○		◎	

◎Do implement it; quickly

○Do implement it; when time comes

△Keep watch on the situation of production/sale. Depending on the future discussion with farmers

×No implementation (No farmers' needs/willingness, Not practicable location)

Idea of Intervention (As of 10 April)

Damella	Output-2 shall make a field visit in April to observe current state, to discuss with farmers about technical support in cultivation by TCP/BPMU. Most probable subjects are; - Method of seedling production; specially fruit vegetable - Vegetable production in poly-house	
Ukhla	Trial of Early cultivation of cole crops by use of mulching sheet (Same activity will be conducted at Fogog and Chhiber Ballu in Bilaspur)	

// end

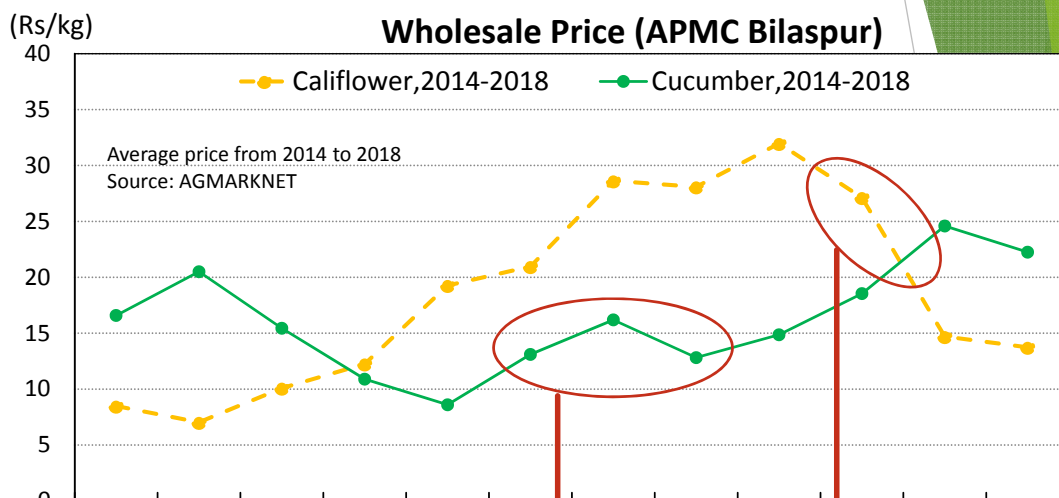
Promotion of vegetable production to sell at time of higher price (Time-shifted cultivation)

Cucumber + Early cauliflower

Material for explanation for new farmers in the field survey
November 2019

Time-shifted cultivation:
Harvest cucumber in August & cauliflower in October

◆ Cropping schedule - correspond to price movements



Cropping Schedule	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Sowing		Cucumber	■				■	Cauliflower				
Transplanting				■				■				
Harvesting						■				■		

◆ **Expected profit per 1 Kanal - Cucumber**

Sales volume	2000 Kg/ kanal (Maybe 2400 Kg, if you are very good at farming)
Sales revenue	Price : Rs 15 – 25 /kg (sell to retailer/consumer) June -- 700 kg x Rs 17 = 11900 July --- 1300 kg x Rs 22 = 28600 Total Rs 40500/ kanal
Production costs	5000 Rs/ kanal <i>*In case of no support of materials by BPMU; i.e. if farmer pay all expenditure by yourself. *In case of no hired labour.</i>
Profit	35500 Rs/ kanal

◆ **Expected profit per 1 Kanal – Early cauliflower**

If harvest all before late October

Sales volume	Early October -- 900 plants x 0.5kg/piece = 450 Kg Middle of October -- 900 plants x 0.8kg/piece = 720 Kg Total 1170 Kg/ kanal (if you are very good at farming)
Sales revenue	Early October -- 450 kg x Rs 40 = 18000 Middle of October -- 720 kg x Rs 25 = 18000 Total 36000 Rs/ kanal Price (sell to retailer/consumer) : Rs. 40/kg in early Oct. , Rs. 25/kg in middle of Oct. Rs. 20-15/kg in late Oct.
Production costs	7900 Rs/ kanal <i>*In case of no support of materials by BPMU; i.e. if farmer pay all expenditure by yourself. *In case of no hired labour.</i>
Profit	28100 Rs/ kanal

Time-shifted cultivation:
Harvest cucumber in August & cauliflower in October

Attachment-2.4.8

1. Bed making by tiller + ridger



5

Time-shifted cultivation:
Harvest cucumber in August & cauliflower in October

Attachment-2.4.8

2. Bed making – Cover by mulching sheet

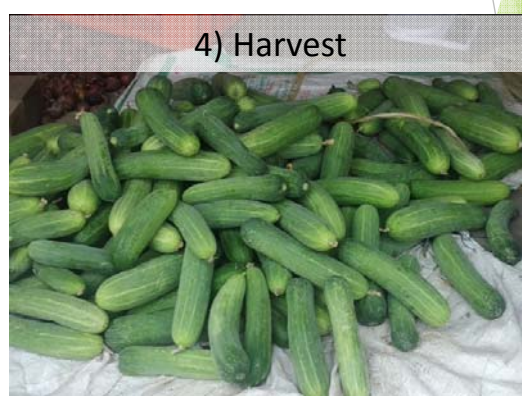


6

3. Prepare staking for cucumber



4. Cultivation of **Cucumber**



5. Cultivation of **Cauliflower**



***You are the one who decide;
whether to catch at this opportunity or not.***

Before you say “Yes, I’ll do it”, understand that;

- ✓ *You have to carry out farm works very much on time.*
- ✓ *You have to make a proper staking.*
- ✓ *Of course, you have to care crops intensively.*

Do you commit to these requirements?

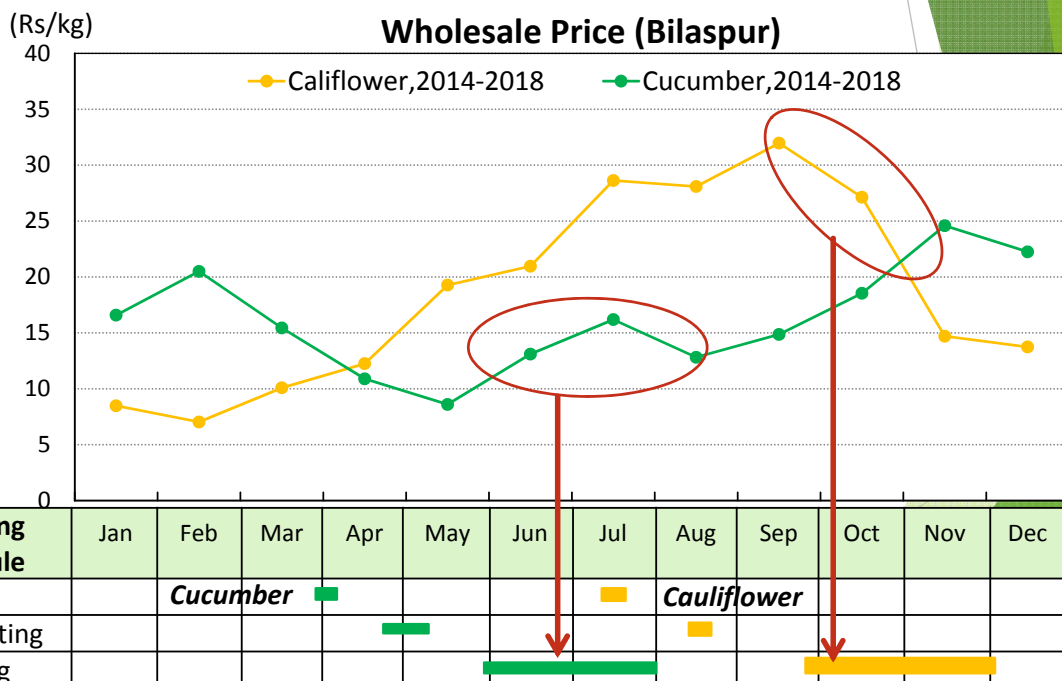
- 1 week delay in sowing cucumber → Maybe no cauliflower harvest in early-Oct.
- Poor cucumber staking → You must harvest less 30%
- 1 week delay in sowing cauliflower → You will lose Rs10/kg
- Poor care-giving to crops → Terminate our support

उच्च कीमतों पर बेचने के लिए सब्जी उत्पादन को बढ़ावा देना (समय में बदलाव करके खेती करना) -खीरा + फूलगोभी -

क्षेत्र सर्वेक्षण में नए किसानों के लिए विवरण के लिए सामग्री
नवंबर 2019

समय में बदलाव करके खेती करना :
अगस्त में खीरे की कटाई और अक्टूबर में फूलगोभी की कटाई

◆ फसल अनुसूची - मूल्य में उतार-चढ़ाव के साथ



समय में बदलाव करके खेती करना :
अगस्त में खीरे की कटाई और अक्टूबर में फूलगोभी की कटाई

Attachment-2.4.8

◆ खीरे की फसल का अपेक्षित परिणाम प्रति कनाल

बिक्री की मात्रा	2000 किलोग्राम / कनाल (शायद 2400 किलोग्राम, अगर आप खेती में बहुत अच्छे हैं)
कुल बिक्री	मूल्य: 15 - 25 रुपये / किग्रा (खुदरा / उपभोक्ता को बेचकर) जून - 700 किलो x 17 रु = 11900 जुलाई - 1300 किलो x 22 रु = 28600 कुल 40500 रुपये / कनाल
उत्पादन लागत	5000 रुपये / कनाल * BPMU द्वारा सामग्री का समर्थन नहीं करने के मामले में; अर्थात् किसान खुद के द्वारा सभी व्यय का भुगतान करता है, तो। * बिना किराए के मजदूर के मामले में।
लाभ	35500 रुपये / कनाल

3

समय में बदलाव करके खेती करना :
अगस्त में खीरे की कटाई और अक्टूबर में फूलगोभी की कटाई

Attachment-2.4.8

◆ फूलगोभी की फसल का अपेक्षित परिणाम प्रति कनाल

यदि अक्टूबर के अंत से पहले पूरी फसल की कटाई हो जाये तो

बिक्री की मात्रा	अक्टूबर के प्रारंभ में - 900 पौधे x 0.5 किग्रा प्रति फूल = 450 किलोग्राम अक्टूबर के मध्य - 900 पौधे x 0.8 किग्रा प्रति फूल = 720 किलोग्राम कुल 1170 किलोग्राम / कनाल (यदि आप खेती में बहुत अच्छे हैं)
कुल बिक्री	अक्टूबर की शुरुआत - 450 किलो x 40 रु = 18000 अक्टूबर के मध्य - 720 किलो x 25 रु = 18000 कुल 36000 रुपये / कनाल मूल्य (खुदरा विक्रेता / उपभोक्ता को बेचकर): शुरुआती अक्टूबर में 40 रुपये/ कि.ग्रा। अक्टूबर के मध्य में 25 रुपये/ कि.ग्रा। अक्टूबर के अंत में 20-15 रुपये/ कि.ग्रा।
उत्पादन लागत	7900 रुपये / कनाल * BPMU द्वारा सामग्री का समर्थन नहीं करने के मामले में; अर्थात् किसान खुद के द्वारा सभी व्यय का भुगतान करता है, तो। * बिना किराए के मजदूर के मामले में।
लाभ	28100 रुपये / कनाल

4

समय में बदलाव करके खेती करना :
अगस्त में खीरे की कटाई और अक्टूबर में फूलगोभी की कटाई

Attachment-2.4.8

1. बेड तैयार करना



5

समय में बदलाव करके खेती करना :
अगस्त में खीरे की कटाई और अक्टूबर में फूलगोभी की कटाई

Attachment-2.4.8

2. बेड तैयार करना - मल्लिंग शीट से ढकना



6

समय में बदलाव करके खेती करना :
अगस्त में खीरे की कटाई और अक्टूबर में फूलगोभी की कटाई

Attachment-2.4.8

3. खीरे के लिए स्टेकिंग तैयार करें



7

समय में बदलाव करके खेती करना :
अगस्त में खीरे की कटाई और अक्टूबर में फूलगोभी की कटाई

Attachment-2.4.8

4. खीरे की खेती



8

समय में बदलाव करके खेती करना :
अगस्त में खीरे की कटाई और अक्टूबर में फूलगोभी की कटाई

Attachment-2.4.8

5. फूलगोभी की खेती



1) बुवाई के लिए मिश्रण तैयार करना



2) प्लग ट्रे में बुवाई



3) रोपाई



4) कटाई

9

आप निर्णय ले सकते हैं कि इस अवसर को पकड़ना है या नहीं।

Attachment-2.4.8

इससे पहले कि आप कहते हैं कि "हाँ, मैं यह करूँगा", तो पहले यह समझ लें:

- ✓ आपको खेत के कामों को समय पर पूरा करना होगा।
- ✓ आपको एक उचित स्टैकिंग करना होगा।
- ✓ आपको फसलों की गहनता से देखभाल करनी होगी।

क्या आप इन आवश्यकताओं के लिए प्रतिबद्ध हैं?

खीरे की बुवाई में 1 सप्ताह की देरी → हो सकता है कि शुरुआती अक्टूबर में कोई फूलगोभी की फसल तैयार न हो
खीरे की उचित स्टैकिंग नहीं → आपको 30% कम फसल प्राप्त होगी
फूलगोभी की बुवाई में 1 सप्ताह की देरी → आपको 10 रुपये प्रति किलो का घाटा होगा
फसलों की खराब देखभाल → हमारे सहयोग की समाप्ती

समाप्त

10

Detail work schedule of each activity

Work Schedule of the Activities under B1

June 2019, PR4

Activities	2017												2018												2019											
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
	Stage 1																																			
B1 Promotion of direct sales to local consumers																																				
B1-1 Support the installation of simplified roofed stall for retailing																																				
a) Mobile cart type stall																																				
0 Clarifying the users/groups																																				
3 sub-projects for 2nd batch																																				
5 sub-projects for 1st batch																																				
1 Designing & making proto-type of mobile cart																																				
2 Procurement/manufacturing of equipment																																				
3 Prepare handover documents - terms of users' responsibility																																				
4 Delivery of equipment, Give guidance on usage & record keeping																																				
1st batch:																																				
Bajinath - Gabli Kuhal																																				
Nurpur - Minjh Gram																																				
Nurpur - Johar Daryia																																				
Dehra - Pagdandi Kuhal																																				
2nd batch:																																				
Dehra - Gela Kuhal																																				
Una - Badhera Lower																																				
Bilaspur - Nalwar Kotlu																																				
Upon request:																																				
Nurpur - Fall Kohal																																				
Dehra - Dhugiari																																				
5-1 Periodic monitoring : 1st & 2nd batch																																				
5-2 Periodic monitoring : Upon request:																																				
6 Users' evaluation of mobile cart																																				
7 Evaluation of effect of having a retail outlet																																				
8 Selection of sub-projects (3rd batch)																																				
9 Procurement/manufacturing of equipment (3rd batch)																																				
10 Delivery of equipment, Give guidance on usage & record keeping (3rd batch)																																				
b) Permanent type (Renovation of existing hut)																																				
Bilaspur - Nalwar Kotlu																																				
1 Determination of details of renovation/schedule/work demarcation																																				
2 Procurement of materials/equipment, Delivery of equipment																																				
3 Renovation of hut by farmers																																				
4 Conduct monitoring																																				
c) Permanent type (Utilization of existing shop)																																				
Bilaspur - Balhseena																																				
1 Confirm the production plan and idea for selling																																				
2 Determine the equipment to provide																																				
3 Procurement & delivery of equipment, Give guidance on usage																																				
4 Conduct monitoring																																				
d) Realization of retail outlets at/around the Indian Institutes of Technology Mandi at Kamand (New campus)																																				
Mandi - Biar Khad																																				
Mandi - Batheri																																				
1 Kick-off discussion by BPMU Mandi and JICA TCP, and decide next step to take																																				
2 Look for/identify a contact point/person of IIT Mandi																																				
3 Arranging a meeting with IIT Mandi by BPM																																				
4 Prepare a plan based on the obtained information																																				
B1-2 Support the market-oriented production target at particular consumer																																				
a) Planned production of pak-choi in poly-house to sell to Tibetan monastery																																				
Nurpur - Chatredi																																				
0 Finalize the Productoin/shipment plan & Execution Plan																																				
1 Confirm demand/buying intention of monastery again																																				
2 Procurement & delivery of items for seedling production																																				
3 1st sowing & bed preparation																																				
4 Procurement & delivery of items for harvesting/shipping work																																				
5 Assistance to canvass for alternative buyer, if necessary																																				
6 Assistance to prepare a production plan for 2020																																				
7 On-site technical guidance																																				
8 Periodic monitoring by BPMU																																				
Expected harvest time																																				

Work Schedule of the Activities under B2

June 2019, PR4

Activities	2017												2018												2019											
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
	Stage 1																																			
B2 Promotion of direct sales to local retailers																																				
B2-1 Support the formation/enhancement of business relation with retailers																																				
B2-2 Support the installation of collection point																																				
Bilaspur - Chhiber Ballu (Build a simple facility)																																				
0 Confirm the availability/location of land for facility building																																				
1-1 Confirm the production plan/result: kinds, q'ty & harvest time																																				
1-2 Discuss & confirm the postharvest works to do at facility																																				
2 Make a design of facility																																				
3 Discuss about work demarcation (beneficiary's works)																																				
4 Preparation for tender & Selection of Contractor	Done by BPMU																																			
5 Construction work & supervision																																				
6 Procurement & delivery of equipment, Give guidance on usage																																				
7 On-site instruction on postharvest works/commodification, if necessary																																				
8 Conduct monitoring																																				
B2-3 Support the market-oriented production target at particular retailer																																				
a) Start-up of a mini-tomato production to sell to Green Leaf																																				
Nurpur - Minji Gram																																				
0 Finalize the Productoin plan & Execution Plan																																				
1 Provide seedlings for start-up																																				
2 Transplanting	21-24 June																																			
3 On-site technical guidance																																				
4 Periodic monitoring by BPMU																																				
5 Assistance to prepare a production plan for 2020																																				
Expected harvest time																																				

Work Schedule of the Activities under C

late Nov. 2018, PR3 &4

Activities	2017												2018												2019											
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
	Stage 1																																			
C Promotion of collective shipment to APMC market yards																																				
C-1 Support the installation of collection point																																				
Bajnath - Thathi																																				
0 Check the availability/location of land for facility building																																				
1 Confirm the production plan/result: kinds, q'ty & harvest time																																				
2 Discuss & confirm the postharvest works to do at facility																																				
3 Make a design of facility, Discuss about contribution by farmers																																				
4 Explore how finance a facility installation, and prepare a detail implemetation plan	Suspended																																			
C-2 Support for linkage building with wholesalers (C/A) who deal with exotic vegetables in Chandigarh																																				
Mandi - Chho Nalla																																				
Mandi - Kandi Nalah																																				
0 Kick-off discussion by BPMU Mandi and JICA TCP																																				
0 Reconfirm the farmers' willingness																																				
1 Prepare for business meeting with C/A in AMPC Chandigarh																																				
2 Visit to Chandigarh																																				
3 Prepare a production/shipment plan of exotic vegetables																																				
4 Collect information/data of broccoli production & sales																																				

Work Schedule of the Activities under F

June 2019, PR4

Activities	2017												2018												2019												
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	
	Stage 1																																				
F Market survey to gather information of distributors and their requirements																																					
F-1-1 Market survey in Delhi under the Support for business building of commercial farmer who seek a new outlet - - - (Commercial farmer outside of sub-projects)																																					
1 Consultation for making of presentation papers and business brochure																																					
2 Consultation for determining target market (potential buyers)																																					
3 Support for arranging business meeting with potential buyers in Delhi																																					
4 Business meeting with potential buyers in Delhi																																					
5 Monitoring and determination of further supportive service																																					
F-1-2 Study on introducing exotic vegetables production in sub-projects in Nurpur																																					
0 Preparation of study plan (draft)																																					
1 Discussion by BPMU & JICA TCP to finalize the plan																																					
2 STAGE 1: STUDY - Work 1 : Collect information																																					
3 STAGE 1: STUDY - Work 2 : Review the collected information and clarify demand for exotic vegetables																																					
4 STAGE 2: PLANNING																																					

Execution Plan of Activity**Final***As of 04 June 2019; after visiting Tibetan monasteries*

- 1) B1: Promotion of direct sales to local consumers
- ii) B1-2: Support the market-oriented production target a particular consumer

a) Support the Planned production of Pak-choi in poly-houses to sell to nearby Tibetan monastery

1. Sub-project : Chatredi, BPMU Nurpur

2. Beneficiary farmers & poly-house size

- 1) Sansar Chand 1 unit, 105m², 7m x 15m
- 2) Tilak Raj 1 unit, 105m², 7m x 15m
- 3) Arvind Thapa 1 unit, 288m², 12m x 24m

3. Background and Aims

“Study on introducing exotic vegetables production in sub-projects in Nurpur [F-1-2]” was started in Nov. 2018 by BPMU Nurpur and JICA TCP experts. It explored a possibility to sell exotic vegetables to GREEN LEAF, also it tried to identify traders who market vegetables to McLeod Ganj / Dharmasala. In course of field survey, current supply system of exotic vegetables to restaurants in McLeod Ganj and Tibetan monasteries were clarified. In addition, as a part of the survey, state of vegetable production and cultivation skill level were checked at several sub-projects.

Based on the findings in the study, it was considered worth trying to promote Pak-choi production in sub-project Chatredi to sell during March to October to Tibetan monastery.

To generate a mind of market-oriented farming in the farmers, production plan was prepared in participatory manner. First, JICA TCP prepared a rough plan based on farmers’ ideas obtained in the meeting held on 14 May 2019 and then it was explained, discussed and finalized by Chatredi farmers, BPMU Nurpur and JICA TCP on 27 May 2019.

This activity is to support the implementation of planned production of pak-choi in three polyhouses to sell to Tibetan monastery. It is categorized into B1: Promotion of direct sales to local consumers.

4. Outline of production plan (as of 27 May 2019) * Detail plan is annexed at the end

Mode of production:	Continuous cultivation in 7 plots by rotation; in poly-house
Field size:	Total about 120 m ² ; include walking space
Plot (bed) size	About 10m ² , 0.8m x 11.5-13.5m x 7 beds
Cultivation period:	middle of June 2019 - end of Oct. 2019
Shipping period:	middle of July - end of Oct. 2019 (15 times)
Sowing	15 times; start at middle of June, @330 seeds/time
Target harvest volume:	@50kg/week
Watering:	Drip irrigation 30cm interval

5. On-site technical guidance on cultivation to be provided by BPMU& JICA TCP

- 1) Seedling production by plug-tray
- 2) Bed preparation; include application of FYM/fertilizer
- 3) Watering
- 4) Temperature control in poly-house
- 5) Disease and insect control
- 6) Preventive measure against clubroot fungus (*Plasmodiophora brassicae*), if necessary
- 7) Demonstration of how to make rice-husk charcoal; to be conducted in Oct. or Nov. 2019

6. Other assistance to be provided by BPMU & JICA TCP

- 1) Assistance to confirm the demand/ buying intention of Tibetan monasteries before starting production.
* *Meeting with Tibetan monasteries is scheduled on 04 June, 2019.*
- 2) Assistance to canvass for alternative buyer, if necessary.
- 3) Facilitate a discussion by farmers about sales / price variation & allocation of sales
- 4) Assistance to prepare a pak-choi production plan for year 2020; to be conducted in Nov. 2019

7. Necessary items and cost sharing

Items	Q'ty	By Farmers	By BPMU	By TCP
Seeds	@330 seeds/time x 15 = 4950, 2 - 3packs (1 pack by JICA TCP)	✓		✓
Plug tray 98 holes	20 trays			✓
Cocopeat **	@ 3 liters /time x 15 = 45 liter, 1 block			✓
Vermin compost **	@ 2 liters /time x 15 = 30 liters	✓		
FYM	@ (2kg/m ² x 10m ² = 20kg/bed) x 15 = 300 kg	✓		
Chemical fertilizer (10-10-10)	@ (100g/m ² x 10m ² = 1kg/bed) x 15 = 15 kg	✓		
Water can, Farm tools, Knife, etc.		✓		
Material for Soil pH adjustment *	about 10kg		✓	
Plastic case	10 cases			✓
Weighing scale (platform type)	1 unit			✓
Thermometer	6 units			✓
Tool to make rice-husk charcoal	1 unit			✓

* Material for Soil pH adjustment:

Lithic lime (dolomite, CaCO₃:MgCO₃) or Hydrated lime (Ca(OH)₂) shall be purchased, only if preventive measure against clubroot fungus (*Plasmodiophora brassicae*) is necessary.

** Mixture ratio: Top soil : Cocopeat: Vermin compost = 2 : 1.5 :1

8. Farm work schedule and On-site assistance schedule (as of 04 June 2019)

Date	Contents of works	On-site assistance	
		BPMU	TCP
04 June	<ul style="list-style-type: none"> ✧ Confirm the demand/ buying intention of Tibetan monasteries again before starting production. ✧ Facilitate a discussion by farmers about sales / price variation & allocation of sales 	✓	✓
11 June	<ul style="list-style-type: none"> ✧ Delivery of necessary items for seedling production. ✧ 1st sowing in plug trays and preparation of beds (Plot-1, 2) 	✓	✓
21 June	<ul style="list-style-type: none"> ✧ 1st transplanting (Plot-1) ✧ Monitoring - Growth of 2nd sowing seedlings ✧ Facilitate a discussion by farmers about sales / price variation & allocation of sales 	✓	✓
28 June	<ul style="list-style-type: none"> ✧ 2nd transplanting (Plot-2) ✧ Monitoring - Growth of seedlings ✧ Delivery of equipment for harvesting/shipping work 	✓	✓
16 July	<ul style="list-style-type: none"> ✧ 1st harvesting & shipping 	✓	✓
	Periodic monitoring shall be carried out by BPMU after 19 July	✓	
Nov.	<ul style="list-style-type: none"> ✧ Assistance to prepare a pak-choi production plan for year 2020 	✓	✓
Oct./Nov.	<ul style="list-style-type: none"> ✧ Demonstration of how to make rice-husk charcoal 	✓	✓

Annex:**1. Production/shipment plan during June - Oct. 2019****2. Technical manual for continuous cultivation of pak-choi in polyhouse**

Attachments: 1. Production/shipment plan during June - Oct. 2019**PLANNED PRODUCTION OF PAK-CHOI IN POLYHOUSE
TO SELL TO NEARBY TIBETAN MONASTERY****PRODUCTION/SHIPMENT PLAN DURING JUNE - OCT. 2019****Farmers and poly-houses:**

Name	Poly house size	Irrigation facility
1. Sansar Chand	105m ² W 7m x L15m	5 beds with 2 drip tubes/bed
2. Tilak Raj	105m ² W 7m x L15m	5 beds with 2 drip tubes/bed
3. Arvind Thapa	288m ² W 12m x L24m	8 beds with 2 or 3 drip tubes/bed

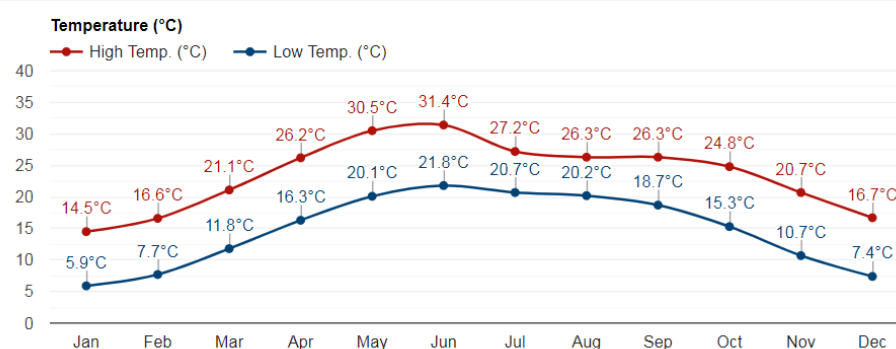
* Dip tubes are all 30cm interval

Targets:

Target buyer	Tibetan monastery nearby
Production target	Harvest 50kg/time x 1 time/week
Production period	Middle of June - End of October

Given condition:

Average temperature Dharamshala, India



Optimum temperature (soil temperature) for germination 20 - 25°C

Optimum temperature for growth 20°C

Available poly house & irrigation facility As shown above

Farmers skill level Beginner

Soil contamination by clubroot fungus Nil

Assumption:

Number of pak-choi for 50kg @150-200g/plant → 300 plants for 50kg

Growth period

Sowing in Jan - Feb 45 days (to be harvested before bolting)

Sowing in March 40 days

Sowing April - Aug. 35 days

Sowing Sep. 40 days

Production plan:

1) Seedling production by plug tray 98 holes

Sow 300 seeds x 110% per week (per time); produce 10% (30seedlings) extra to supplement dead/bad plants.

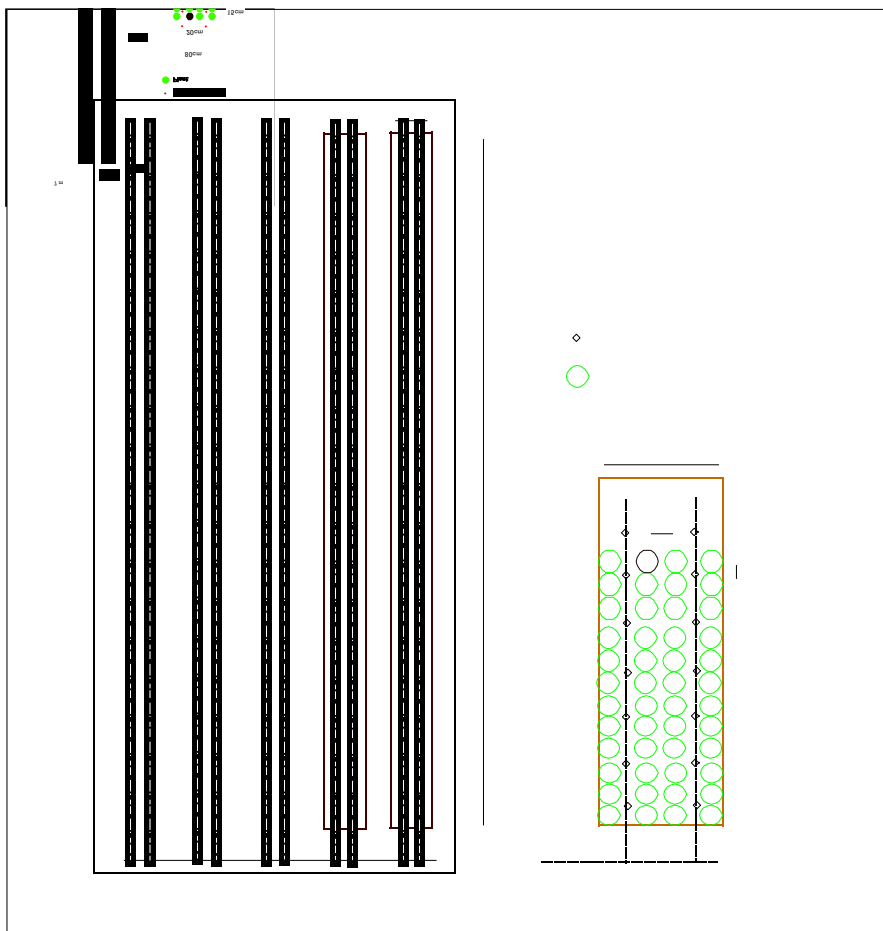
2) Rotation of plots (beds)

Prepare 7 plots (beds) in 3 playhouses to rotate the production.

Each beds is about 10m², W 80cm x L 11.5-13.5m, with 2 drip tubes

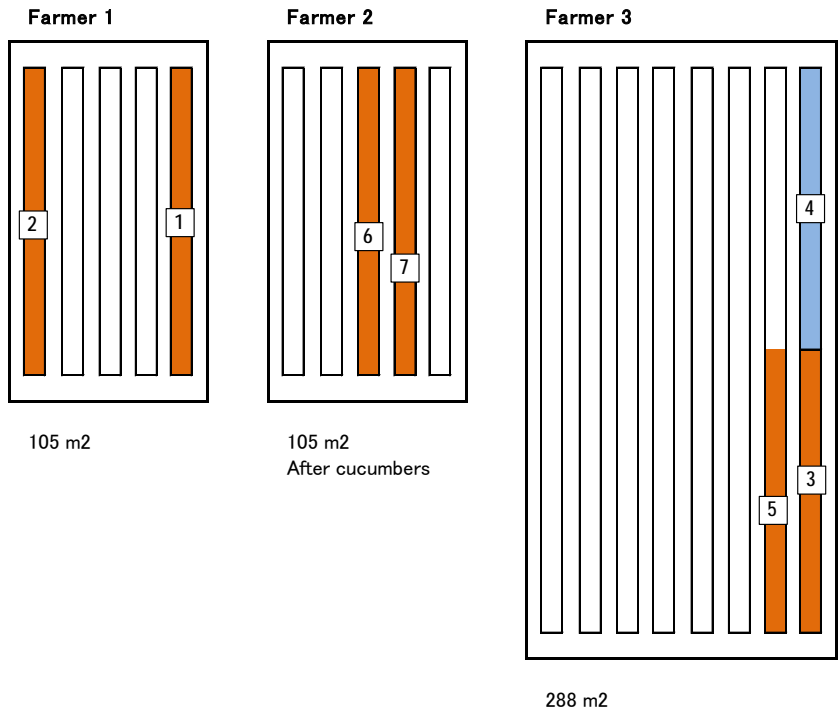
Planting space is 20cm x 15cm, 4 lines with 20cm interval x 15 cm

Number of plants is maximum 330 plants in case of W 80cm x L 12.5 m bed



3) Allotment of plots

	Name	Number of plots	Plot code (rotation order)
Farmer 1	Sansar Chand	2	Plot-1, 2
Farmer 2	Tilak Raj	2	Plot-6, 7
Farmer 3	Arvind Thapa	3	Plot-3, 4, 5



State of the plots (beds) in 27 May 2019

<p>Plot-1</p>	<p>Plot-2</p>	<p>Plot 3, 4, 5</p>
<p>Plot 6, 7</p>		

4) Production Plan

Production/shipment plan during June - Oct. 2019 (final, 04 June)

* Time of 1st sowing : 11 June

Week	Sowing & Bed preparation	Nursery period (days)	Transplanting	Total growth period (days)	Harvesting & shipping	Number of days to next harvest (days)	Number of days after harvesting to next transplanting (days)	Plot code	Farmer name
Week 1	11-Jun	10	21-Jun	35	16-Jul	7	24	Plot 1	Sansar
Week 2	18-Jun	10	28-Jun	35	23-Jul	7	24	Plot 2	Sansar
Week 3	25-Jun	10	5-Jul	35	30-Jul	7	24	Plot 3	Arvin
Week 4	2-Jul	10	12-Jul	35	6-Aug	7	24	Plot 4	Arvin
Week 5	9-Jul	10	19-Jul	35	13-Aug	7	24	Plot 5	Arvin
Week 6	16-Jul	10	26-Jul	35	20-Aug	7	24	Plot 6	Tilak
Week 7	23-Jul	10	2-Aug	35	27-Aug	7	24	Plot 7	Tilak
Week 8	30-Jul	10	9-Aug	35	3-Sep	7	24	Plot 1	Sansar
Week 9	6-Aug	10	16-Aug	35	10-Sep	7		Plot 2	Sansar
Week 10	13-Aug	10	23-Aug	35	17-Sep	7		Plot 3	Arvin
Week 11	20-Aug	10	30-Aug	35	24-Sep	7		Plot 4	Arvin
Week 12	27-Aug	10	6-Sep	35	1-Oct	12		Plot 5	Arvin
Week 13	3-Sep	10	13-Sep	40	13-Oct	7		Plot 6	Tilak
Week 14	10-Sep	10	20-Sep	40	20-Oct	7		Plot 7	Tilak
Week 15	17-Sep	10	27-Sep	40	27-Oct			Plot 1	Sansar

Growth period (assumption)

Sowing April - Aug. 35 days
 Sowing Sep. 40 days

Expected harvest volume

Farmer 1 (Sansar)	2 plots	5 times x @50kg = 250 kg
Farmer 2 (Tilak)	2 plots	4 times x @50kg = 200 kg
Farmer 3 (Arvind)	3 plots	6 times x @50kg = 300 kg
Total		15 times 750 kg

Attachments: 2. Technical manual for continuous cultivation of pak-choi in polyhouse

**TECHNICAL MANUAL
FOR CONTINUOUS CULTIVATION OF PAK-CHOI IN POLYHOUSE
AT CHATREDI, BPMU NURPUR**



*Pak-choi production in poly house
in Japan*

1. Seedling production by plug-tray

Reasons why use a seedling production & transplanting method:

- Jan, Feb and early-March is cold; soil temperature is lower than optimum for germination and it is difficult to warm a whole bed (large area).
 - It can increase time for bed preparation after harvesting.
 - It is easy to maintain the required number of plants by replanting dead/bad ones.
 - It can deduce chance of infection by soil-borne infection.
- Sow 300 seeds x 110% per week; produce 10% (30 seedlings) extra to supplement dead/bad plants.
 - Potting soil is mixture of sieved top soil, vermin compost and cocopeat. Mixture rate (by volume) is top soil 2 + vermin compost 1 + cocopeat 1.5.
 - Use a poly-tunnel in the poly house to get optimum soil temperature for germination 20 - 25°C in Jan and Feb.

2. Preparation of bed

- Bed width 80cm; 3 lines (apart 20cm) and 15cm interval

- If the soil is acidity (pH5 - 6.5), adjust it to over pH7 by use of Lithic lime (dolomite, $\text{CaCO}_3 \cdot \text{MgCO}_3$), Hydrated lime ($\text{Ca}(\text{OH})_2$), rice-husk charcoal and ash of grass/wood. Rice-husk charcoal is highly recommended; if rice husk is easily acquired.
- Procedure and time of bed preparation works are as follows.
 - Soil pH adjustment and plowing 2 weeks before transplanting
 - FYM and Fertilizer application and bed making 1 week before transplanting
 - FYM $2\text{kg}/\text{m}^2$, Chemical fertilizer $100\text{g}/\text{m}^2$ (N-P-K=10-10-10)
- Change the plots in next year to avoid replant failure.

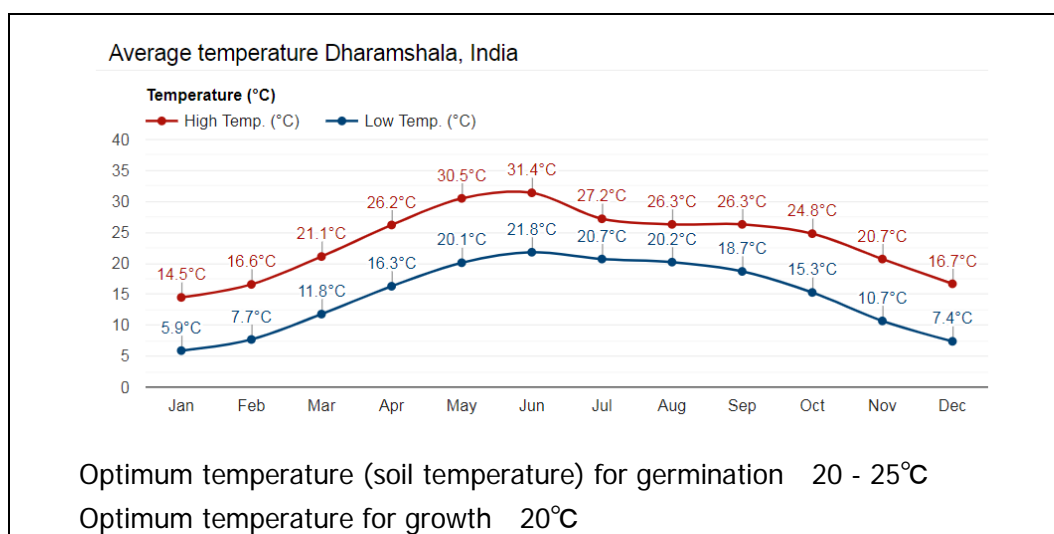
3. Transplanting

- Before transplanting, spray water over the bed by water can

4. Watering

- After the transplanting, watering by water can for about 7 days
- Do not water 1 - 2 days before the harvesting to make harvesting work easy and to avoid pak-choi get dirty.

5. Temperature control in poly house



- Set thermometer(s) in each poly-house
- Target to maintain maximum temperature below 30°C; by means of;
 - Mid-April to June : Open both sides of film, and use shade net always.
 - July to Aug (during rainy season): Open both sides of film, and use shade net in sunny days.
 - Sep. : Open both sides of film, use shade net according as temperature.
 - Oct. : Close side(s) of film in cool days.

6. Harvesting

- Harvest at about 20cm tall. Cut whole plant at just above the ground.
- Use a clean knife to cut. Wash it with clean water before use.
- Utilize plastic cases to pack and to carry pak-choi. Before use, wash and dry the cases.

- Remove damaged outer leaf before pack it into a plastic case.
- Carry away all damaged leaves out of poly house. Do not keep them in poly house.
- Remove all roots from soil after harvesting as soon as possible.



- Plants being sowed in Jan. to Feb. must cause a bolting, and harvest plants before bolting.

7. Preventive measure against “Clubroot fungus (*Plasmodiophora brassicae*)”, if necessary

Clubroot fungus is serious problem when cultivate brassica vegetables in Japan. Fortunately, this disease is not seen in Nurpur area.



Chinese cabbage



Cabbage



Broccoli



Preventive measures to apply:

a. Adjust soil pH to pH7 - 7.2

By use of Lithic lime (dolomite, $\text{CaCO}_3:\text{MgCO}_3$), Hydrated lime ($\text{Ca}(\text{OH})_2$), rice-husk charcoal and ash of grass/wood.

Rice-husk charcoal is highly recommended; if rice husk is easily acquired.

b. Reduce density (number) of fungus in soil

- Good drainage by a little high bed (15cm over)
- Sprinkle a rice bran (if available & cheap) between beds during rainy season.

c. Reduce chance that fungus enters roots (plants)

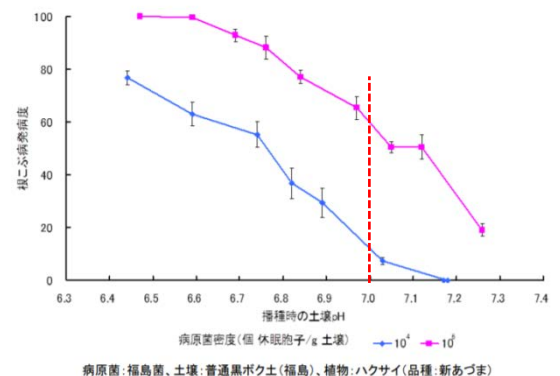
- Do not damage roots when transplanting / weeding.
- Use well matured FYM
- Chemical fertilizer should be applied in bed 1 week before transplanting.
- Use transplanting method

d. Do not increase fungus in soil

- If an infected plant is found, pull out a whole plant (whole root) and take it out of poly-house immediately.
- Remove all roots after harvesting as soon as possible.

// end

発病に対する土壌pHの影響



**JICA TCP Phase II for
Crop Diversification in Himachal Pradesh**

Field Visit Report - Planned production of Pak-choi, Chatredi - BPMU Nurpur

Purpose	•To check the status of pakchoi grown
Date	July 5, 2019
BPMU	-
TCP	Amit Kumar
Contents of visit	<ul style="list-style-type: none"> •Transplanting of Pakchoi on first plot was done on June 24,2019 •Transplanting in second plot was done on July 1, 2019. •After some days of transplanting there was attack of caterpillar on pakchoi leaves in first plot, but there was no information to TCP even Eos of BPMU by farmer •Most of the leaves damaged by insect. •Insecticide recommended to avoid the attack of insect. •Sowing of pakchoi for third plot was done by Mr. Arvind but he kept trays in not leveled surface. So less germination found in the trays. He is suggested to keep trays in leveled place in sunny area and sow 7-8 more trays of pakchoi to fulfill no of seedlings for 3rd and 4th plots.

Photos of activities



S.No.1 Pakchoi damaged by caterpillar, July 5, 2019.



S.No.2 Pakchoi damaged by caterpillar, July 5, 2019,



S.No.3: Status of transplanted Pakchoi on second plot, July 5, 2019.



S.No.4: plug trays kept in shady and improper way, July 5, 2019.

JICA TCP Phase II for Crop Diversification in Himachal Pradesh

Date	July 20, 2019
BPMU	Mr. Vikrant (AO), Mr Guleria (AEO)
TCP	Amit Kumar
Contents of visit	<ul style="list-style-type: none"> • After applying insecticide crop recover from caterpillar attack and now the new leaves are free from the symptoms of insect attack. Farmers removed infected leaves which were damaged by insect. • 2nd plot also infected by insect attack and many plants damaged totally. • Mr. Arvind sow more seed after the instructions given in last visit but this time he again kept trays improper way (he kept trays on the roof where half day good sunshine but half day less sunshine) even that seedlings looks good for transplanting. • Sowing of Pakchoi for 6th plot was done on July 18, 2019 by Mr. Tilak (3rd farmer).

Photos of activities

	
S.No.1: Status of Pakchoi after application of insecticide (prophenophose), July 20, 2019	S.No.2 Status of 2 nd plot of Pakchoi, July 20, 2019
	
S.No.1: Sowing of Pakchoi for 6 th plot, July 20, 2019	S.No.1: kept plug trays on the roof of house, July 20, 2019

**JICA TCP Phase II for
Crop Diversification in Himachal Pradesh**

Date	August 03, 2019
BPMU	Ms ? (BPM), Mr Guleria (AEO)
TCP	Amit Kumar
Contents of visit	<ul style="list-style-type: none"> • Pakchoi in 1st plot is almost ready to harvest but in some plants stem rot symptoms found . Due to stem rot less harvest expected so we contact Green leaf (not monetary) to buy Pakchoi from chartered farmers and they agreed. • In 3rd plot crop is good and farmer sow seed on the bed for other plots. • Seedlings are ready to transplant in 6th plot (Mr Tilak) • Mr Tilak instructed to prepare plot for transplanting of Pakchoi.

Photos of activities



S.No.1: Status of Pakchoi in 1st plot , August 03, 2019



S.No.2 Some plants damaged due to over moisture because of heavy rain, August 03, 2019



S.No.3: Status of transplanted crop in 3rd plot, August 03, 2019



S.No.4: Status of seedlings for 6th plot, August 03, 2019

**JICA TCP Phase II for
Crop Diversification in Himachal Pradesh**

Date	August 16, 2019
BPMU	-
TCP	Amit Kumar
Contents of visit	<ul style="list-style-type: none"> • Harvest from 1st plot was complete but harvest was less as per the plan of trial. Mr. Sansar harvested 8 kg Pakchoi from one bed and sell to green leaf @ Rs. 50/kg • Status of Pakchoi in 3rd plot is good, spacing is little bit wide but growth of plants is ok. • Mr. Arvind raised seedlings in bed for other plots. • Mr. Tilak (6th plot) transplant seedlings in his poly house but he kept very wide spacing which is not recommended for Pakchoi form the beginning

Photos of activities

	
<p>S.No.1: Status of transplanted Pakchoi in 3rd plot, August 16, 2019</p>	<p>S.No.2: Status of seedlings in raised bed in Mr. Arvind poly house, August 16, 2019</p>
	
<p>S.No.3: Status of transplanted Pakchoi in 6th plot (Mr Tilak), August 16, 2019</p>	

**JICA TCP Phase II for
Crop Diversification in Himachal Pradesh**

Production/shipment plan & Results (tentative)

Week	Sowing & Bed preparation		Transplanting		Harvesting & shipping		Plot code	Farmer name
	Plan	Result	Plan	Result	Plan	Result		
1	11-Jun	11-Jun	21-Jun	24-Jun	16-Jul	24-Jul (1 day only.)	Plot 1	Sansar
2	18-Jun	18-Jun	28-Jun	1-Jul	23-Jul	Damaged	Plot 2	Sansar
3	25-Jun	28-Jun	5-Jul	Damaged	30-Jul		Plot 3	Arvin
4	2-Jul	3-Jul	12-Jul	25-Jul	6-Aug	Started from 28-Aug	Plot 4	Arvin
5	9-Jul	18-Jul	19-Jul	7-Aug	13-Aug		Plot 5	Arvin
6	16-Jul	27-Jul	26-Jul	18-Aug	20-Aug		Plot 6	Tilak
7	23-Jul		2-Aug		27-Aug		Plot 7	Tilak
8	30-Jul		9-Aug		3-Sep		Plot 1	Sansar
9	6-Aug		16-Aug		10-Sep		Plot 2	Sansar
10	13-Aug		23-Aug		17-Sep		Plot 3	Arvin
11	20-Aug		30-Aug		24-Sep		Plot 4	Arvin
12	27-Aug		6-Sep		1-Oct		Plot 5	Arvin

Planned nursery period : 10 days, Planned growth period : 35 days

Execution Plan of Activity:*as of 04 June 2019*

2) B2: Promotion of direct sales to local retailers

ii) B2-3: Support the market-oriented production target a particular retailer

a) Support the Start up of mini-tomato production to sell to Green Leaf**1. Sub-project :** Minji Gram, BPMU Nurpur**2. Beneficiary farmer** Mr. Anil Saini**3. Background and Aims**

“Study on introducing exotic vegetables production in sub-projects in Nurpur [F-1-2]” was started in Nov. 2018 by BPMU Nurpur and JICA TCP experts. It explored a possibility to sell exotic vegetables to GREEN LEAF, also tried to identify traders who market vegetables to McLeod Ganj / Dharmasala. In course of field survey, current supply system of exotic vegetables to restaurants in McLeod Ganj and Tibetan monasteries were clarified. In addition, as a part of the survey, state of vegetable production and cultivation skill level were checked at several sub-projects.

As the result of the Study, an idea to produce new exotic vegetable (Western vegetables) which Green Leaf cannot supply to her European/American customers is derived. It is no doubt that Green Leaf had such short supply items because Green Leaf’s suppliers are all local farmers.

In the meeting with Green Leaf in May 2019, mini-tomato was identified as the best potential crop so far. The farmer (Mr. Anil Saini) in sub-project Minjh Gram also participated in the meeting and he expressed strong willingness to challenge a mini-tomato production after the meeting.

Upon the request from Green Leaf, sample of mini-tomatoes to examine the customers’ demand were provided to Green Leaf on 27 May. Based on the Green Leaf’s idea on prospective demand of mini-tomato and farmer’s skill level/resources, this farmer’s production plan and BPMU/JICA TCP’s supportive activity have been formulated.

This activity is to support the farmer to start up a mini-tomato (new exotic vegetable) production to sell to Green Leaf. It is categorized into B2: Promotion of direct sales to local retailers.

4. Given condition for planning:

Available poly house: 1 unit, 7m x 15m, with 5 beds

Farmer’s skill level: Intermediate.

Tomato cultivation in poly-house is traditional/bush mode (see left photo)

Prospective demand of Green Leaf (as of 30 May; after delivery of tomato sample):

About 35 customers expressed willingness to buy.

5 - 7 kg/shipping x 2 times/week = 10 - 14kg/week (= @285g - 400g/customer/week)

Current mode**Target mode**



Minji Gram; 14 May 2019
 * Type of variety (determinate or indeterminate type) is unknown



Mini-tomato cultivation by advanced farmer in Hamirpur; May 2019

5. Assumptions:

Planting space / Number of tomato plants in bed : 30cm interval x 2 lines, about 90 plant/bed

Expected harvest volume from 90 plants: 10kg/week

6. Startup production plan

Field size: 1 bed (7m x 15m); in poly-house

Number of plant & spacing: 90 plants, 30cm interval x 2 lines

Cultivation period: June 2019 - Nov. 2019

Target harvest volume: 10 kg /week (average)

New technic to apply:

- 1) Pruning, pinch-off suckers and supporting method
- 2) Fertilizer application, watering & plant nutrition/vigor control
- 3) Usage of 4-CPA in hot season
- 4) Temperature control in poly-house
- 5) How to prepare seedlings by cutting
- 6) Soil heat treatment by solar heat + poly-sheet + water, if necessary

Farm work schedule:

Bed preparation (FYM, fertilizer) : 11-12 June

Planting of seedlings : 20 June; adjust the date by size/condition of seedlings

7. On-site technical guidance on cultivation to be provided by BPMU& JICA TCP

To provide guidance on new technic to apply shown in above

8. Other assistance to be provided by BPMU & JICA TCP

- 1) Assistance to canvass for alternative buyer, if necessary.
- 2) Assistance to apply DOA subsidy to build a new poly-house, if necessary

3) Assistance to prepare a production plan in year 2020; to be conducted in Nov./Dec. 2019

9. Necessary items and cost sharing

Items	Q'ty	By Farmers	By BPMU	By TCP
Seedling for initial planting	100 seedlings			✓
Plastic pots for seedling production	150	✓		
Consumables - FYM, fertilizer, agri. chemicals, plastic code, etc.		✓		
Thermometer	2 units			✓
4-CPA	1 bottle			✓

10. Farm work schedule and On-site assistance schedule (as of 04 June 2019)

Date	Contents of works	On-site assistance	
		BPMU	TCP
11 June	<ul style="list-style-type: none"> ✧ Finalize the Startup production plan, farm work schedule ✧ Start bed preparation 	✓	✓
20 June	<ul style="list-style-type: none"> ✧ Delivery of seedling for initial planting, thermometers ✧ Transplanting ✧ On-site technical guidance on : Temperature control in poly-house 	✓	✓
2 weeks after transplanting	<ul style="list-style-type: none"> ✧ On-site technical guidance on : Pruning and supporting method, Fertilizer application, watering & plant nutrition/vigor control 	✓	✓
	Periodic monitoring shall be carried out by BPMU	✓	
When start flowering	<ul style="list-style-type: none"> ✧ On-site technical guidance on : Usage of 4-CPA in hot season, How to prepare seedlings by cutting 	✓	✓
	Periodic monitoring shall be carried out by BPMU	✓	
Nov./Dec.	<ul style="list-style-type: none"> ✧ Assistance to prepare a production plan in year 2020 	✓	✓



// end

**JICA TCP Phase II for
Crop Diversification in Himachal Pradesh**

Field visit report - Start-up of mini-tomato production, Minji Grami - Nurpur

Purpose	•To check the status of Cherry tomato grown
Date	July 5, 2019
BPMU	-
TCP	Amit Kumar
Contents of visit	<ul style="list-style-type: none"> •Transplanting of cherry tomato was done on June 24,2019 •Growth of plants after ten days is good. •90 plants were transplanted and out of 90 plants 3-5 plants were damaged by cut worm. • Use of chemical application recommend to farmer to avoid worm attack • Use of NPK twice in a week (19:19:19) recommended to farmer. ▪



Photos of activities

	
S.No.1: Transplanted tomatoes growth is good after 10 days, July 5, 2019.	S.No.2 All leaves damaged by insect attack, July 5, 2019

Date	July 20, 2019
BPMU	Mr. Vikrant (AO), Mr Guleria (AEO)
TCP	Amit Kumar
Contents of visit	<ul style="list-style-type: none"> • It is found that plants are so long (lanky) and weak • It is because of not proper use of shade net. Farmer remains shade net spreads continue even in cloudy (shady) days in rainy season. Farmer is also informed about the proper use of shade net. • mites attack also found on the plants and suggested one insecticide. • Farmer is not following the schedule of fertilizer application and now he convinced that he will follow the fertilizer schedule. • Tomato tone (4-cpa) given to farmer for good fruit setting and also demonstrate farmer about its use (how to apply).



JICA TCP Phase II for Crop Diversification in Himachal Pradesh

Photos of activities

	
S.No.1: Lanky growth of plants, July 20, 2019	S.No.2 Mites attack on plants, July 20, 2019

Date	August 03, 2019
BPMU	-
TCP	Amit Kumar
Contents of visit	<ul style="list-style-type: none"> ▪ In this visit it is found that mites attack is controlled after use of chemical application and new buds of plant are not affected by insect. ▪ Proper use of fertilizer application is missing because only some plants are looks good but not all ▪ Some plants are dying due root rot and drenching with fungicide (mencozeb) recommended.

Photos of activities

	
S.No.1: Uneven growth of plants, August 03, 2019	S.No.2 New buds looks good and not affect by mites, August 03, 2019

**JICA TCP Phase II for
Crop Diversification in Himachal Pradesh**

Date	August 16, 2019
BPMU	Mr. Guleria (AEO)
TCP	Amit Kumar
Contents of visit	<ul style="list-style-type: none">• Only some of the plants remain good and on these plants flowering is also good.• it is found that crop should be replace with new plants or again transplant in another bed.• looking for new plants or sowing of seed again.

Photos of activities



Execution plan of activity: Trial of Early cultivation of cole crops by use of mulching sheet

[D-1(2)-3] (D-1 (2) : PMU's trial - Use of cultivation control technology)

12 April, 2018; Version 01

1. Sub-projects for the trail

BPMU Bilaspur : 3 sub-projects - Chibber Ballu, Fogog, Kahali

BPMU Sarkaghat : 1 sub-project - Ukhla

2. Aims

Prime target of the trial is to harvest cauliflower (1st crop) in October; before starting the large inflow of cole crops from Panjab.

To harvest cauliflower in October, transplanting should be done in mid - late August; i.e. cultivation starts in rainy-season; under very wet condition. Land preparation (plowing & bed making) in midst of rainy season is difficult. Therefore, it should be done before or early time of rainy-season; in mid-June, and prepared bed should be covered with mulching sheet to prevent flourishing of weed to maintain shape of bed until transplanting take place. To utilize mulched-beds, continuous cultivation of cole crop is recommended

By using mulching sheet and bed;

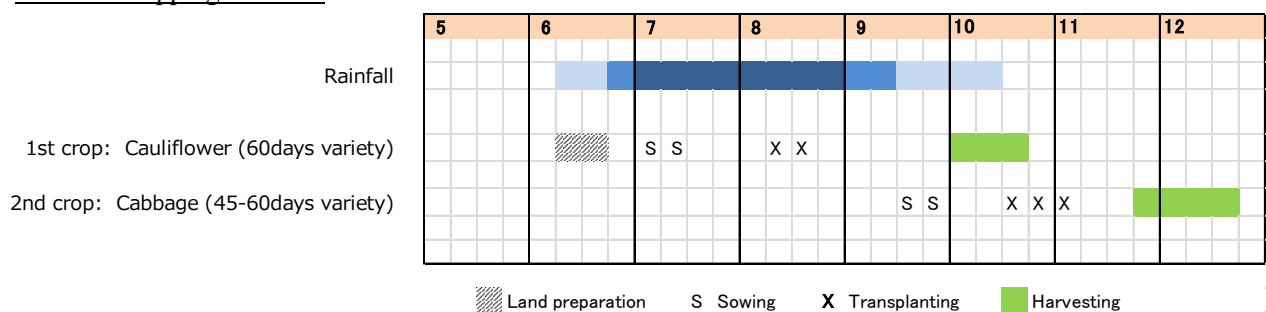
- Maintain (protect) shape of bed during rainy-season
- Prevent washout of manure/fertilizer components by rain
- Reduce labor cost for weeding (Rs1000/kanal x 2 times)
- Prevent excessive soil moisture; then to promote healthy growth of roots

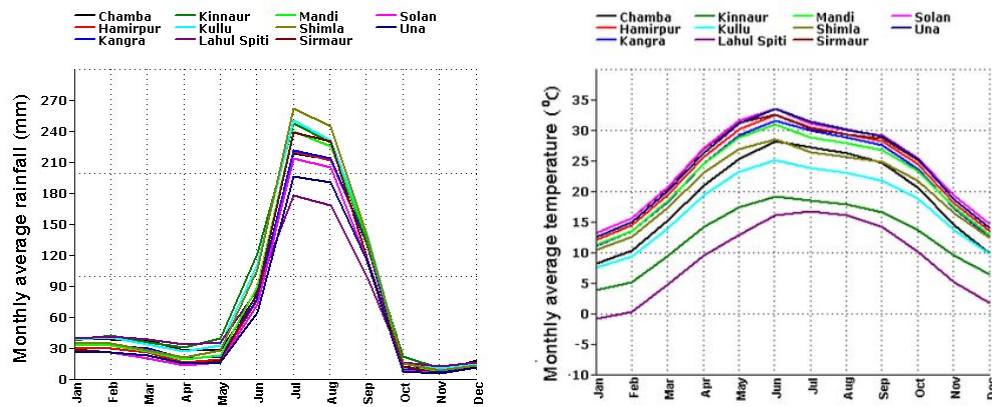
By making seedlings in plug tray, in poly-house/poly-tunnel

- Forward the harvest time; by minimizing the roots damage occur in transplanting (minimize recovery time)

By continuous (2 times) cropping in same beds;

- Reduce labor cost for land preparation for 2nd crop (Rs1000/kanal)

Intended cropping schedule



Way of watering in October - December

There are three (3) methods. Depending on available equipment at sub-project, method to use shall be decided.

- ✧ Micro-sprinklers
- ✧ Drip tube (hole interval 30 cm)
- ✧ Furrow; between beds (* Applicable only if the field is flat & even)

Way of fertilizing:

Base fertilization: Apply common practice; FYM and chemical fertilizer

Additional fertilization: Apply common practice (manual application)

Cost for covering 1 kanal (400 m²) with mulch film:

Size of film : width 1.2 m x 400m/roll Price of film : Rs4500/roll (Rs11.25/m)

Bed width : 80-90 cm, Distance between beds : 30-40cm

Land shape : 20m x 20m, 1m width pathway at two sides (both ends) ==> Bed length 18m

	Less close planting (90cm; 40cm)	Most close planting (80cm, 40cm)
Nos. of bed (row)	$20 / (0.9 + 0.4) = 15.4$ beds	$20 / (0.8 + 0.3) = 18.2$ beds
Necessary length of film	15 beds x (18+1) = 285m	18 beds x (18+1) = 342m
Film cost	Rs 3206/kanal	Rs 3847/kanal

Expected harvest in 1 kanal:

Planting space : Cauliflower : 2 lines x 30cm, Cabbage : 2 lines x 30cm

	Less close planting (90cm; 40cm)	Most close planting (80cm, 40cm)
Nos. of plant: Cauliflower	120 plants/bed x 15 = 1800	120 plants/bed x 18 = 2160
Nos. of plant: Cabbage	Same as above	Same as above
Expected harvest in total	2394kg	2872kg
1 st : Cauliflower @700g/pc.	$1800 \times 700g \times 95\% = 1197kg$	$2160 \times 700g \times 95\% = 1436kg$
2 nd : Cabbage @700g/pc. *	Same as above	Same as above

* In Chibber Ballu, broccoli may be cultivated in some area in the 2nd cropping.

3. Scale of the trial

To be finalized after discussion with farmers; with BPMU.

Tentative idea

	Nos. of farmer	Field area per farmers	Total area per sub-project
Bilaspur - Fogog	3	1 kanal	3 kanal
Bilaspur - Chibber ballu	3	1- 2 kanal	3 - 6 kanal
Sarkaghta - Ukhla	3 - 4	0.5- 1 kanal	1.5 - 4 kanal
Total			

Implementation of trial at Kahali -Bilaspur

Trial at Kahali -Bilaspur will be designed and implemented by BMPU.

Extension staff shall learn what to teach, how to teach when TCP carry out on-site guidance in Chibber Ballu and Fogog (on-site TOT), and apply it at Kahali.

4. Items to be provided by TCP and its costs

To be finalized after fixing the scale of the trial.

Items for 1 kanal of field

Item	Quantity	Unit price	Cost per kanal
Mulching sheet	342 m	4500/400m	3847
Plug tray; 98 holes	(22 plus 3) = 25 trays *	40/tray	1000
Cocopeat	1 block	200/block	200
Seeds **	1 pack x 2 cropping	400/pack	800
Fertilizer; 12:32:16	9kg	25/kg	225
Total			6072

* 3 extra trays for replanting dried-up plants; replacing poor plants

* About 2500 seeds/pack; Cauliflower = Megha (Seminess brand), Cabagge = Ash (Seminess brand)

5. Work schedule plan

Detail work schedule (chart) is under preparation.

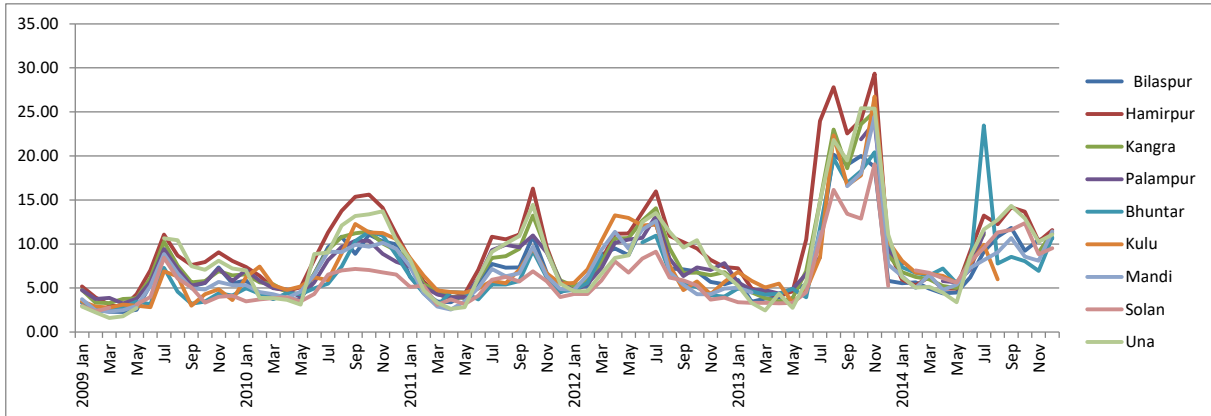
Schedule of key works is as follows.

Work	Time
Explain the details to farmers & determine the farmers/field size	To complete before middle of May
Procurement of items	To complete before end of May
Field preparation	11 - 13 June
Seed sowing in plug-trays	04 - 06 July

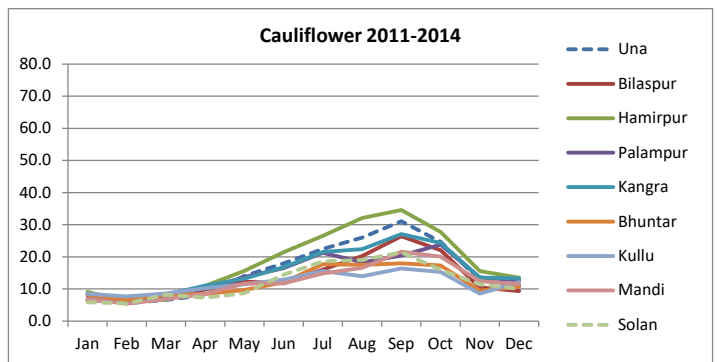
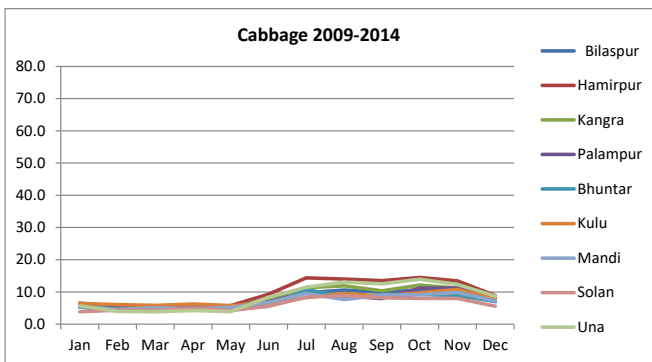
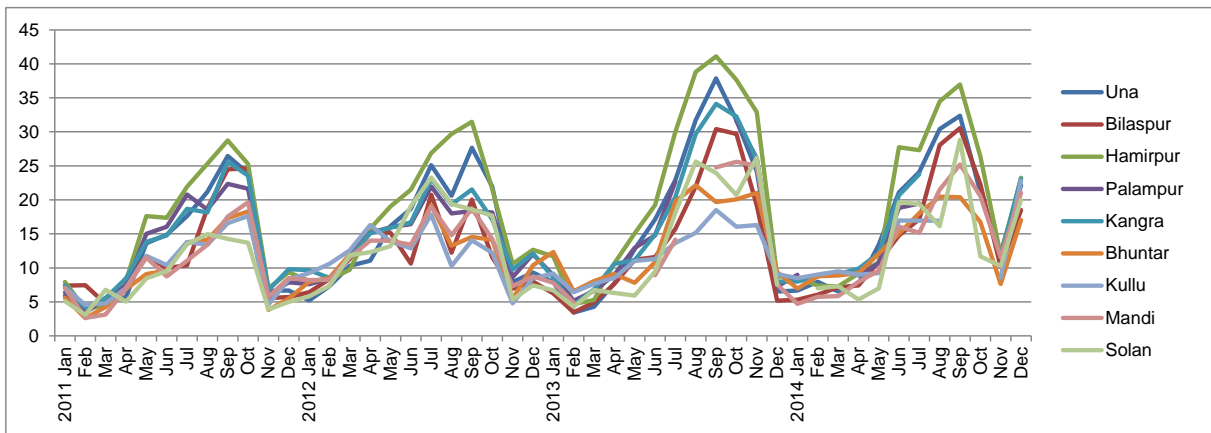
* Technical guideline for farmers is available; prepared by output-2

Reference 1. Seasonal price trend of Cole crops (Monthly prices at APMC market yards)

Cabbage



Cauliflower



// end



Phase II Project for Crop Diversification in Himachal Pradesh

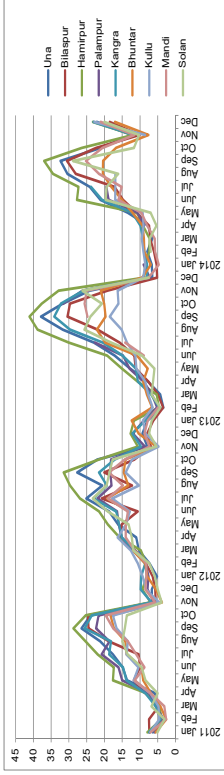
Presentation on Experience sharing visit to
LIS - Chibber Ballu, on trial of
Early cultivation of cole crops by use of mulching sheet

October 11, 2018

5

Aim of Early cultivation/harvest of cole crops

Fetch a good price



Prime target of the trial is;

To harvest cauliflower (1st crop) in October;

before starting the large inflow of cole crops from Panjab.

2

To harvest cauliflower in October

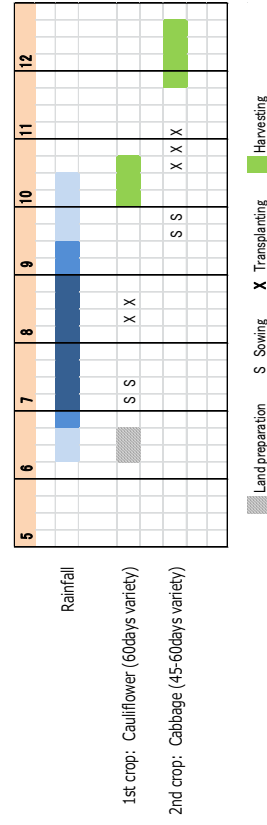
To harvest cauliflower in October,

**Transplanting should be done in mid August;
i.e. cultivation starts in rainy-season under very wet
condition.**

**Land preparation (plowing & bed making) in midst of
rainy season is difficult.
Therefore, it should be done before or early time of
rainy-season in mid-June.**

3

Cropping calendar (plan)



4

Aim of new techniques applied in the trial

Using mulching sheet and bed;

- Maintain (protect) shape of bed during rainy-season
- Prevent washout of manure/fertilizer components by rain
- Reduce labor cost for weeding (Rs1000/kanal x 2 times)
- Prevent excessive soil moisture; then to promote healthy growth of roots

Making seedlings in plug tray, in poly-house/poly-tunnel;

Forward the harvest time; by minimizing the roots damage occur in transplanting (minimize recovery time)

Continuous (2 times) cropping in same beds;

Reduce labor cost for land preparation for 2nd crop (Rs1000/kanal)

5

Expected harvest in 1 Kanal

Bed width : 90 cm, Distance between beds : 40cm

Planting space : 2 lines x 30cm

Nos. of plant: Cauliflower	120 plants/bed x 15 = 1800
Nos. of plant: Cabbage	Same as above
Expected harvest in total	2394kg
1 st : Cauliflower @700g/pc.	1800 x 700g x 95% = 1197kg
2 nd : Cabbage @700g/pc. *	Same as above

7

Cost for covering 1 kanal (400 m²) with mulch film:

Price of film : Rs4500/roll (Rs11.25/m) width 1.2 m x 400m/roll

Bed width : 90 cm, Distance between beds : 40cm

Land shape : 20m x 20m ==> Bed length 18m x 15 beds

Nos. of bed (row)	20 / (0.9 + 0.4) = 15.4 beds
Necessary length of film	15 beds x (18+1) = 285m
Film cost	Rs 3206/kanal

6

Material required to prepare seedlings for 1 kanal

Nos. of plants for 1 kanal = 1800 (spacing 45*30 cm)

Plug trays (98 holes) 20 – 22 trays

Media volume in total about XX liters

Soil : Cocopeat : Vermin compost (2:1.5:1, by volume)



98 Holes

8

Bed preparation



June 04, 2018

June 14, 2018



Set of mulch sheet- June 04 to 14, 2018



Seedling production- Sowing start from July 01, 2018



Transplanting – Start from Aug. 01, 2018



Different stages of crop



← July 11, 201



→ Aug. 27, 2018



← Sep. 15, 2018



→ Aug. 90, 2018

Thank You Very Much

Result of the Experience sharing visits (exposure visits) on Trial of early cultivation of cole crops by use of mulching sheet

Prepared by Y.Ban JICA TCP Expert, 22 Oct. 2018

Aim of the visits

To explain the new technique applied in the trial and to show the result in the fields to farmers in other sub-projects.

TCP/BPMU expects that some sub-projects shall try to apply same method to grow early cauliflower in 2019; and to extent the support to them.

Place & date of the visits

Chhiber Ballu, Bilaspur 11 October 2018

Ukhala, Sarkaghat 16 October 2018

Participants

Visit to Chhiber Ballu, Bilaspur		Visit to Ukhala, Sarkaghat	
Famers from other sub-projects in total :	15	Famers from other sub-projects in total :	5
Nalwal Kotlu	6	Lahra	1
Takrehara *	2	Kuthera *	0 (Zero)
Swara *	1	Khanot *	1
Domehar *	2	Kadheri Baririn *	1
Lehri Sarail *	2	Tikkari *	0 (Zero)
Noa *	2	Karari Kandyol *	0 (Zero)
Balhseena	0 (zero)	Damella	2
Fagog Dol Lasawa	2		
BPMU	2	BPMU	1
JICA TCP	2	JICA TCP	2

* Sub-project which TCP (Output-3) has not yet visited.

Program

Time	Contents
11:30 - 12:15	Opening remarks, Who's who, Explanation of the trial by PowerPoint (by TCP)
12:15 - 13:15	Field observation, Q&A
13:15 - 14:00	Hearing the farmers' experiences, Discussion, Q&A Closing remarks
14:00 - 14:30	Lunch
14:30 - 15:00	Demonstration of media preparation and sowing in plug-tray

1. Result from the visits

(1) From visit to Chhiber Ballu, Bilaspur

- Chhiber Ballu farmer (Mr. Krishan Chand) expressed his intention to challenge the early cultivation by use of mulching sheet next year.
- Intention of Fagog farmers (Mr. Mehar Singh, Mr. Kamal) to continue the trial method or not is not clear yet (Harvesting at Fogog has not yet started).
- Swara and Nalwar Kotlu are prospective sub-projects to extend the trial method.

(2) From the visit to Ukhala, Sarkaghat

- Four (4) Ukhala farmers who got good harvest have intention to challenge again in next year. Whereas three (3) farmers with no good harvest (= less effort to care) may not challenge.
- Damella is prospective sub-project to extend the trial method.
- Pesticide should be used safe/proper manner.

2. Idea on future intervention (technical issue / farmers' difficulties remain to be solved)

Bed making work

- How to reduce the labour cost / physical burden -- Utilization of BPMU provided 2-wheel cultivators.
- Application of FYM (preparation of better FYM, efficient (less laborious) method of application)
- Purchasing of mulching sheet, coco peat (those items are available only at Bilaspur town)

Irrigation method

- How to introduce drip irrigation (What support can BPMU/TCP provide to use the DOA subsidy?)

Insect control

- Enforce proper usage of pesticide
- Recordkeeping of chemical use (entry point to traceability system)

Attachments

- 1) PowerPoint for "Explanation of the trial"
- 2) Participant lists
- 3) Record of opinions given by the farmers

//

Record of opinions given by the farmers in the experience sharing visit

At Chibber Ballu, Bilaspur on 11 October 2018

Farmers of Chibber Ballu and Fogog explained their experiences and observation/feeling on the trial and some discussions were made. Also participating farmers commented about the trial.

Chibber Ballu

Mr. Mr. Krishan Chand explained his experiences/opinions to the participants:

- 1 Bed making and setting of mulch sheets by hired laborer was expensive. Only two or three beds were prepared in a day by two laborers because it was first time (unknown job). It took more time but beds should be prepared by family members to decrease the cost.
- 2 There was a big difference between seedlings prepared in plug-trays and prepared in beds; plug-tray seedlings were healthy whereas bed seedlings got lanky. Survival of seedlings in the field was better at plug-tray seedlings.
- 3 Crops (cauliflower & cabbage) were damaged by insect (worm of Spodoptera moth) but it was because of no proper monitoring at initial stage, and no proper application of insecticides.
- 4 Weeding by manual was problem in rainy season. It is better to use herbicide.
- 5 Drip irrigation should be on the beds to irrigate at regular interval.
BPM Mr. Shashi Pal said that this crop was in rainy season so no need to worry about irrigation, for next crop it should be there. Sprinklers also provided to him so he can irrigate by it.
- 6 There were many difficulties in this crop (trial) but I learned and they can be avoided next year.

Fagog

Mr. Mehar Singh explained his experiences/opinions to the participants:

- 1 Some of the points (2, 4 and 5 as above) were same as explained by Mr. Krishan Chand.
- 2 He said that he spend much money to prepare beds and set mulch sheets by hiring labor. This was the first time for them to prepare beds. The first day he made a few beds but after preparing some beds he became faster in bed preparation.
- 3 At the beginning of the trial, he thought that transplanting must be possible without mulching sheet. He kept one field empty to try transplanting with no mulching, but he could not plow the field due to heavy rains and his attempt was failed (He prepared seedlings for this purpose with seeds given by BPMU Bilaspur).
- 4 He suffered from damping-off after transplanting and guessed that there was not proper drainage of water.
- 5 He also suffered from same insect attack and applied insecticide.

* No comments from Mr. Kamal (2nd farmer from Fagog)

Attachment-2.4.11 Plan of trial of early cultivation of cole crops

Swara

- 1 Mr. Joravar Singh said that he has experience of using mulching sheet; last year he grew cauliflower; but not early cauliflower. After watching the crop status in the field he feels the advantage of mulching sheet for early cole crops.
- 2 He said in rainy season no problem with irrigation but if use mulching sheet throughout year drip irrigation must be required to reduce manpower.
- 3 He used the mulching sheet with drip irrigation.
- 4 He came to know about the importance of seedlings raised in plug tray method.
- 5 Next year he will cultivate early cauliflower by using the trial method.

Nalwar Kotlu

Farmers have experience of vegetable cultivation from a long time but this is the first time to see harvest of cauliflower at this much early stage.

- 1 Mr. Pawan (President) informed that he knows about the trail in Chibber Ballu and Fagog through TCP, but hard to imagine the picture without watching the fields.
- 2 Next year he will also go with early cultivation/harvest of cauliflower and cabbage with mulching. He said that they need technical support for the cultivation of early crop even though they observed the trial (cauliflower under mulching sheets).
- 3 Ms. Babita (farmer) has the same opinion as Mr. Pawan. She will also do the same next year and also require technical as well as financial (for mulching sheets) support from BPMU or TCP.

Noa

- 1 Ms. Jasoda Devi informed that she now has cauliflower in her fields; transplanted about ten days later than Chibber Ballu. It will take about more 25 days to harvest.
- 2 No damage by insect in her fields.
- 3 She said that without mulching sheet they can do it. But when she was asked how much area you do cultivate, then she said less area compare to the trial area in Chibber Ballu.

Domehar

- 1 Mr. Dila Ram said that he will do it in small area in future.

//end

Record of opinions given by the farmers in the experience sharing visit**At Ukhala, Sarkaghat on 16 October 2018**

Ukhala farmers explained their experiences and observation/feeling on the trial and some discussions were made. Also participating farmers commented about the trial.

Ukhala

It was first time for the farmers to grow cauliflower and cabbage by raised beds cover with mulching sheet.

- Farmers felt the difference between seedlings which were raised by plug-tray method and raised on beds. Seedlings by plug-tray were healthy, strong and about 95% survival after transplanting, and those raised on beds were lanky and survival in the field about 20%.
- Insect attack (worm of Spodoptera moth, same worm seen in Chibber Ballu & Fogog) was there but through monitoring and application of insecticide they save the crop.
- Mr. Amar Nath didn't apply insecticide in his field even insects (worms) were attacking on the crop. He was frightened by risk to use pesticides; because he saw one farmer in Ukhala applied insecticide and got sick; he heard that one farmer in other village applied herbicide died due to poor protection/wrong use.
- In some parts of fields less growth of plants. It was due to inadequate FYM application; they focus on bed preparation and setting of mulching sheet and forgot to add sufficient amount of FYM at the time of 2nd plowing (rotary plowing).
- FYM (heap of cow dung) was far from the field and this was one reason for shortage of FYM application. Now they think to make heaps of cow dung near the field where they will grow vegetables.
- They also feel the different growth of plants in different fields. Some fields are in sunny place where growth was good and place which covered with trees (shady) less growth of the plants.

Notes: Farmers prepared bed by family member (no hired labour). In addition, no farmers mentioned tiresome to prepare beds.

Damella

- It is new for the farmers of Damella to grow crop with mulching sheet.
During the last rainy season, one farmer use poly-sheet to cover a part of his field (to prevent soil get very wet) and plowed/prepared for cauliflower. But with this method (with extra effort), he could cover less area with cauliflower.
- Material used (plug trays, coco peat and mulch sheet) for early cultivation is not easily available in nearby seed shops or other shops.
- Farmers want to do the trial method next year. Farmers can pay for such materials, but want to request BPMU to support a purchasing/delivery of materials.

Attachment-2.4.11 Plan of trial of early cultivation of cole crops

Lahra

- One progressive farmer participated in the visit and he grows early cauliflower in this year; sowed in the first week of July, transplanted in the first week of August, and started harvesting in October; same calendar with the trial.
- He felt that although he is taking harvest but it is from small field. If he has to do cultivation with same timing in big area, it will difficult to plough field in rainy season. By using trial method he can cover more area for early cauliflower and cabbage.

Ladheri Barin

- It is new to grow crop with mulching sheet and next year they will try in small area.

Khanot

- It is new to grow crop with mulching sheet and next year they will try in small area.

//end

Execution data results (data sheets): Early cultivation of cole crops by use of mulching sheet [D-1(2)-3] (Chhiber Ballu, Fogog, Ukhla), Year 2018

1. Sub-projects, farmers and farm fields for the trial

JICA TCP proposed sub-projects for the trial: Bilaspur- Chibber Ballu, Fogog Dol Lasawa and Sarkghat - Ukhla. Discussion with BPMU Bilaspur and BPMU Sarkaghat were made in April and participating sub-projects/farmers/ fields for the trial were determined as follows.

Participating sub-projects, nos. of farmers and fields area for the trial (Final)

	Fogog	Chibber Ballu	Ukhla
Number of farmers	2	1	7
Field size for mulching (total, result)	3 kanal	1 kanal	4 kanal

Source: JICA TCP Expert Team

2. Seedling production

	Fogog	Chibber Ballu	Ukhla
< 1st crop >			
Crop 1	Cauliflower	Cauliflower	Cauliflower
Variety	Megha	Megha	Megha
Seedling production (sowed)	5100	2200	7500
Crop 2	Cabbage	Cabbage	Cabbage
Variety	ASHA-1	ASHA-1	ASHA-1
Seedling production (sowed)	900	500	400
< 2nd crop >			
Crop	Cauliflower	Cauliflower	Cauliflower
Variety	Sungrow 626F1	Sungrow 626F1	Ginga

3. Farm work schedule for 1st crop (Result)

	Fogog	Chibber Ballu	Ukhla
Bed making	03 June	13 June	04 - 15 June
Setting mulch sheets	04 - 07 June	14 - 17 June	05 - 17 June
Seed sowing (1) in plug tray	03 July	04 July	05 July
Seed sowing (2) in plug tray	11 July	11 July	13 July
Seed sowing (3) in plug tray	----	----	----
Transplanting (1)	31 July	08 Aug	01 Aug
Transplanting (2)	02 Aug	12 Aug	03 Aug
Transplanting (3)	12 Aug	20 Aug	12 Aug
Harvest started on:	08 Oct		05 Oct

4. Experience sharing visits (exposure visits)

- To explain the new technique applied in the trial and to show the result in the fields to farmers in other sub-projects.
- TCP/BPMU expects that some sub-projects shall try to apply same method to grow early cauliflower in 2019; and to extent the support to them.

Place, date and participants

Visit to Chhiber Ballu, Bilaspur		Visit to Ukhala, Sarkaghat	
Date	11 October 2018	Date	16 October 2018
Famers from other sub-projects in total :	15	Famers from other sub-projects in total :	5
Nalwal Kotlu	6	Lahra	1
Takrehara *	2	Kuthera *	0
Swara *	1	Khanot *	1
Domehar *	2	Kadheri Baririn *	1
Lehri Sarail *	2	Tikkari *	0
Noa *	2	Karari Kandyol *	0
Balhseena	0	Damella	2
Fagog Dol Lasawa	2		
BPMU	2	BPMU	1
JICA TCP	2	JICA TCP	2

* Sub-projects which TCP (Output-3) has not yet visited.

Details such as comments of the participants are shown in another Attachment.

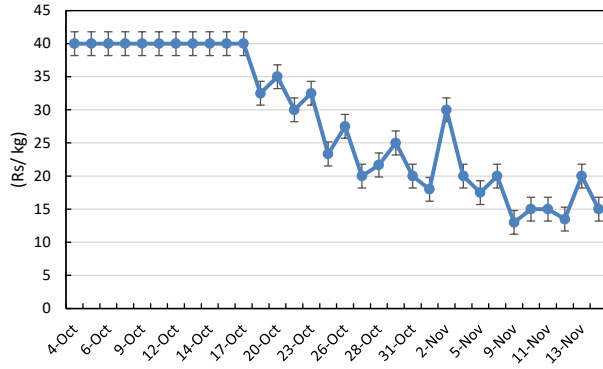
5. Harvest and sales

Harvest of 1st cauliflower finished in middle of November. Sales records of each farmer were collected. Selling price was found that was highest in the beginning of October, around Rs. 40/kg. However, it was gradually decreasing week by week to Rs. 20/kg in November. Early cultivation of cole crops has been clarified effective for selling at higher price.

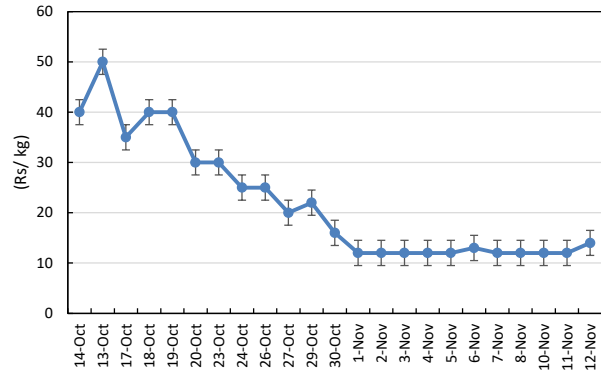
Result of sales of early cauliflower (1st crop) harvested in October

Farmer Name	Field area	Total harvest	Total sales	Highest price/kg	Sale/m ²
Sub-project- Ukhala, BPMU Sarkaghat					
Mr. Amar Nath	400 m ²	278 kg	Rs 9085	Rs 40 up to 20/10	Rs 23
Mr. Raghunath	200 m ²	195 kg	Rs 6600	Rs 40 up to 17/10	Rs 33
Mr. Om Prakash	200 m ²	260 kg	Rs 7119	Rs 40 up to 17/10	Rs 36
Mr. Amar Nath	300 m ²	340 kg	Rs 8936	Rs 40 up to 13/10	Rs 30
Sub-project- Fagog, BPMU Bilaspur					
Mr. Mehar Singh	800 m ²	509 kg	Rs 8891	Rs 40 up to 19/10	Rs 11
Mr. Kamal Dev	400 m ²	262 kg	Rs 4415	Rs 50 up to 13/10	Rs 11
Sub-project- Chibber Ballu, BPMU Bilaspur					
Mr. Krishan Chand	400 m ²	90 kg	Rs 3600	Rs 40 up to 18/10	Rs. 9

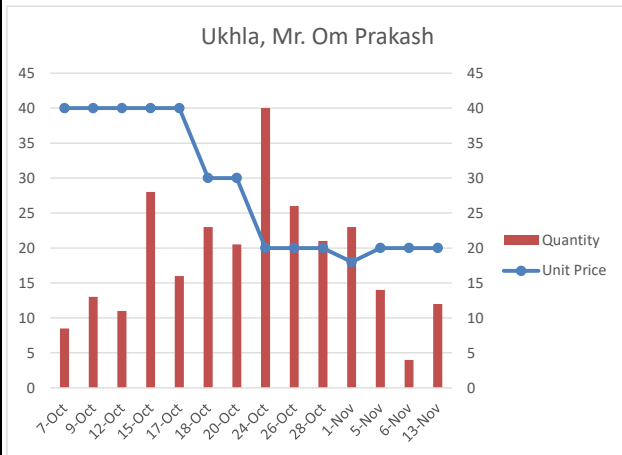
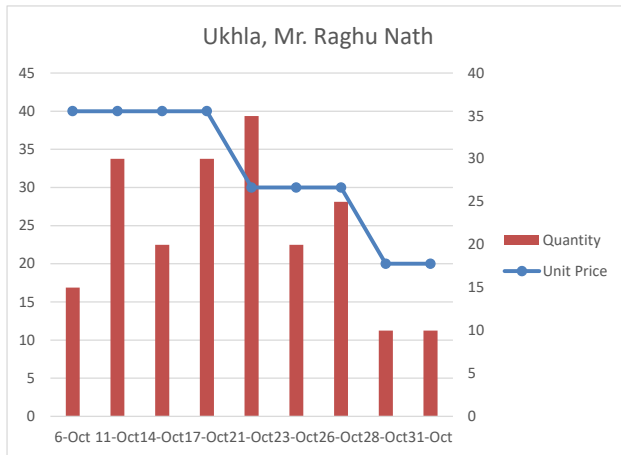
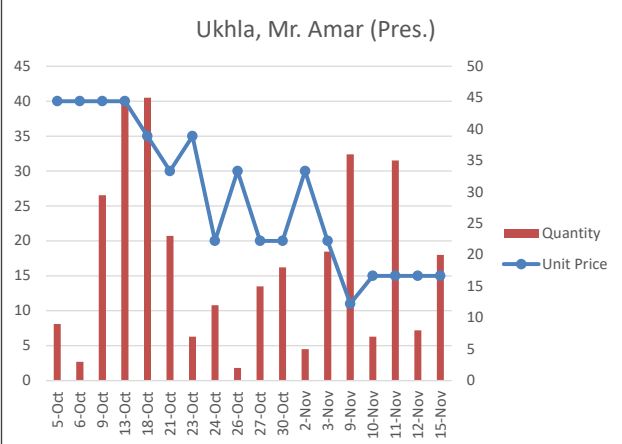
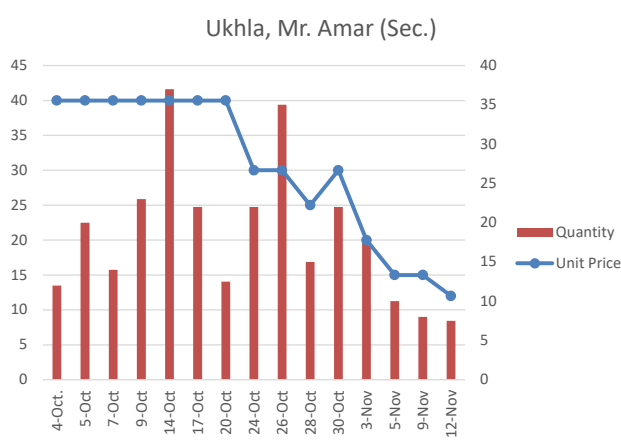
Selling price (average) of Cauliflower by farmers (Ukhla, Sarkaghat, 2018)



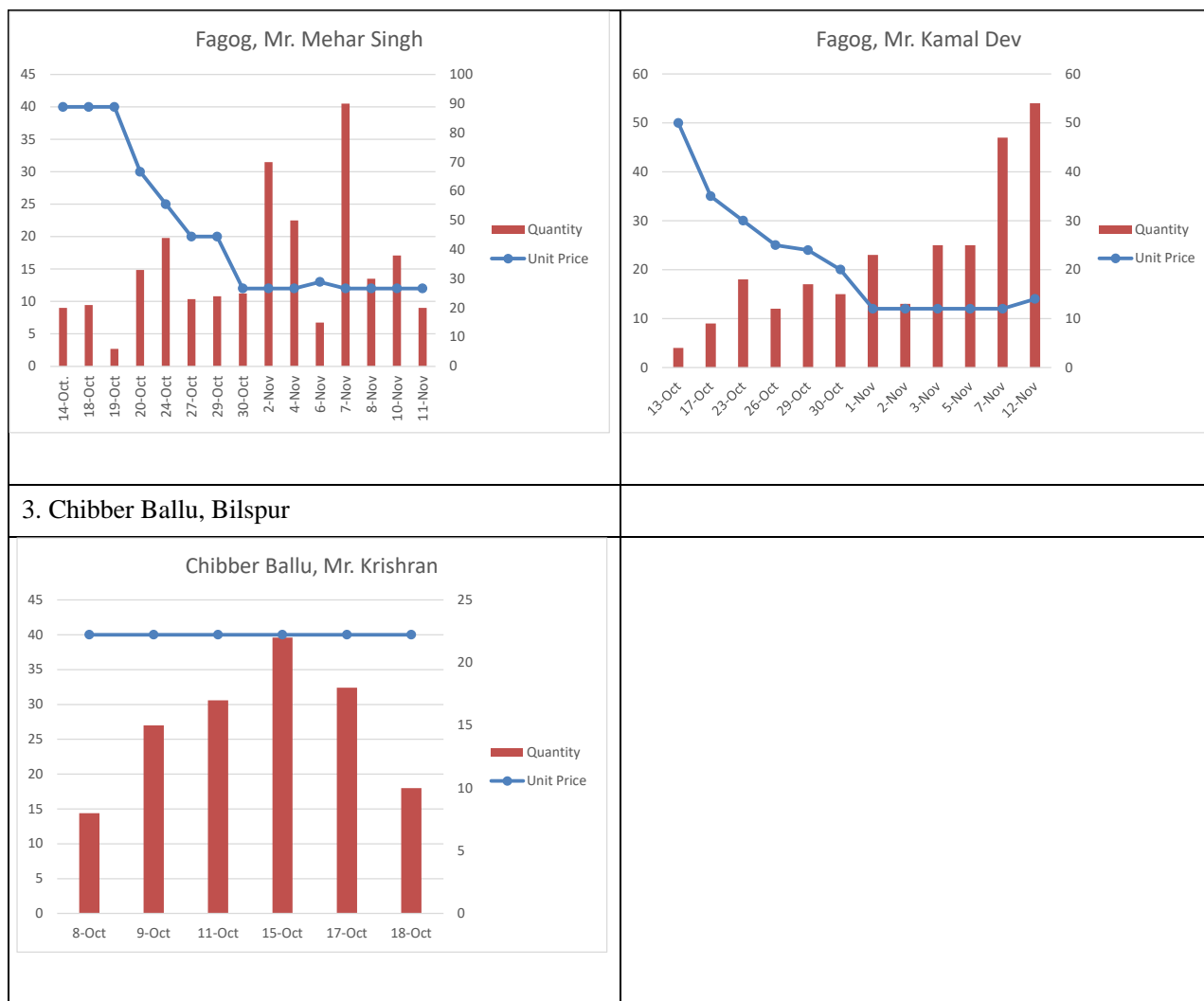
Selling price (average) of Cauliflower by farmers (Fagog, Bilaspur, 2018)



1. Ukhla, Sarkaghat



2. Fagog, Bilaspur



Harvest of 2nd crop at Ukhla was over in April. Sales results are shown as below.

Result of sales of 2nd cauliflower at Ukhla (*Harvest took place at Ukhla only)

Farmer name	Duration of harvest	Total harvest (sold)	Price
Mr. Amar Nath	Mar. 6 to Apr. 14, 2019	325 kg	Rs. 12- 20/ kg
Mr. Om Prakash	Mar. 2 to Apr. 14, 2019	296 kg	Rs. 12- 20/ kg

6. About 2nd cole crop cultivation (as of early Nov. 2018)

Many participating farmers decided to remove mulching sheets before 2nd cole crop cultivation because;

- No much weed problem in November and afterward.
- Field has no drip irrigation facility and it is difficult / troublesome to irrigate a field covered with mulching sheet.
- Applying fertilizer and transplanting seedling in each hole is troublesome (Expected price in January is very cheap to do delicate work).

In addition, many farmers did not use plug-trays for seedling preparation in 2nd crop because;

- Climate is favorable for cauliflower cultivation and seedling prepared by ordinary bed method is also OK (Farmers have experiences to grow cauliflower by this method in this season). Also, it is a little troublesome to use plug-trays (to buy and prepare potting soil).

Considering the farmers' actions on 2nd cole crop cultivation described above, following ideas for modifications of the trial method is conceived.

- (a) To grow a crop before early-cauliflower (in May-July/Aug) instead of growing cole crop after early-cauliflower (after November). Then, to utilize mulching sheet two times (to reduce the production cost).
- (b) It is said that most of vegetables are good price in August since the supply from Panjab state is reduced by rainfall (too wet to cultivate vegetables in the plain). Therefore, farmers can expect better sales figure with July/Aug harvest crop than selling cheap cauliflower in Jan.
- (c) Growth period of early cauliflower in open field was Aug to Nov. and only some supplemental irrigation was required. However, irrigation is essential to start crop cultivation in May and drip irrigation is ideal for mulched beds.

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Execution plan of activity: Coriander cultivation in July-August under poly-sheet roof

[D-1(2)-4] (D-1 (2) : PMU's trial - Use of cultivation control technology)

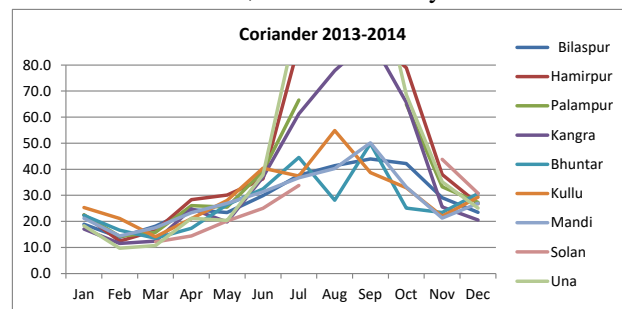
12 April, 2018; Version 01

1. Sub-projects for the trail

BPMU Hamirpur : 1 sub-project - Panjahli

2. Aims

Coriander price tend to hike during rainy season in Hamirpur. This trial is to verify the effect of simple rain protection; whether it can make cultivation easier; it can increase yield / nos. of harvest or not.

**Seasonal price trend of Coriander**

Rain protection by poly-sheet roof used in Japan:

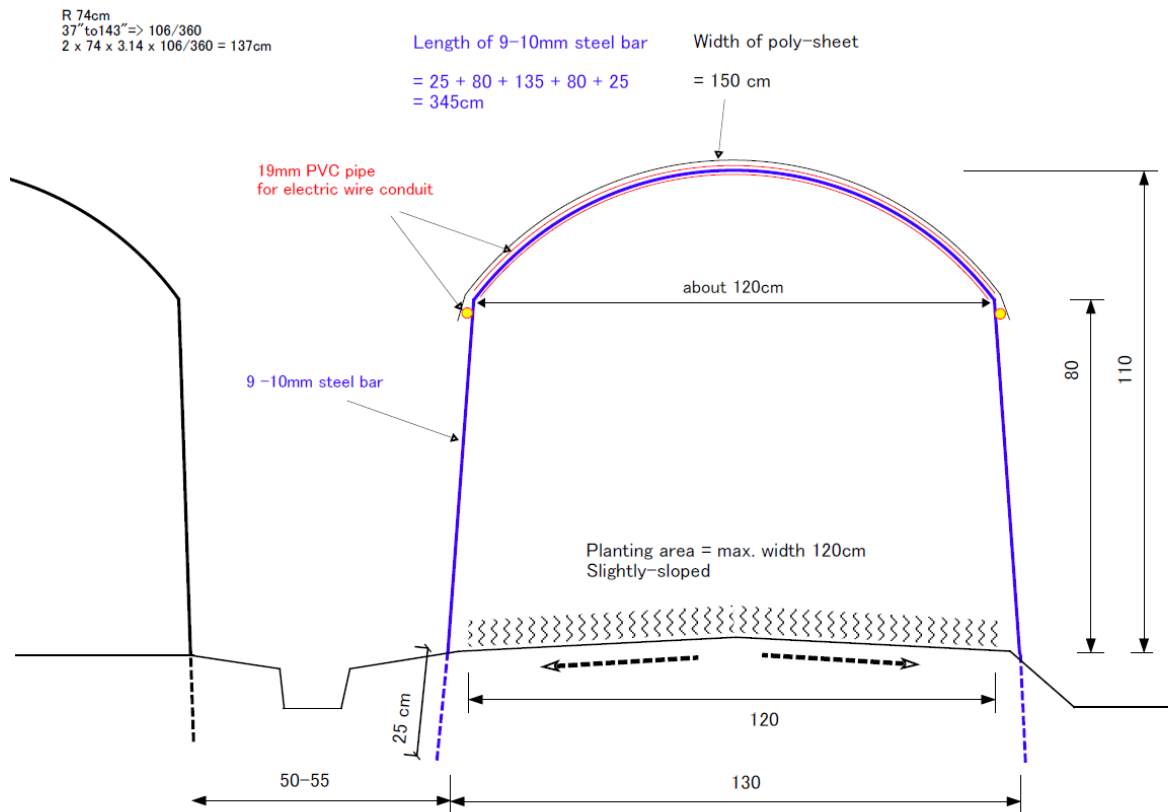
1) Spinach cultivation



2) Tomato / capsicum cultivation

**3. Design of rain protection to be tested**

JICA TCP already explored to find the locally available materials to make a “not expensive & easy to make” rain protection. Desing, materials and cost are as follows;



Materials & cost for 10m long roof (If steel frame interval is 1m)

Items	Quantity	Unit price	Cost
Poly-sheet	12m x 1.5m (w) = 18m ²	55/m ²	990
Steel bar	345cm x 13pcs. (3 pcs from 40ft long bar)	123/pc (370/40ft)	1599
PVC pipe	135cm x 13pcs. (2 pcs from 3m long pipe)	15/pc (30/3m)	195
PVC pipe; side	7 pcs	30/pc	210
Film clip	46pcs.	10/pc	460
		Total	3454

4. Scale of the trial

	Under poly-sheet roof	Customary method
Farmer 1	Length 20m (about 30m ²)	?? kanal
Farmer 2	Length 20m (about 30m ²)	?? kanal

5. Items to be provided by TCP and its costs

Items	Quantity & unit price	Cost
All costs for making total of 40m long roof	4 units x 3454	13,816
Coriander seeds	1 kg x 500	500
Total		14,316

5. Work schedule plan

Detail work schedule (chart) is under preparation.

Schedule of key works is as follows.

Work	Time
Explain the details to farmers	End of April - Early May
Procurement of items & making of frames	To complete before middle of May
Field preparation & set steel frames	End of May
Seed sowing	End of May
Setup poly-sheet on frame	End of June - Early July; after frequent rain starts

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