Appendix A-3:

Monitoring Sheets ver. 1 to ver. 10

TO CR of JICA Myanmar OFFICE

PROJECT MONITORING SHEET

Project Title : Project for Profitable Irrigated Agriculture in Western Bago Region
Version of the Sheet: Ver.1.0（Term: March 2016 - June 2016）

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Submission Date: 30 June, 2016

I. Summary

1 Progress

1-1 Progress of Inputs

Japanese side

- 1st batch of Japanese experts for the Project was dispatched on March 20, 2016
- Provision of equipment and necessary material for technical training has been done as mentioned on the list in **Annex III.**
- A part of operation costs for implementing project activities including training material, transportation cost and lodging fee were provided by Japanese side.
- Eleven (11) participants from PROFIA were participated in seed multiplication training in Pathein on June 7 and 8, organized by JICA Technical Cooperation Project on Development of Participatory Multiplication and Distribution System for Quality Rice Seeds (hereinafter referred to as “The JICA Seed Project”). The training has another 5 batches and will continue until November 2016.

Myanmar side

- Nine (9) DOA officials from Regional, District, and Township level were assigned as counterparts. In addition, Eight (8) DOA officials were selected as Post Harvest Group.
- Office Building with some furniture was provided to the Project Team.
- A part of operation costs for implementing project activities including electricity cost for office building, training material and travel cost of counterparts were provided by Myanmar side.

1-2 Progress of Activities

1-0-1 Conduct a baseline survey and endline survey to collect data on farm profitability of the target group and the control group.

(Progress) - Baseline survey has started from May 28, with ten (10) surveyors and three (3) data input assistants, targeting 377 farmers in the project sites. The survey aims at collecting baseline indicators shown in the Project Design Matrix (PDM). In addition, the survey is to collect the basic information necessary for formulation of highly profitable farming model under irrigation, including 3 cropping model (e.g. monsoon paddy - winter beans – summer paddy) and 2 cropping model (e.g. monsoon paddy – summer beans). Therefore, it also includes items to grasp current conditions and issues on farming and marketing of major crops in the project site. Data analysis is now on-going.

1-0-2 Reconfirm the issues of present farming in the Project Site.

(Progress) - Site survey has been conducted by the Project Team from May.
- Problem analysis of PCM method was conducted on June 9, with participation of C/Ps. Result of the analysis is shown in **Annex IV.**

1-0-3 Review the suitable balance between land productivity and labor productivity to examine the project activities.

(Progress) - This activity will start after completion of the baseline survey.

1-1. Promote the use of Certify Seed for rice

1-1-1 Review the current seed multiplication practice of DOA (seed farm & T/S extension office) and Model Seed Villages in the project site.

(Progress) - The Project Team started site visit from the middle of May, and has discussed with DOA officials to identify issues on seed multiplication in the Project Sites. Initially identified seed multiplication issues include; 1) amount of good quality seed is not enough to meet demand (need private sector involvement), 2) seed farmers need skill improvement, 3) product from CS cannot make good price in local market, 4) difficulty in finding CS with the yellow tag in the project site, 5) irrigation canal is not connected to DOA seed farm.
- The Project Team conducted meetings with members of the JICA Seed Project on March 28 and May 5 to learn their experiences and to ask further collaboration with them.

1-1-2 Enhance the capacity of DOA seed farm to improve quality of FS and RS.

(Progress) - Equipment for seed farms including paddy seed cleaner and bean

cleaner/grader are under procurement process. Seed cleaners are necessary equipment to extract broken and immature grains/beans, and foreign materials including tiny stones and other residuals, and select pure FS and RS which will enhance function of seed farm of DOA. The seed cleaner for paddy and beans can be used from Nov. and Feb. respectively.

- C/Ps from the DOA's two (2) seed farms were participated in the seed multiplication training for their capacity enhancement.

1-1-3 Improve awareness of extension staff and farmers on CS.

(Progress)
- Post Harvest Group was organized by DOA on May, and training for them to improve quality of products has started from May 6. Training schedule and topics is shown in **Annex V**.
- Participating in the seed multiplication training in Pathein is one of best opportunity for awareness improvement on CS. Action plan to disseminate learnings of the training will be organized on July 4.

1-1-4 Encourage rice millers / traders to purchase CS seeds produced by seed growers.

(Progress)
- Project Manager and JICA Project Team held a meeting on June 17 for the DOA's new policy to promote seed multiplication with newly established Seed Growers Association. Both side agreed on collaboration for successful implementation of the policy.
- The first meeting with MRF members was held on May 21, and the Project Team asked them for future collaboration of the rice millers involvement.

1-1-5 Involve rice millers for CS distribution and purchase of paddy produced from CS.

1-1-6 Strengthen the network among Public-Private-Producers for rice.

(Progress)
- The Post Harvest Group made a long list of rice millers in the project area, and questionnaire survey to select rice millers was conducted during June at each TS. Data input is now on-going.

1.2. Promote the use of Good Quality Seeds for non-rice crops

1-2-1 Introduce good quality seed of non-rice crops to the Project Site.

(Progress)
- Thirty (30) baskets of Black Gram seed are now ready for procurement at DAR Letpadan seed farm. The seed will be

distributed to the model farmers for next winter crop season.

1-2-2 Conduct trainings for DOA staff, farmers and the private companies on seed multiplication technique.

(Progress) - N.A. because this activity will be done after monsoon season in 2016. For this activity, PROFIA team will visit JICA Water Saving Agriculture Technology Project Team in Nyaung Oo and DAR in Yezin to learn their field experiences. Also, a Japanese firm, Daiwa-Noen, is a potential partner of this activity, and the firm and PROFIA team start information exchange for future collaboration. The farm is now conducting feasibility survey in West Bago region toward next year's implementation.

1-2-3 Involve traders in the good quality seed distribution and the purchase with premium of crops produced from good quality seeds.

(Progress) - The Project Team starts collection of pulses/ beans seeds from wholesalers and traders for quality inspection, and the analysis is on-going at private laboratory in Yangon. Result of analysis will be used for seed inspection and distribution to the model farmers.

1-2-4 Strengthen the Public-Private-Producers network for non-rice crops.

(Progress) - The Project Team visited Crop Exchange Center in Pyay and starts discussion with them for future collaboration. Possible collaboration with the private sector is to establish quality seed production model, marketing model with higher prices.

2-1. 3-season cropping model and 2-season cropping model with improved profitability are demonstrated in the AMD demonstration farms in the 6 townships

2-1-1 Identify the suitable crops for 3-season cropping in each township by taking market demand prospect into account.

2-1-2 Enhance the capacity of farmers on the 3-season cropping in the AMD demonstration farms.

2-1-3 Identify the suitable crops for 2-season cropping in each township by taking market demand prospect into account.

(Progress) - Selection of model farmers/ sites was completed under combined effort of DOA and ID. List of model farmers is attached in **Annex VI.**

- Analysis of baseline survey and soil test is on-going to identify recommendable cropping model of each TS.

- Trainings for farming record to the model farmers were conducted from June 13 to 18. Result of record will be used for analyzing profitability of cropping models.

2-1-4 Introduce good quality seed of pulses, rice or other important product identified in 2-1-1 and 2-1-3.

(Progress) - N.A. This activity will start from winter season in 2016, after identifying cropping model of each Township, and will start from winter season in 2016.

2-1-5 Enhance the capacity of farmers on appropriate use of agricultural inputs.

(Progress) - Baseline survey was conducted to identify current use of agricultural inputs of farmers. Also, training needs assessment was conducted during the first training to the model farmers. Analysis of the result is now on-going.

2-1-6 Enhance the capacity of farmers on on-farm water management techniques for rice production.

(Progress) - N.A. This activity will start from summer season in 2017, after establishing water users group, and making consensus with stakeholders including ID and DOA.

2-1-7 Enhance the capacity of farmers and AMS staff on appropriate use of combine harvesters.

(Progress) - Survey to Agricultural Mechanization Stations in 5 TSs for current condition of combine harvesters has been conducted from May. Analysis of the survey result is now on-going.

2-1-8 Introduce plot-to-plot water management practices, especially for pulses, including ridge building techniques.

(Progress) - Survey on appropriate specification of ridge builder has started from the middle of June, at agricultural machinery market in Yangon for example. Analysis of the survey result is now on-going.

2-2 The practice introduced in 2-1 is disseminated in cost effective and sustainable way

2-2-1 Introduce the farm economy record (accounting book) to model farmers and control group farmers.

(Progress) - Training on farming record keeping was conducted from June 13 to 18 to the model farmers of each TS. Counterpart staffs will monitor and follow-up farmers' record keeping activity

2-2-2 Analyze the data of 2-2-1 and visualize the effect of the practices introduced in 2-1.

2-2-3 Advertise the practice in 2-1 by using the information of 2-2-2 through poster, radio, newspaper advertisement, etc.

(Progress) - N.A. This activity will be done after analyzing result of 2-2-1 activity.

2-2-4 Create material such as booklet, poster, DVD etc. to disseminate the practice in 2-1 through Farmer Development Center.

(Progress) - Working manual for seed selection using salt water was developed by DOA C/P and the Project Team on June 16, and is shown in **Annex VI**.
- Training manual of Post Harvest Training is now preparing by the Group members based on the TOT provided by the Project Team.

2-2-5 Disseminate the telephone list of model farmers to contact farmers in each village.

(Progress) - Now under preparation

2-2-6 Select model farmers in non-consolidated land in the 6 townships and adopt the techniques in 2-1.

(Progress) - N.A. Basically, this activity will start from 3rd year of the project implementation (2018), after establishing profitable farming model in land consolidation areas.

3-1. Identify the issues on middle- and long-term use of irrigation facilities in the Project Site through monitoring the Project.

3-2. Develop a guideline on PIM (Participatory Irrigation Management) in the Project Site.

3-3. Establish a stakeholders meeting of irrigation sector, and take a leading role on the meeting.

3-4. Discuss about the guideline with stakeholders including donor agencies, and propose it to the central ministry.

3-5. Assist PIM activities by Water Users Groups after the Groups are established.

3-6. Assist dissemination of the use of guidelines for land consolidation in the Project Site.

3-7. Provide advices to solve the issues of irrigation sector in Myanmar through meeting with stakeholders and observation of various irrigation systems in Myanmar.

(Progress) - Irrigation Policy Advisor will be assigned on July 8, 2016, and activities from 3-1 to 3-7 have not yet started.

1-3 Achievement of Output

Output 1 *Public-Private-Producers (Farmers) Partnership is strengthened*

(Achievement) - A long list of rice millers in the project area was developed by the Post Harvest Group of DOA.

Output 2 *Profitability of farmers in the Model Site is improved*

(Achievement) - Model farmers and model area was identified under combined effort of DOA and ID.
- Result of baseline survey will be available by July 2016.

Output 3 *Guidelines for Participatory Irrigation Management (PIM) in the Project Site is prepared and applied in the Model Site*

(Achievement) - N.A. Irrigation Policy Advisor will be assigned on July 8, 2016, and activities from 3-1 to 3-7 have not yet started.

1-4 Achievement of the Project Purpose

- Baseline survey has started from May 28, and data analysis will start from the end of June. Result of baseline survey will be available by July 2016.

1-5 Changes of Risks and Actions for Mitigation

- It was found that out of seven (7) land consolidation areas, which were selected for the project activities for Phase 1, three (3) areas including Thegon, Nattalin and Zigon, cannot start irrigated agriculture from next summer season due to rehabilitation schedule of the irrigation scheme.
- Land distribution to farmers is not completed yet in land consolidation area in Pyay (as of June 15).
- Two (2) seed farms in Thegon and Paungde cannot use irrigation water since irrigation canals are not extended to their farmland.

1-6 Progress of Actions undertaken by JICA

- As a result of consultation to JICA-HQ, additional model farmers for the Phase 1 activity were selected from outside of the land consolidation areas in Thegon and Nattalin. In case of Zigon, additional farmers are not selected since it was observed that all areas under Taung Nyo Irrigation scheme in Zigon cannot receive irrigation water during next summer season. Therefore, model farmers were selected from original land consolidation area in Zigon.

1-7 Progress of Actions undertaken by Gov. of Myanmar

- Thanks to support from ID officials, additional model farmers in Thegon (6) and Nattalin (5) were selected for the Phase 1 activities.

1-8 Progress of Environmental and Social Considerations (if applicable)

- N.A. Not applicable since the project is categorized in the Category C of the JICA Environmental and Social Consideration Guideline.

1-9 Progress of Considerations on Gender/Peace Building/Poverty Reduction (if applicable)

- Survey on gender issue is conducted through baseline survey, and its analysis is on-going.

1-10 Other remarkable/considerable issues related/affect to the project (such as other JICA's projects, activities of counterparts, other donors, private sectors, NGOs etc.)

- Eleven (11) counterparts were participated in seed multiplication training in Pathein, organized by JICA Seeds Project. The training has another 5 batches including field inspection training, and will continue until November. Also, there is a plan to organize one-day training for seed multiplication in Pyay on October.
- DOA's new policy to promote seed multiplication with establishing Seed Growers Association has a similar approach of PROFIA (Activity 1-1-4), which involves private sector to ensure "high price for high quality".

2 Delay of Work Schedule and/or Problems (if any)

2-1 Detail

1) Delay of the model farmers identification

- Initially, all model farmers were selected from AMD's land consolidation area in the target six (6) TS. However, after commencement of the Project, it was found that three (3) land consolidation areas in Thegon TS, Nattalin TS and Zigon TS cannot start irrigated agriculture from next summer season.

2) Postpone of procurement of CS for monsoon paddy in 2016

- Procurement of CS for monsoon paddy was postponed since CS with yellow tag was not available in the project area. Quality of seed will be carefully indentified and procured by next summer season in 2017.

2-2 Cause

1) Identification of the model farmers

- According to ID, rehabilitation work is divided in 3 periods (2015/16, 2016/17, and 2017/18), and the three (3) model sites in Thegon TS, Nattalin TS and Zigon TS were located in the second year (2016/17) implementation areas, in where irrigation water for next summer is not available.

2) Procurement of CS for monsoon paddy in 2016

- According to the JICA Seed Project, CS with yellow tag needs strict field inspection and laboratory test by DOA. However those seeds that can be available in the Project site do not meet the required the Project's standard.

2-3 Action to be taken

1) Identification of the model farmers

- After consultation to JICA HQ, additional model farmers were selected from outside of land consolidation area, where irrigation water would be available from next summer season.

2) Procurement of CS for monsoon paddy in 2016

- Quality of seed will be carefully identified and procured by next summer season in 2017. For this purpose, during monsoon season in 2016, the Project team will analyze seed quality in the project area, and identify CS variety for procurement based on farmers' needs, soil condition, and marketability. Then, the Project team will identify seed suppliers and start procurement procedures by November 2016.

2-4 Roles of Responsible Persons/Organization

1) Identification of the model farmers

- Final decision was made by PM and the project

2) Procurement of CS for monsoon paddy in 2016

- Quality seed will be identify based on discussion with PM, C/P, the project team, and model farmers. In case, the CS cannot be found in the project area, the project will procure "good quality seed" produced in the DOA seed farm or RS for seed multiplication.

3 Modification of the Project Implementation Plan

3-1 PO

- Procurement of CS for monsoon paddy was postponed since CS with yellow tag was not available in the project area. Quality of seed will be carefully indentified and procured by next paddy season.

3-2 Other modifications on detailed implementation plan

- N.A.

4 Preparation of Gov. of Myanmar toward after completion of the Project

- **N.A.**

II. Project Monitoring Sheet I & II

Attached in **Annex I** and **Annex II**

Annex

Annex I	Project Monitoring Sheet I (Revision of Project Design Matrix)
Annex II	Project Monitoring Sheet II (Revision of Plan of Operation)
Annex III	List of Equipment
Annex IV	Result of Problem Analysis
Annex V	Training Topics and Schedule of Post Harvest Group
Annex VI	List of Model Farmers
Annex VII	Working Manual for Seed Selection using Salt Water

Project Design Matrix

Project Title: Project for Profitable Irrigated Agriculture in Western Bago Region

Version 1

Implementing Agency: Department of Agriculture, **Ministry of Agriculture, Livestock and Irrigation**

Dated 30, June, 2016

Target Group: Model farmers, **MOALI** staff, private sectors and farmers in four irrigation systems in Pyay district and Thayawaddy district (116,738 personnel／23,394 House hold)

Period of Project: 5 years after dispatching 1st Japanese expert (supposed to be from March 2016 to February 2021)

Project Site: 4 irrigation schemes in 6 townships (Pyay, Pauk Khaung, Thae Kone, Paung De, Nattalin, Zee Kone) in Western Bago Region

Model Site: 20 places (part of AMD demo farms in the 6 townships, non-land consolidated demo farms 2 each in the 6 townships, DOA seed farms (Thae Kone and Paung De))

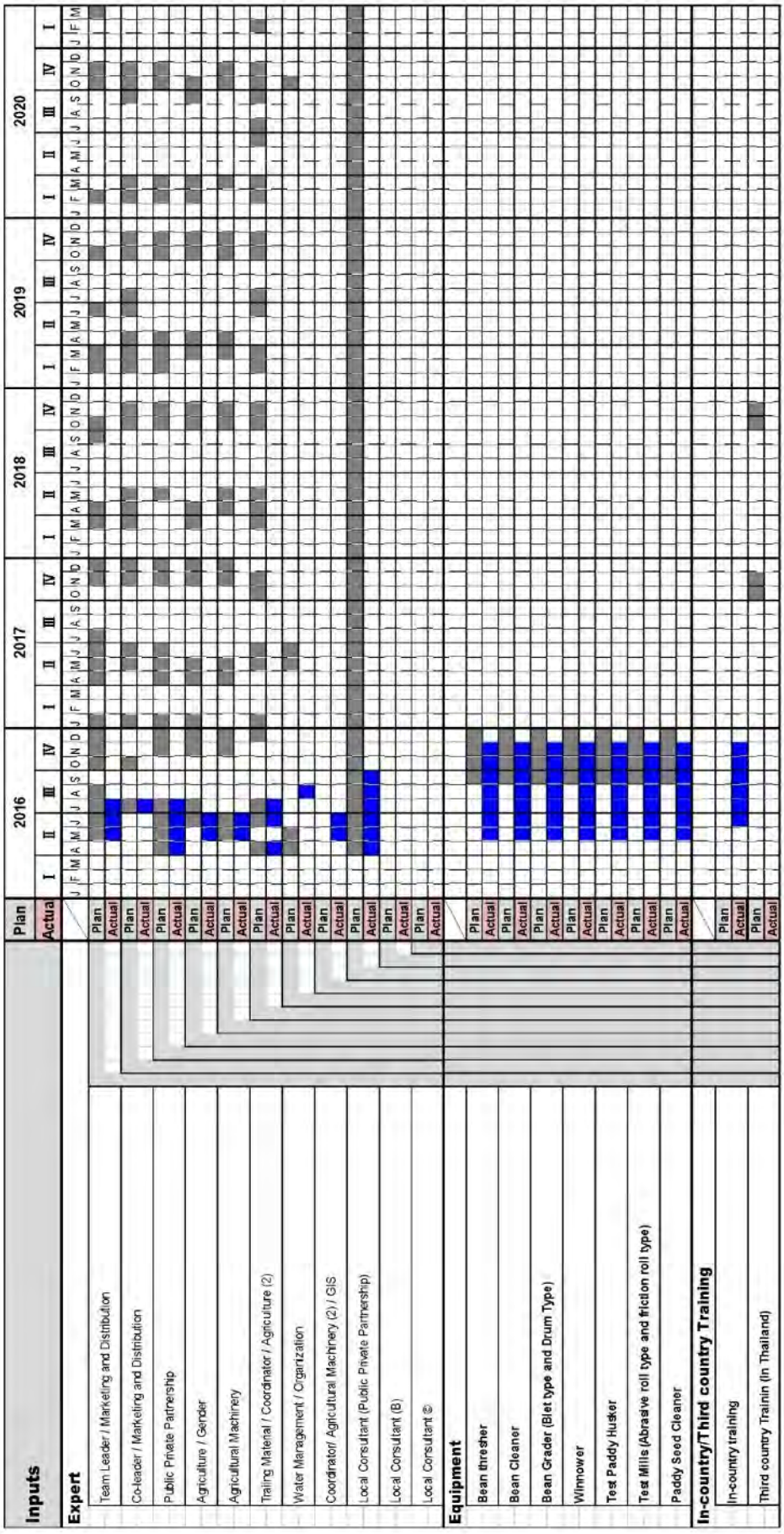
Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumption	Achievement	Remarks
Overall Goal					
Profitability of agricultural activities in the Project Site is improved	Increase of agricultural profit in the Project Site since 2015 exceeds that of the whole country by more than 10%.	**MOALI** Statistics	Policy related to crop selection and trading does not change drastically.	Baseline survey has started from May 28, and data analysis will start from the end of June. Result of baseline survey will be available	Indicators is still draft and will be determine through discussion with CP and JICA
Project Purpose					
Profitable irrigated agriculture model with private sector involvement is established	・At least one of the practices introduced through the Project is adopted in more than 50 % of areas in the 6 AMD demonstration farms ・Increase of agricultural profit since 2015 among farmers who adopt the practices exceeds that of the control group by more than 10%.	Baseline survey and endline survey of the Project Baseline survey and endline survey of the Project	Water supply is not disturbed due to drought or flood	A long list of rice millers in the project area was developed by the Post Harvest Group of DOA.	Indicators is still draft and will be determine through discussion with CP and JICA
Outputs					
1. Public-Private-Producers (Farmers) Partnership is strengthened	1-1 Paddy rice produced from Certified Seed in the Model Site is sold at higher price than paddy rice produced from ordinary seeds. 1-2 At least one variety of multiplication and distribution flow of good quality seeds of non-rice crops is strengthened.	Baseline survey and endline survey of the Project Baseline survey and endline survey of the Project	Policy and regulations for pulses seed production do not adversely affect the project activities	A long list of rice millers in the project area was developed by the Post Harvest Group of DOA.	Indicators is still draft and will be determine through discussion with CP and JICA
2. Profitability of farmers in the Model Site is improved	2-1 Increase of agricultural profit since 2015 among farmers in the Model Site exceeds that of the control group by more than 20%.	Farm economy record taken in the Project		Model farmers/ area was identified. Result of baseline survey will be available by July 2016.	
3. Guidelines for Participatory Irrigation Management (PIM) in the Project Site is prepared and applied in the Model Site	3-1 Guidelines for participatory irrigation management is prepared 3-2 Stakeholders meetings of irrigation sector are sustainably organized 3-3 More than 50 % farmers in the 6 AMD demonstration farms participate in PIM activities	Monitoring sheet Monitoring sheet Baseline survey and endline survey of the Project		N.A.	

Activities	Inputs		Important Assumption
	The Japanese Side	The Myanmar Side	
1-0-1 Conduct a baseline survey and endline survey to collect data on farm profitability of the target group and the control group. 1-0-2 Reconfirm the issues of present farming in the Project Site. 1-0-3 Review the suitable balance between land productivity and labor productivity to examine the project activities <Output1> 1-1. Promote the use of Certify Seed for rice 1-1-1 Review the current seed multiplication practice of DOA (seed farm & T/S extension office) and Model Seed Villages in the project site. 1-1-2 Enhance the capacity of DOA seed farm to improve quality of FS and RS. 1-1-3 Improve awareness of extension staff and farmers on CS. 1-1-4 Encourage rice millers / traders to purchase CS seeds produced by seed growers. 1-1-5 Involve rice millers for CS distribution and purchase of paddy produced from CS. 1-1-6 Strengthen the network among Public-Private-Producers for rice. 1.2 Promote the use of Good quality seeds for non-rice crops 1-2-1 Introduce good quality seed of non-rice crops to the Project Site. 1-2-2 Conduct trainings for DOA staff, farmers and the private companies on seed multiplication technique. 1-2-3 Involve traders in the good quality seed distribution and the purchase with premium of crops produced from good quality seeds. 1-2-4 Strengthen the Public-Private-Producers network for non-rice crops.	(1) Dispatch of Experts Team Leader/ Marketing and Distribution Co-leader/ Marketing and Distribution Public Private Partnership Agriculture/ Gender Agricultural Machinary Training Material/ Coordinator/ Agriculture (2) Water Management/ Organization Coordinator/ Agricultural Machinery (2) / GIS Local Consultant (PPP) Local Consultant (B) Local Consultant (C) (2) Provision of equipment ~~3~~ 2 Seed Cleaners Moisture Meters 6 Motorcycles for field inspectors ~~if budget allows~~ 2 Vehicles for the Project 1 Adopter for ridge building 2 Pulses thresher / cleaner Harvesting machine for pulses (3) Third country / In country training (4) Local cost shared by Japanese side Project office refurbishment cost Travel allowance for the Project Other running cost	a) Office space in DOA West Bago division b) Office space for irrigation policy advisor in ID in Nay Pyi Taw c) Fuel for field inspectors d) 9 designated staff for the Project assigned by DOA West Bago division throughout the project period (1 in division, 2 in districts, 6 in townships) d) Running cost such as electricity and water	The mechanism to facilitate land consolidation is introduced by the state or the union government of Myanmar. **Pre-Conditions** 10 baskets of Yezin 2, 3 and 5 (Black gram variety) is procured before the dry season cultivation in the 1st year. The AMD model land consolidation is completed before the start of the Project without lasting dispute. The AMD model land consolidation site is not destroyed through rainfall, flood or use of machineries. **<Issues and countermesures>** Farmer's coordination mechanism may be introduced through the project activities.

<Output2>			
2-1 3-season cropping model and 2-season cropping model with improved profitability are demonstrated in the AMD demonstration farms in the 6 townships			
2-1-1 Identify the suitable crops for 3-season cropping in each township by taking market demand prospect into account.			
2-1-2 Enhance the capacity of farmers on the 3-season cropping in the AMD demonstration farms.			
2-1-3 Identify the suitable crops for 2-season cropping in each township by taking market demand prospect into account.			
2-1-4 Introduce good quality seed of pulses, rice or other important product identified in 2-1-1 and 2-1-3.			
2-1-5 Enhance the capacity of farmers on appropriate use of agricultural inputs.			
2-1-6 Enhance the capacity of farmers on non-farm water management techniques for rice production.			
2-1-7 Enhance the capacity of farmers and AMS staff on appropriate use of combine harvesters.			
2-1-8 Introduce plot-to-plot water management practices, especially for pulses, including ridge building techniques.			
2-2 The practice introduced in 2-1 is disseminated in cost effective and sustainable way			
2-2-1 Introduce the farm economy record (accounting book) to model farmers and control group farmers.			
2-2-2 Analyze the data of 2-2-1 and visualize the effect of the practices introduced in 2-1.			
2-2-3 Advertise the practice in 2-1 by using the information of 2-2-2 through poster, radio, newspaper advertisement, etc.			
2-2-4 Create material such as booklet, poster, DVD etc. to disseminate the practice in 2-1 through Farmer Development Center.			
2-2-5 Disseminate the telephone list of model farmers to contact farmers in each village.			
2-2-6 Select model farmers in non-consolidated land in the 6 townships and adopt the techniques in 2-1.			

<Output3> 3-1. Identify the issues on middle- and long-term use of irrigation facilities in the Project Site through monitoring the Project. 3-2. Develop a guideline on PIM (Participatory Irrigation Management) in the Project Site. ~~3-3. Establish a stakeholders meeting of irrigation sector, and take a leading role on the meeting.~~ ~~3-4. Discuss about the guideline with stakeholders including donor agencies, and propose it to the central ministry.~~ 3-~~5~~3. Assist PIM activities by Water Users Groups after the Groups are established. 3-~~6~~4. Assist dissemination of the use of guidelines for land consolidation in the Project Site. 3-~~7~~5. Provide advices to solve the issues of irrigation sector in Myanmar through meeting with stakeholders and observation of various irrigation systems in Myanmar.				

Annex II Project Monitoring Sheet II (Revision of Plan of Operation)



Activities	Plan / Actual	20146				2017				2018				2019				2020			
Sub-Activities		I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
		J F M A M J J A S O N D				J F M A M J J A S O N D				J F M A M J J A S O N D				J F M A M J J A S O N D				J F M A M J J A S O N D			
Output 1: Public-Private-Producers (Farmers) Partnership is strengthened																					
1.0.1 Conduct a baseline survey and end line survey to collect data on farm profitability of target group and control group	Plan																				
	Actual																				
1.0.2 Reconfirm the issues of present farming in the Project Site.	Plan																				
	Actual																				
1.0.3 Review the suitable balance between land productivity and labor productivity to examine the project activities	Plan																				
	Actual																				
1.1 Promote the use of Certify Seed for rice	Plan																				
	Actual																				
1.1.1 Review the current seed multiplication practice of DOA (seed farm & T/S extension office) and Model Seed Villages in	Plan																				
	Actual																				
1.1.2 Enhance the capacity of DOA seed farm to improve quality of FS and RS	Plan																				
	Actual																				
1.1.3 Improve awareness of extension worker and seed production farmers on CS quality control	Plan																				
	Actual																				
1.1.4 Involve rice millers / traders to purchase CS seeds produced by seed growers.	Plan																				
	Actual																				
1.1.5 Involve rice millers for CS distribution and purchase of paddy produced from CS.	Plan																				
	Actual																				
1.1.6 Strengthen the network among Public-Private-Producers for rice	Plan																				
	Actual																				
1.2 Promote the use of Good quality seeds for non-rice crops	Plan																				
	Actual																				
1.2.1 Introduce good quality seed of non-rice crops to the Project Site	Plan																				
	Actual																				
1.2.2 Conduct trainings on multiplying the seeds for DOA staff, farmers and the private companies	Plan																				
	Actual																				
1.2.3 Involve traders for good quality seed distribution and purchase of crops made from the good quality seed with	Plan																				
	Actual																				
1.2.4 Strengthen the network among Public-Private-Producers for non-rice crops	Plan																				
	Actual																				

Activities / Sub-Activities	Plan / Actual	20146 (I, II, III, IV)	2017 (I, II, III, IV)	2018 (I, II, III, IV)	2019 (I, II, III, IV)	2020 (I, II, III, IV, IV)	Responsible Organization: Japan	Responsible Organization: GOM	Achievements	Issue & Countermeasures
Output 2: Profitability of farmers in the Model Site is improved										
2.1 3-season cropping model and 2-season cropping model with improved profitability are demonstrated in the AMD demonstration	Plan									
	Actual									
2.1.1 Identify the suitable crops for 3 season cropping in each township by taking market demand prospect into account	Plan									
	Actual									
2.1.2 Enhance the capacity of farmers on the 3 season cropping in the AMD demonstration farm.	Plan									
	Actual									
2.1.3 Identify the suitable crops for 2 season cropping in each township by taking market demand prospect into account	Plan									
	Actual									
2.1.4 Introduce good quality seed of pulses, rice or other important product identified in 2-1-1 and 2-1-3.	Plan									
	Actual									
2.1.5 Enhance the capacity of farmers on appropriate use of agricultural inputs.	Plan									
	Actual									
2.1.6 Enhance the capacity of farmers on on-farm water management techniques for rice	Plan									
	Actual									
2.1.7 Enhance the capacity of farmers and AMS staff on appropriate use of combine.	Plan									
	Actual									
2.1.8 Introduce plot to plot water management practice, especially for pulses, including ridge building techniques	Plan									
	Actual									
2.2 The practice introduced in 2-1 is disseminated in cost effective and sustainable way	Plan									
	Actual									
2.2.1 Introduce farm economy record (accounting book) to model farmers and control group farmers.	Plan									
	Actual									
2.2.2 To analyze the data of 2-2-1 and visualize the effect of the practices introduced in 2-1.	Plan									
	Actual									
2.2.3 Advertise the practice in 2-1 by using the information 2-2-2 through poster, radio, newspaper advertisement, etc.	Plan									
	Actual									
2.2.4 Create material such as booklet, poster, DVD etc to disseminate the practice in 2-1 through Farmer Development	Plan									
	Actual									
2.2.5 Disseminate the telephone list of model farmers to contact farmers in each village.	Plan									
	Actual									
2.2.6 Select model farmers in non consolidated land in 6 townships and adopt the techniques in 2-1	Plan									
	Actual									
Output 3. Guidelines for Participatory Irrigation Management (PIM) in the Project Site is prepared and applied in the Model Site										
3.1 Identify the issues on middle- and long-term use of irrigation facilities in the Project Site through monitoring the Project.	Plan									
	Actual									
3.2 Develop a guideline on PIM (Participatory Irrigation Management) in the Project Site.	Plan									
	Actual									
3.3 Assist PIM activities by Water Users Groups after the Groups are established.	Plan									
	Actual									
3.4 Assist dissemination of the use of guidelines for land consolidation in the Project Site.	Plan									
	Actual									
3.5 Provide advices to solve the issues of irrigation sector in Myanmar through meeting with stakeholders and observation of	Plan									
	Actual									
Duration / Phasing	Plan									
	Actual									

Months per year: J F M A M J J A S O N D (2020: J F M A M J J A S O N D J F M)

Monitoring Plan	Plan / Actual	20146 I	20146 II	20146 III	20146 IV	2017 I	2017 II	2017 III	2017 IV	2018 I	2018 II	2018 III	2018 IV	2019 I	2019 II	2019 III	2019 IV	2020 I	2020 II	2020 III	2020 IV
Monitoring																					
Joint Coordinating Committee	Plan		●				●				●				●				●		●
	Actual			●																	
Set-up the Detailed Plan of Operation	Plan		▲																		
	Actual			◀																	
Preparation of Monitoring Sheet	Plan		▲		▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
	Actual		◀																		
Monitoring Mission from Japan	Plan						▲				▲				▲				▲		▲
	Actual																				
Joint Monitoring	Plan										▲										▲
	Actual																				
Post Monitoring	Plan																				
	Actual																				
Reports/Documents																					
Work Plan	Plan			▲							▲										
	Actual			◀																	
Submission of Monitoring Sheet	Plan			▲		▲			▲			▲	▲		▲		▲		▲		▲
	Actual			◀																	
Project Progress Report	Plan								▲												
	Actual																				
Project Completion Report	Plan																				▲
	Actual																				
Public Relations																					
Commencement of the Project (Newspaper, etc)	Plan			▲																	
	Actual																				
Partial achievment of the Project (Newspaper, etc)	Plan											▲									
	Actual																				
Achievement of the Project (Newspaper, etc)	Plan																			▲	
	Actual																				

Annex III List of Equipment

Item	Item
＜Japan＞	
Seed Cleaner	Grain trier (improved type)
Threshing machine for beans/pulses	Mirror plate
Cleaner for beans/pulses	Tweezers
Ridge Builder (Ridgger)	Electric balance (small)
Moisture Meter	Electric balance (large)
Video camera	Test sieve (sesame)
Copy machine	Soil tester
Printer	EC meter
Sieve set for small beans/pulses	pH meter
Sieve set for large beans/pulses	Multi-tester pH/EC/TDS/ Salimeter
Moisture Meter for other grain	Soil hardness tester (insert type)
Dial thickness gauge	Soil hardness tester (Yamanaka type)
Pre-Cleaner for beans/pulses	Petri Film for bacteria
Test Paddy Husker	Petri Film for mold, yeast
Test Rice Mill	Petri Film for coliform
Moisture meter for rice	Lummi-tester
Winnower	Certified seed (rice)
Sieve set for milled rice	Certified seed (pulse)
Sample divider	Soft Carton (white)
Digital grain thermometer	Soft Carton (black)
＜Local Procurement＞	
Project vehicle (SUV/ Pickup)	Autoclave
Motor-bike	Drying sterilizer
Rice trans-planter (6 rows)	Incubator
Manual nursery bed	Small rice mill set
Nursery tray	Spare parts for machines
Laboratory	Plastic containers for vegetable transportation
Electrical generator	

Annex IVResult of Problem Analysis

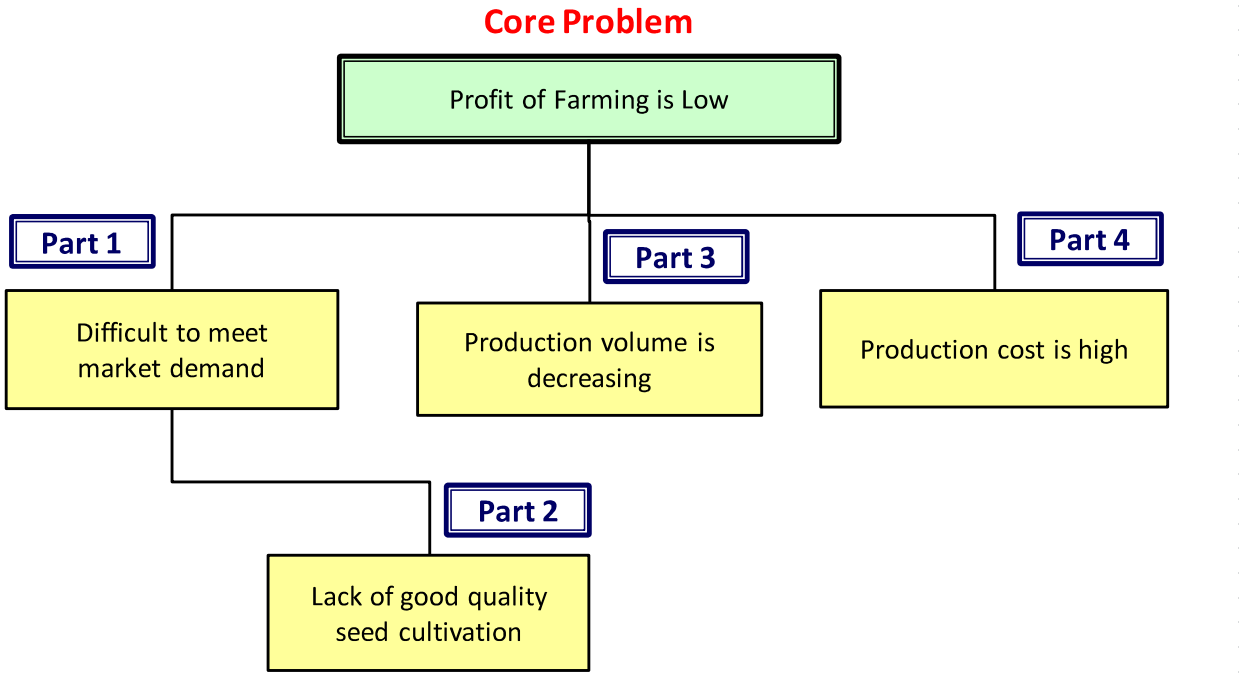


Figure 1. Core Problem and Direct Causes

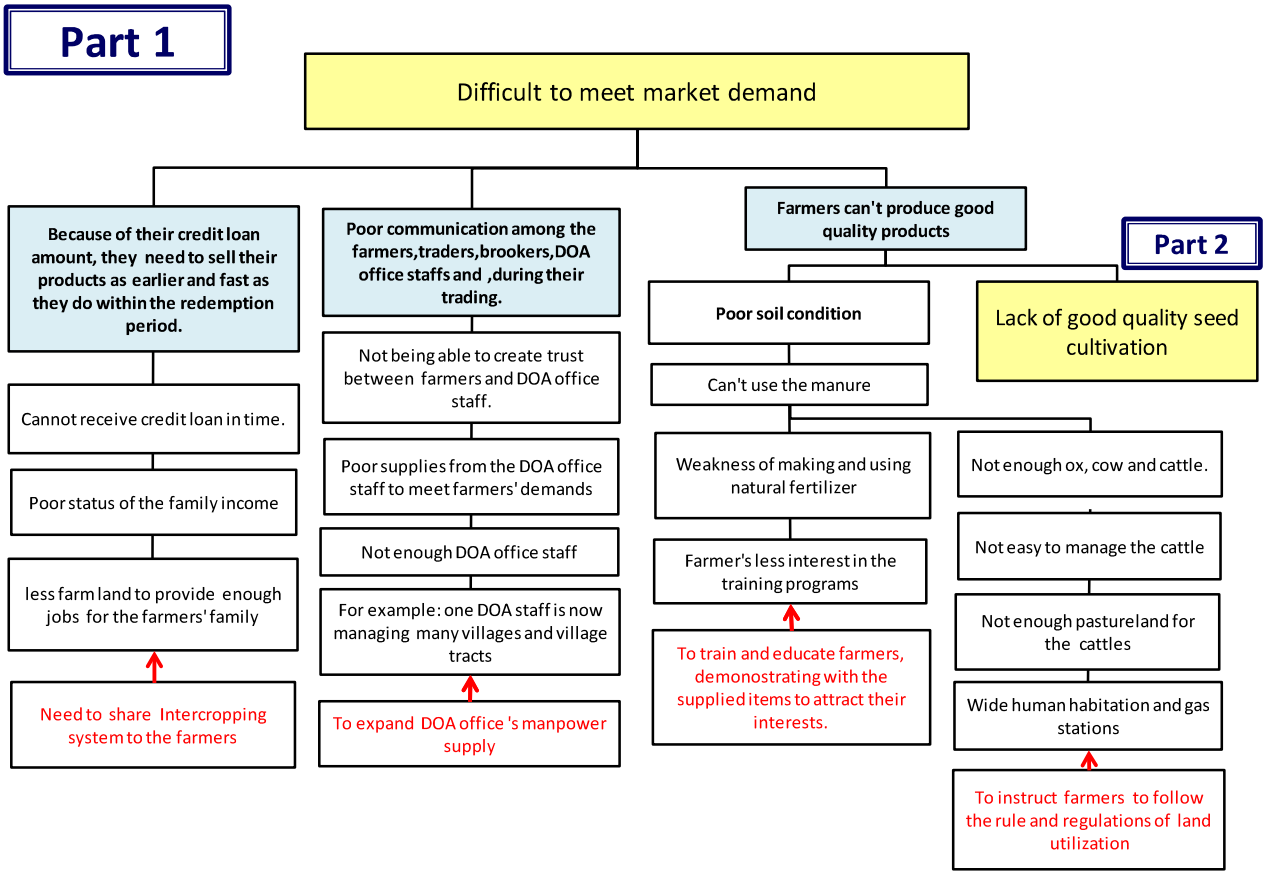


Figure 2. Problem Tree (Part-1)

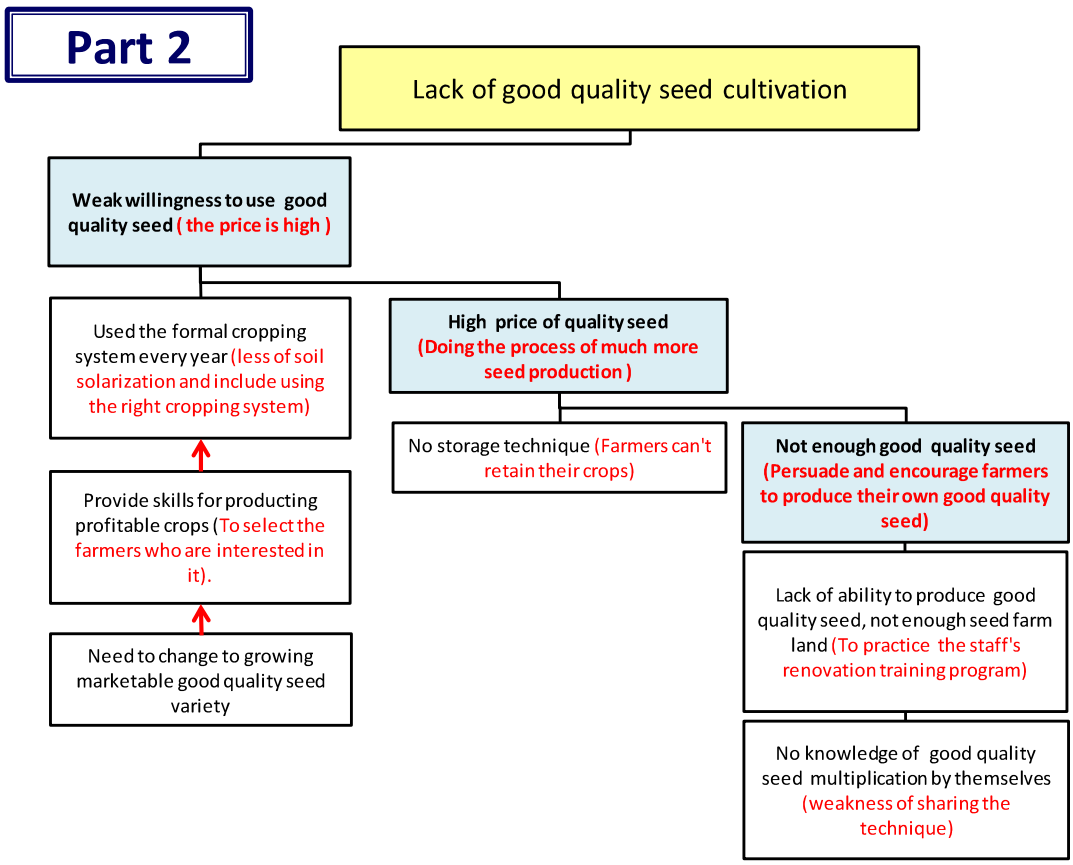


Figure 3. Problem Tree (Part-2)

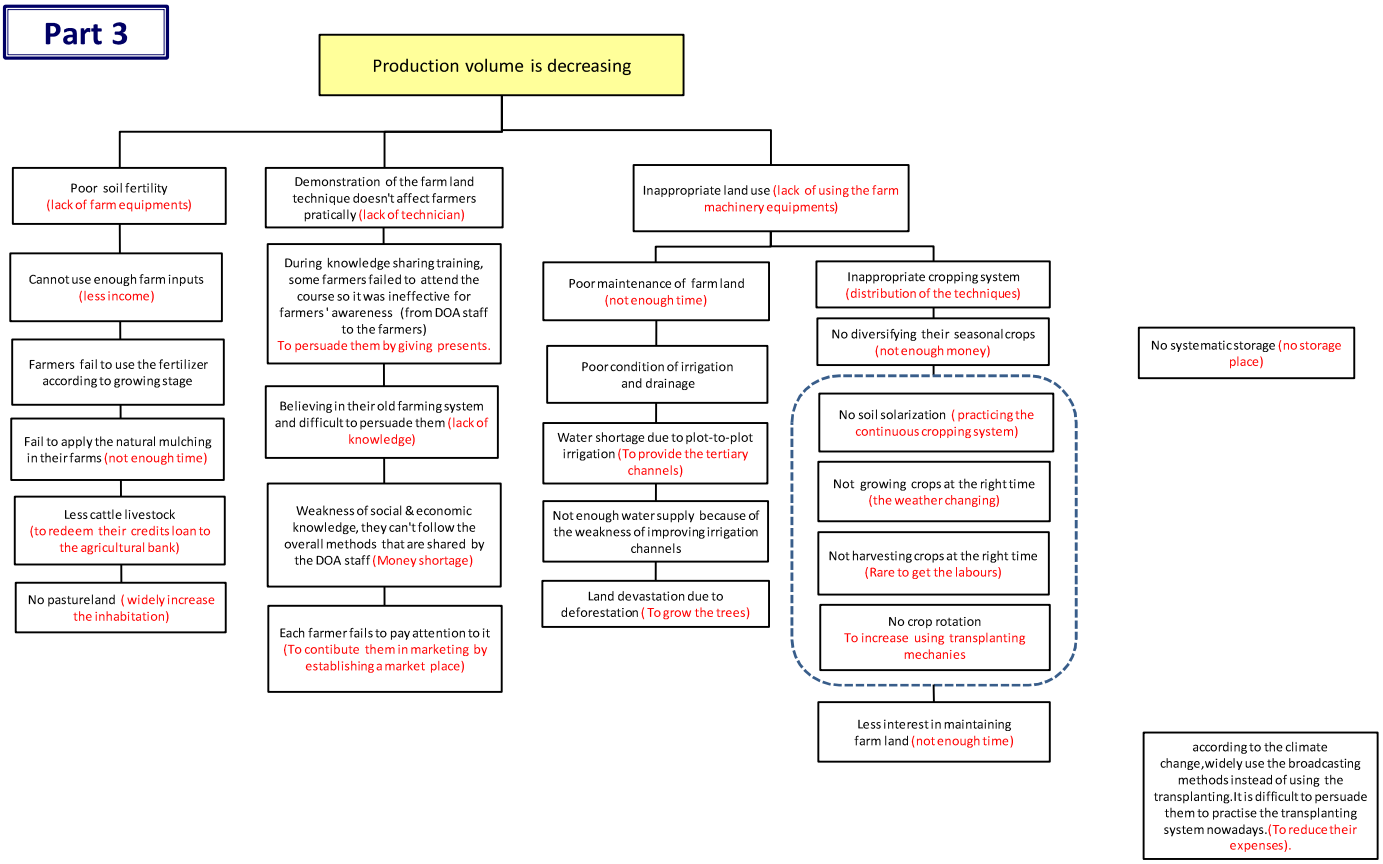


Figure 4. Problem Tree (Part-3)

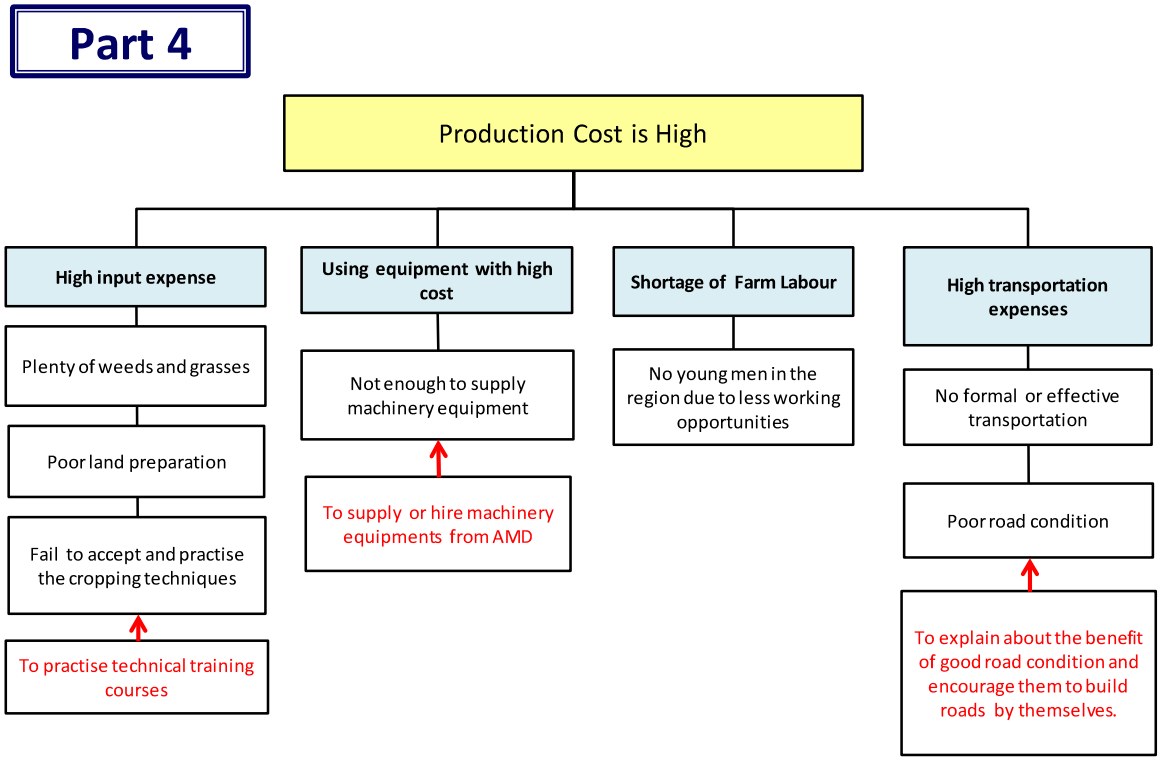


Figure 5. Problem Tree (Part-4)

Annex V Training Topics and Schedule of Post Harvest Group (in case of May)

Date (2016 May)	Day	Time	Items of Lecture/ Discussion
6	Fri	9:00 -12:00	Introduction to Post Harvest Counterparts & Project Background, and explain on schedule
		13:00 -15:30	Introduction to Post Harvest Techniques, picking up items of PH techniques
9	Mon	10:00 -12:00	Discussion of "What is Farmer's Job?" and "Cultivation Cycle & Seed Selection"
		13:00 -15:30	Training of Post-harvest Technologies (Quality, Impurities, Standard, Temperature (36℃)
10	Tue	10:00 – 12:00	Discussion and Training of Post-harvest Technologies [1)Harvesting/Soil Treatment, 2)Threshing & 3) Drying]
		13:00 – 15:30	Discussion and Training of Post-harvest Technologies [3) Drying, 4) Cleaning & 5) Milling
11	Wed	10:00 – 12:00	Discussion of Rice Mills' List in Project Territory Area & Rice Mill Questionnaires survey
		13:00 – 16:00	Discussion of Rice Mills' List in Project Territory Area & Rice Mill Questionnaire survey
13	Fri	10:00 – 12:00	Study tour for Rice Mill Survey to Le Taw Gyi Rice Mill, Pyay Township
			Nil
17	Tue	10:00 – 12:00	Discussion on Rice Miller List in each township & Training on Food Value Chain and
		13:00 – 16:00	Training of Drying including Moisture Content Calculation
18	Wed	10:00 – 12:00	Practical training for calculation and Self-explanation of Moisture Content based on Wet Base & Dry Base
		13:00 – 15:00	Practical training for Self-calculation and Self-explanation of Moisture Content based on Wet Base & Dry Base and Reviewing on Drying technique
19	Thu	10:00 – 12:00	Discussion of Operation of Bean Factory
		13:00 – 16:00	Discussion of Drying theory at Saturated Moisture Content, RH and Specific Temperature
23	Mon	10:00 – 12:00	Training of Selection of Rice Millers for Questionnaire & Discussion of Criteria how to select
		13:30 – 15:30	Final Selection of Rice Millers for Questionnaires survey along criteria decided
25	Wed	10:00 – 12:30	Discussion on Questionnaires survey and Training on Seed Grading
		-	Nil

Annex VI List of Model Farmers

List of Model Farmers

No.	TS Name	Farmer's Name	Village Name	Cultivated Area (acre) Lowland Total	Lowland LCA	Lowland Model	Lowland Seed Plot	Upland	Total	Cropping Pattern (2016) Monsoon	Cropping Pattern Winter	Cropping Pattern Summer	Variety Name Monsoon	Variety Name Winter	Variety Name Summer	Seed Source Monsoon	Seed Source Winter	Seed Source Summer	Year Purchased (Seed) Monsoon	Year Purchased Winter	Year Purchased Summer
1	Paukkaung	U Soe Myint	Wattoe	7.00	5.00	1.00	-	3.00	10.00	Paddy	Blackgram	Paddy	Sinthwelat	Yezin-2(Ywetchon)	Yadanartoe	Own Seed	Merchant	DOA	2015	Not Yet	Not Yet
2	Paukkaung	U Thein Oo	Wattoe	8.00	7.50	1.00	-	3.00	11.00	Paddy	Blackgram	Paddy	Sinthwelat	Yezin-2(Ywetchon)	Yadanartoe	Own Seed	Market	Own Seed	2015	Not Yet	2015
3	Paukkaung	U Myo Tint	Wattoe	4.00	4.00	1.00	-	4.00	8.00	Paddy	Blackgram	Paddy	Sinthwelat	Blackgram	Yadanartoe	Own Seed	Not Yet	Own Seed	2015	-	2015
4	Paukkaung	U Thein Win	Wattoe	2.00	1.00	1.00	-	3.00	5.00	Paddy	Blackgram	Paddy	Sinthwelat	Local Variety	Yadanartoe	Own Seed	Shop	Farmer	-	-	-
5	Paukkaung	U Nyan Myint	Wattoe	3.00	2.00	1.00	-	2.00	5.00	Paddy	Blackgram	Paddy	Sinthwelat	Yezin-2(Ywetchon)	Yadanartoe	Own Seed	Own Seed	DOA	2015	-	-
6	Paukkaung	U Khaing Htoo	Wattoe	3.00	2.00	1.00	-	5.00	8.00	Paddy	-	Paddy	Yadanartoe	-	Yadanartoe	Not yet	-	Ledawgyi Seed Farm	2015		
7	Paukkaung	U Han Gyi	Wattoe	5.00	2.50	1.00	-	3.00	8.00	Paddy	-	Paddy	Yadanartoe	-	Yadanartoe	from other farmers	-	Ledawgyi Seed Farm	2016		
8	Paukkaung	U Zaw Win	Wattoe	5.00	1.00	1.00	-	3.00	8.00	Paddy	Blackgram	Paddy	Sinthwelat	Local Variety	Yadanartoe	Shop	Own Seed	Farmer	-	-	-
9	Paukkaung	U Hla Myint	Wattoe	6.00	4.00	1.00	-	-	6.00	Paddy	-	Paddy	Sinthwelat	-	Palethwel	Ledawgyi Seed Farm	-	DOA	2016	-	2016
10	Paukkaung	U Myint Maung	Wattoe	8.00	7.00	1.00	-	8.00	16.00	Paddy	-	Paddy	Yadanartoe		Kyawzeya	own seed		DOA	2015		
11	Nattalin	Daw Khin Mar Kyi	Kyakhatwaryone	16.00	4.50	2.00	-	-	16.00	Paddy	Blackgram	Paddy	Yadanartoe	Peakazun	-	Paungde Seed Farm	Farmer	-	2016	-	-
12	Nattalin	U Ohn Myint	Kyakhatwaryone	15.00	2.00	1.50	-	-	15.00	Paddy	Blackgram	Paddy	Yadanartoe	Peakazun	Yadanartoe	Paungde Seed Farm	Farmer	-	2016	-	-
13	Nattalin	U Aye Soe	Kyakhatwaryone	7.00	2.00	1.50	-	-	7.00	Paddy	Blackgram	Paddy	Yadanartoe	Peakazun	Yadanartoe	Paungde Seed Farm	Farmer	-	2016	2016	-
14	Nattalin	Daw Nyo Nyo San	Kyakhatwaryone	26.00	9.50	2.00	-	-	26.00	Paddy	-	-	Yadanartoe	Peakazun	-	farmer Paungde Seed Farm	-	-	2016		
15	Nattalin	Daw Khin Thaung (or)Ko Myint Kyaing	Kyakhatwaryone	5.50	2.00	2.00	-	-	5.50	Paddy	-	-	Yadanartoe	Peakazun	-	Paungde Seed Farm			2016		
16	Nattalin	U Hlaing Gyi / U Htun Shein	Damange	16.50	-	2.00	-	-	16.50		Blackgram	Paddy	Yadanartoe/ Ngwe toe	Peakazun	Yadanartoe/ Ngwe toe	Own Seed	Own Seed	Own Seed	-	-	-
17	Nattalin	U Htun Than	Damange	25.00	-	2.00	-	-	25.00	Paddy	Blackgram	Paddy	Yadanartoe/	Peakazun	Yadanartoe/	Own Seed/Paungde seed farm	Own Seed	Own Seed	2016	-	-
18	Nattalin	U Myint Hlaing (1)	Damange	8.00	-	2.00	-	-	8.00	Paddy	Blackgram	Paddy	Yadanartoe	Peakazun	Yatanartoe	Pauktapin	Own Seed	Own Seed	-	-	-
19	Nattalin	U Myint Htun	Damange	14.00	-	1.50	-	-	14.00												
20	Nattalin	U Myint Hlaing (2)	Damange	7.00	-	2.00	-	-	7.00	Paddy	Blackgram	Paddy	Ngwe toe/Inmma	Peakazun	Ngwe toe/Innma	Own seed	Own Seed	Own seed			
21	Nattalin	U Antt Maung	Thet Nat Kwin	18.50	13.00	3.00	-	-	18.50	Paddy	Blackgram	-	Yatanartoe/Taungpyan	Peakazun	-	Pwintphyu seed farm/own seed	Own Seed	-	2016		
22	Nattalin	U Maung San	Thet Nat Kwin	6.00	5.50	1.50	-	-	6.00	Paddy	Blackgram	-	Yatanartoe/Taungpyan	Peakazun	-	Own seed	Own Seed	-	-	-	-
23	Nattalin	U Nyein Chan Thu /	Thet Nat Kwin	7.50	6.44	2.00	-	-	7.50	Paddy	Blackgram	-	Yatanartoe/Taungpyan	Peakazun	-	Pauktapin	Own Seed	-	2016	-	-
24	Nattalin	U Mya Thein	Thet Nat Kwin	10.00	3.37	2.00	-	-	10.00	Paddy	Blackgram	-	Yatanartoe/Taungpyan	Peakazun		Pauktapin/Own seed	Own Seed	-	2016	-	-
25	Nattalin	U Win Bo	Thet Nat Kwin	12.00	8.82	1.50	-	-	12.00	Paddy	Blackgram	-	Taung Pyan/Yatanar toe	Peakazun		Paungde Seed Farm/own seed	Own Seed		2016	-	-
26	Zeekone	U Than Zaw Tun	Myauklautkone	5.00	4.00	2.00	-	-	5.00	Paddy	Blackgram	-	Yadanartoe	Peakazun	-	Pauktapin Seed Farm	Farmer	-	2016	-	-
27	Zeekone	U Myint San	Myauklautkone	8.00	2.00	1.00	-	-	8.00	Paddy	Blackgram	-	Yadanartoe	Peakazun	-	Pauktapin Seed Farm	Farmer	-	2016	-	-
28	Zeekone	U Kyaw Min	Myauklautkone	1.00	1.00	1.00	-	-	1.00	Paddy	Blackgram	-	Yadanartoe	Peakazun	-	Pauktapin Seed Farm	Farmer				
29	Zeekone	U Phyo	Myauklautkone	6.00	4.00	4.00	-	-	6.00	Paddy	Blackgram	-	Yadanartoe	Peakazun	-	Pauktapin Seed Farm	Farmer	-	2016	-	-
30	Zeekone	U Thein Lwin	Myauklautkone	12.00	4.00	1.00	-	-	12.00	Paddy	Blackgram	-	Yadanartoe	Peakazun	-	Pauktapin Seed Farm	Farmer	-	2016	2016	-
31	Zeekone	U Kyaw Lwin Oo	Myauklautkone	8.00	4.00	1.00	-	-	8.00	Paddy	Blackgram	-	-	Peakazun	-	Pauktapin Seed Farm	Farmer	-	2016	-	-
32	Thegon	U Myint Kyi	Kyaung Su	10.00	6.00	2.00	-	-	10.00	Paddy	-	Paddy	Kyawzeya	-	Manawthukha	Own Seed	-	Own Seed	2015	-	2014
33	Thegon	U Hla Kyi	Kyaung Su	20.00	9.00	1.00	-	-	20.00	Paddy	-	-	Kyawzeya/Mhawbi	-		Own Seed	-	-	-	-	-
34	Thegon	U Nyan Myint	Kyaung Su	5.00	2.00	2.00	-	-	5.00	Paddy	-	-	Kyawzeya	-		Own Seed	-	-	-	-	-
35	Thegon	U Nyan Htun	Kogyimyote (7)	5.00	2.00	2.00	-	-	5.00	Paddy	-	-	Kyawzeya	-		Own Seed	-	-	-	-	-
36	Thegon	U Myint Tin	Kogyimyote (7)	19.00	4.00	2.00	-	-	19.00	Paddy	-	-	Kyawzeya	-		Own Seed	-	-	-	-	-
37	Thegon	U Aung Kyaw Soe	Yae Myat	5.00	1.00	1.00	-	-	5.00	Paddy	-	-	Kyawzeya/Mhawbi	-		Own Seed	-	-	-	-	-
38	Thegon	U Aung Naing	Tawgyi	14.00	-	1.00	-	-	14.00	Paddy	-	-	Karenma/Taungpyan mhwe	-		Own Seed	-	-	-	-	-
39	Thegon	U Htun Hlaing	Tawgyi	10.00	-	2.00	-	-	10.00	Paddy	-	-	Karenma	-		Own Seed	-	-	-	-	-
40	Thegon	U Htwe Myint	Inntai inn	12.00	-	1.00	-	-	12.00	Paddy	-	-	Karenma/Taungpyan mhwe/Innma yebaw	-		Own Seed	-	-	-	-	-
41	Thegon	U Swe Naing Win	Inntai inn	12.00	-	2.00	-	-	12.00	Paddy	-	-	Mhawbi san	-		Own Seed	-	-	-	-	-
42	Thegon	U Myint Oo	Inntai inn	8.50	-	4.00	-	-	8.50	Paddy	-	-	Kyawzeya/Mhawbi san	-		Own Seed	-	-	-	-	-
43	Paungde	U Than Soe	Ywar Palae	10.00	3.00	1.00	-	-	10.00	Paddy	Blackgram	-	Yadanartoe/	Peakazun	-	Own Seed	Own Seed	-	2015	2016	-
44	Paungde	U Aung Ko Min	Ywar Palae	6.00	3.00	1.00	-	-	6.00	Paddy	Blackgram	Paddy	Taung Pyan	Ywetwine/Ywet Chun	-	Own Seed		-	-	-	-
45	Paungde	U Htun Htun Oo	Ywar Palae	4.00	3.50	1.00	-	-	4.00	Paddy	-	Paddy	Taung Pyan	-	Yadanartoe	Farmer	-	Own Seed	2016	-	2014
46	Paungde	U San Win	Nyaungzin	10.00	4.00	1.00	-	-	10.00												
47	Paungde	U Aung San	Nyaungzin	3.00	1.00	1.00	-	1.00	4.00	Paddy	Blackgram	-	Yadanartoe	Yezin-2(Ywetchon)	-	Own Seed	Farmer	-	2014	Not Yet	-
48	Paungde	U Myint Htay	Ywar Palae	3.00	2.00	1.00	-	0.50	3.50	Paddy	Blackgram	-	Taung Pyan	Peakazun	-	Own Seed	Farmer	-	2015	Not Yet	-
49	Paungde	U Aye Lwin	Ywar Palae	6.00	5.00	1.00	-	-	6.00	Paddy	Blackgram	Paddy	Taung Pyan	Ywetwine/Ywet Chun	-	Own Seed		-	-	-	-
50	Paungde	U Soe Lwin	Ywar Palae	8.57	1.70	1.00	-	-	8.57	Paddy	Blackgram	Paddy	Taung Pyan	Yezin-2(Ywetchon)	Yadanartoe	Farmer	Own Seed	Paungde Seed Farm	2015	2015	Not Yet
51	Paungde	U Tin Shwe	Ywar Palae	7.93	4.00	2.00	-	0.25	8.18	Paddy	Blackgram	-	Yadanartoe/	Peakazun	-	Own Seed	Farmer	-	2015	Not Yet	-
52	Pyay	U Kyaw Win	Alotawya	8.00	2.16	2.16	$36m^2$	5.00	13.00	Paddy/sesame	green gram/groundnut	-	Yatanartoe/samonenet	Petishwewah/magwe(11)	-	laedawgyi seed farm /own seed	Own Seed	Ledawgyi Seed Farm	2015	-	-
53	Pyay	U Zaw Myint Oo	Alotawya	5.00	2.50	2.50	-	5.00	10.00	Paddy/sesame	green gram/groundnut	_	Yatanartoe/samonenet	Petishwewah/magwe(11)	-	Ledawgyi Seed Farm/own seed	Own Seed	-	2015	-	-
54	Pyay	U Myint Lwin	Alotawya	5.00	1.50	1.50	-	2.50	7.50	Paddy/sesame	green gram/groundnut	_	Kyawzeya/samonenet	Petishwewah/magwe(11)	-	Ledawgyi Seed Farm/own seed	Own Seed	_	2015	-	-
55	Pyay	U Aung Kyaw Lin	Alotawya	2.43	2.00	2.00	$36m^2$	3.00	5.43	Paddy/sesame	green gram/groundnut	_	Shwebo pawsan /samonnet	Petishwewah/magwe(11)	-	Ledawgyi Seed Farm/own seed	Own Seed	_	2015	-	-
56	Pyay	U Aung Zaw Win (or)U Myint Shwe	Alotawya	3.00	1.84	1.84	-	2.50	5.50	Paddy/sesame	green gram/groundnut	_	Kyawzeya /samonnet	Petishwewah/magwe(11)	-	Own seed/own seed	Own Seed	-	-	-	-
57	Pyay	U Win Myint	Alotawya	5.00	1.25	1.25	-	8.50	13.50	Paddy/sesame	green gram/groundnut	_	Kyawzeya /samonnet	Petishwewah/magwe(11)	-	Own seed/own seed	Own Seed	-	-	-	-
58	Pyay	U Than Shwe	Alotawya	7.00	4.50	4.50	-	5.00	12.00	Paddy/sesame	green gram/groundnut	_	Kyawzeya/shwe bo paw san	Petishwewah/magwe(11)	-	Own seed/laedawgyi	Own Seed	-	2015	-	-
59	Pyay	U San Ngwe	Alotawya	6.00	0.75	0.75	-	3.00	9.00	Paddy/sesame	green gram/groundnut	_	Kyawzeya/samonenet	Petishwewah/magwe(11)	-	Own seed/own seed	Own Seed	-	-	-	-
60	Pyay	U Tun Min	Alotawya	1.75	0.50	0.50	-	0.50	2.25	Paddy/sesame	green gram/groundnut	_	shwepyitan /samonnet	Petishwewah/magwe(11)	_	Own seed/own seed	Own Seed	-	-	-	-

Source: PROFIA

Annex VII　Working Manual for Seed Selection using Salt Water

အကျိုးအမြတ်ဖြစ်ထွန်းစေမည့် ရေသွင်းစိုက်ပျိုးရေးစနစ်တော်ဆောင်ရေးစီမံကိန်း (PROFIA)

ဆားရေစိမ်၍ မျိုးစေ့ရွေးချယ်နည်း လမ်းညွှန်

ဆားရေစိမ်၍ မျိုးစေ့ရွေးချယ်ခြင်း		
၀။	ရည်ရွယ်ချက် - ကျန်းမာသန်စွမ်းမှုမရှိသည့် မျိုးစေ့များအား ဖယ်ရှားရန်နှင့် အရည်အသွေးကောင်းမွန်သော မျိုးစေ့များရွေးချယ်ရန် - အပင်ပေါက်နှုန်းနှင့် အထွက်နှုန်းတိုးစေရန် အချိန် မျိုးခင်းပြင်မီအချိန်	လိုအပ်ပစ္စည်းများပြင်ဆင်ခြင်း (က) စပါးမျိုးစေ့ (ခ) ရေပုံးကြီးကြီး (၁ ပုံး) (ဂ) သောက်ရေသန့်ဘူးခွံ (၁ ဘူး) (ဃ) ဆား (၂ ပိဿာ၀န်းကျင်) (င) လတ်ဆတ်သည့်ကြက်ဥ (၁ လုံး) (စ) ပိုက်စိမ်းစ (၁ ခု) (ဆ) ရိုးရိုးရေ (၄ ဂါလံ) (ဇ) ပလတ်စတစ်ဇကာ (၁ ခု)
	လုပ်ငန်းစဉ်ပြပုံ	ဖော်ပြချက်
၁။		ရိုးရိုးရေ ၄ ဂါလံ (ရေသန့်ဘူး ၁၆ ဘူးစာ)ကို ရေပုံးကြီးထဲသို့ ထည့်ပါ။ (ဆား ၂ ပိဿာနှင့် ရေ ၄ ဂါလံဆိုသည်မှာ စပါး ၁ ပြည်မှ ၄ ပြည်ပမာဏ အတွက်သာဖြစ်ပြီး စပါး ၄ ပြည် ထက်ပိုပါက စပါး ၁ ပြည်လျှင် ရေ ၁ ဂါလံနှုန်းဖြင့် ရေကို ထပ်တိုးထည့်သွားရမည်ဖြစ်ပြီး ဆားပမာဏကိုလည်း လိုအပ်သလိုထပ်တိုး အသုံးပြုသွားရမည်ဖြစ်သည်)
၂။		ရေထဲသို့ကြက်ဥကိုထည့်ပါ။ တို့နောက် ရေထဲသို့ ဆားနဲနဲချင်းစီထည့်၍ ရေတွင်ပျော်ဝင်အောင် မွှေပေးပါ။ ကြက်ဥရေပေါ်တွင် ပေါလာသည်အထိ ဆားကို နဲနဲချင်းစီ အကြိမ်ကြိမ် ထည့်ပေးပါ။ ဆားတစ်ကြိမ်ထည့်မွှေပြီးတိုင်း ကြက်ဥပေါ်မပေါ် စောင့်ကြည့်ပါ။ ထိုသို့စောင့်ကြည့်ရာတွင် ရေပြိမ်သည်အထိ စောင့်ရမည်။ (ယေဘုယျအားဖြင့် ရေ ၄ ဂါလံလျှင် ဆား ၀ ပိဿာခွဲ၀နှုန်းကျော်ထည့်ပါက ကြက်ဥပေါ်လာလေ့ရှိသည်)
၃။		ကြက်ဥသည် ရေမျက်နှာပြင်ပေါ်တွင် ဒေါင်လိုက်အနေအထားဖြင့် ပေါ်လာပြီး ရေပေါ်တွင်ပေါ်နေသည့် အပိုင်းသည် ဒင်္ဂါးစေ့အပိုင်းခန့်ပေါ်လာလျှင် ဆားထပ်ထည့်ရန် မလိုတော့ပါ။ (အကယ်၍ ရေ ၄ ဂါလံအတွင်း ထည့်ရမည့် လိုအပ်သည့်ဆားပမာဏကို ကြိုတင်သိရှိပြီးဖြစ်ပါက ၄င်းလို အပ်သည့် ဆားပမာဏထည့်ပြီးမှ ကြက်ဥကို ရေထဲသို့ထည့်၍ စမ်းသပ်နိုင်ပါသည်။)

၄။		ပိုက်စိမ်းစကို ရေပုံးထဲသို့ အောက်ခံအဖြစ်ထည့်ပါ။
၅။		မျိုးစေ့များကို ဆားဖျော်ရည်ထဲသို့ထည့်လိုက်ပါ။
၆။		မျိုးစေ့အချို့ အောက်ခြေသို့နစ်မြုပ်သွားပြီး အချို့မှာ မူ ရေပေါ်တွင် ပေါ်ကျန်ခဲ့သည်ကိုတွေ့ရမည်။ နစ်မြုပ်သွားသည့် မျိုးစေ့များမှာ ကျန်းမာသန်စွမ်းသည့် အဟာရပြည့်ဝသည့် မျိုးစေ့များဖြစ်သည်။
၇။		ရေပေါ်တွင်ပေါ်နေသည့် မျိုးစေ့များမှာ ကျန်းမာသန်စွမ်းသည့် စပါးပင်ရရှိမည်မဟုတ်သဖြင့် ၎င်းတို့ကို ဖယ်ရှားပစ်ပါ။
၈။		နောက်ဆုံးအဆင့်အနေဖြင့် အောက်တွင်ခံထားသည့် ပိုက်ကိုမ၍ လက်ရွေးစင်မျိုးစေ့များကို ဆယ်ယူပါ။ ၎င်းပိုက်ဖြင့် ထုပ်ထားသည့်အတိုင်းပင် ဆားနှင့်ရည်များ ပြောင်စင်သွားသည်အထိ ရိုးရိုးရွေ့ဖြင့် အထပ်ထပ်ဆေးကြောပါ။ တို့နောက် တောင်သူများ လုပ်လေ့ရှိသည့် မျိုးစေ့ပြင်ဆင်မှု ပုံမှန်လုပ်ငန်းစဉ်များကို ဆက်လက်၍ လုပ်ဆောင်နိုင်ပြီဖြစ်သည်။

အကျိုးကျေးဇူး

ဆားရည်စိမ်၍ မျိုးရွေးချယ်ခြင်းနည်းကို အသုံးပြုခြင်းအားဖြင့် ရရှိနိုင်သော အကျိုးကျေးဇူးများမှာ -

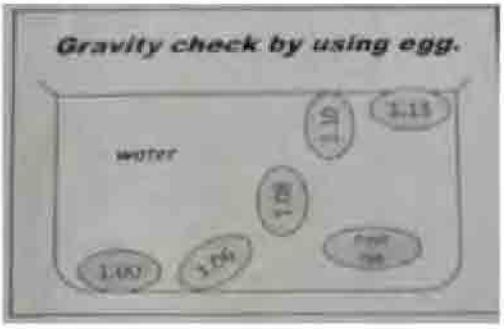
- အရည်အသွေးကောင်းမျိုးစေ့များ ရရှိပြီး သန်မာသောပျိုးပင်များရရှိသဖြင့် ကိုယ်ခံအားကောင်းပြီး ပိုးမွှားရောဂါဒဏ်ပိုမိုခံနိုင်ခြင်း
- မလိုလားသော မျိုးစေ့ဆောင်ရောဂါများ ဖယ်ရှားနိုင်ခြင်း
- မလိုလားသော ပေါင်းမျိုးစေ့များဖယ်ရှားနိုင်ခြင်း
- ပယ်လိုက်သောမျိုးစေ့များကို အခြောက်ခံပြီးကြိတ်ခွဲ၍ တိရိစ္ဆာန်အစာအဖြစ်အသုံးပြုနိုင်ခြင်း

သတိပြုရန်

တောင်ပုံနှင့် ကောက်ညှင်းစပါးမျိုးများကို ဤနည်းဖြင့်ရွေးချယ်လျှင် ရိုးရိုးရေတွင်နာရီဝက်ခန့် အရင်စိမ်ပြီးမှသာ ဆားရည်စိမ်ခြင်းပြုလုပ်ပါရန်။

မှီငြမ်းမှတ်ချက်

၁။ ကြက်ဥကိုအသုံးပြု၍ ဆွဲငင်အားကိုဆန်းစစ်ခြင်း



၂။ ဆန်အမျိုးအစားအလိုက် ရေ ၁၀ လီတာတွင် ထည့်ရမည့် ဆား (သို့) အမိုနီယမ်ဆာလဖိတ်

ဆန်အမျိုးအစား	ဆား (ကီလိုဂရမ်)	အမိုနီယမ် ဆာလဖိတ် (ကီလိုဂရမ်)	ဆွဲငင်အား
စေးကပ်မှုများသောဆန်	၂	၃	၁.၁၃
စေးကပ်မှုအသင့်အတင့်ရှိသောဆန်	၁.၆	၂.၂	၁.၀၈
အရက်ချက်ဆန် (အရွယ်အစားကြီး)	၀.၉	၁.၁	၁.၀၆

TO CR of JICA Myanmar OFFICE

PROJECT MONITORING SHEET

The Project for Profitable Irrigated Agriculture in Western Bago Region (PROFIA)
Version of the Sheet: Ver.2.0（Term: July 2016 - December 2016）

Name: Myint Lwin
Title: Project Manager
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Title: Team Leader/ Distribution and Marketing

Submission Date: 31 December, 2016

I. Summary

1 Progress

1-1 Progress of Inputs

Japanese side

- 9 Japanese experts, including 2 additional short-term experts for 1) farm economy/ baseline analysis and 2) farm mechanization (2)/ coordinator, has been dispatched during the period.
- 2 seed graders, procured from India, were installed in Paungde Seed Farm (Paungde TS) and Pwe Pyae Seed Farm (Thegon TS) on November 22, and handover ceremonies were organized on December 7 at each seed farm. The seed graders will start operation from December 2016 for cleaning and grading of 2016 monsoon paddy. Newspaper scripts of the ceremony are shown in **Annex III.**
- The PROFIA Team conducted a survey on procurement of additional 1 seed grader from November, and identifies a location for installation, which is Agricultural Community Learning Center in Paundale, under Pyay TS.
- Equipment from Japan, including threshing machine, pre-cleaner and cleaner for pulses/ beans, arrived in Yangon port on November 20, and transported to Pyay on December 8. Seed cleaners for pulses/ beans will be installed in Zigon. List of equipment to be procured are shown in **ANNEX IV**.
- 2 Japan-made Vehicles are now under procurement procedures. After obtaining Import Permit and Tax Exemption, the vehicles will be shipped from Yokohama and Bangkok port. Expecting date of the 2 vehicles arrival in Pyay is March 2017.

Myanmar side

- Nine (9) DOA officials from Regional, District, and Township level were assigned as counterparts. In addition, Eight (8) DOA officials were selected as Post Harvest Group.
- A building and space in Deputy Regional Officer's Office for establishing

"Postharvest and Grain Quality Control Laboratory" was provided to the Project Team. The team started rehabilitation work from November, and the work will be completed by the middle of February 2017. Operation will be start on March 2017.

1-2 Progress of Activities

1-0-1 Conduct a baseline survey and endline survey to collect data on farm profitability of the target group and the control group.

(Progress) - Follow-up of the baseline survey was conducted during August, and data processing has started from September. Result of the baseline survey is attached in this monitoring sheet.

1-0-2 Reconfirm the issues of present farming in the Project Site.

(Progress) - Field survey, including the model LCA in 6 TSs, Aunglan, Wetpoke, Magway, etc., was continued by the Project Team during October to December.
- Major issues identified by the Team includes; 1) not enough irrigation water for summer crops (only limited area can grow summer paddy), 2) inappropriate physical condition of the land consolidation area (LCA) resulting in difficulty in proper water management and mechanization as shown in **ANNEX V**.
- For the issue of 1), the PROFIA Team decided to promote crop diversification in summer season, particularly shifting from summer paddy to less water consume crops including sesame and pulses. For 2), it is matter of precondition of the PROFIA PDM, and will be discussed in Section 2 of this monitoring sheet.

1-0-3 Review the suitable balance between land productivity and labor productivity to examine the project activities.

(Progress) - The PROFIA consultant team collects data and information to discuss suitable balance between land productivity and labor productivity. Due to labor cost increase and declining birth rate, mechanization is needed in land preparation, transplanting, and harvesting for example. In this regards, increase in land productivity through proper mechanization is necessary. However, in some case, seed multiplication and nursery preparation of transplanting for example, improvement of labor productivity is required. The issue will be analyzed further based on farming diary recorded by model farmers.

1-1. Promote the use of Certify Seed for rice

1-1-1 Review the current seed multiplication practice of DOA (seed farm & T/S extension office) and Model Seed Villages in the project site.

(Progress)
- The team conducted discussion with C/Ps from 6 Townships, seed farms in Paungde and Pwe Pyae, and JICA technical cooperation project team for paddy seed multiplication to identify current seed multiplication practice. Also, Project Manager (PM) shared a policy on promotion of Seed Growers Association (SGA), and PM and the consultant team agreed on collaboration for the policy implementation.
- Through discussion with C/Ps, the PROFIA consultant team identified seed multiplication issues include; 1) amount of good quality seed is not enough to meet demand (need private sector involvement), 2) seed farmers need skill improvement, 3) product from CS cannot make good price in local market, 4) difficulty in finding CS with the yellow tag in the project site, 5) irrigation canal is not connected to DOA seed farm.

1-1-2 Enhance the capacity of DOA seed farm to improve quality of FS and RS.

(Progress)
- During 2016 monsoon season, C/Ps of the project including 6 township extension office and 2 seed farms participated in a series of seed multiplication training in Pathein, organized by JICA Technical Cooperation Project on Development of Participatory Multiplication and Distribution System for Quality Rice Seeds (hereinafter referred to as “The JICA Seed Project”). The training was started from June until November, and consists of lectures and field practices and covers all process of seed multiplication from seed selection to post harvest handling.
- 2 paddy seed cleaners from India were arrived at Yangon port at the beginning of November and installed in the 2 seed farms by November 22. Handover ceremony of the seed cleaners for paddy was held on December 7 at each seed farm, and operation is now on-going.

1-1-3 Improve awareness of extension staff and farmers on CS.

(Progress)
- The Post Harvest Group, organized by DOA on May, has continuously participated in training on Postharvest and Grain

Quality Control provided by PROFIA consultant. The training includes not only lectures, but also practical activities such as 1) grain quality assessment using results of grain inspection at Yangon, 2) feed backing and discussion to the grain/ seed providers, and 3) milling recovery test at rice mills in 6 Townships.

- To assure and extend their activity to farmers and private sectors, Postharvest and Grain Quality Control Laboratory will be established in Pyay. Rehabilitation work for the laboratory started on November 13, and will be completed by February

- Participating in the seed multiplication training in Pathein is one of opportunities for awareness improvement of C/Ps. Also, One-day seminar on seed multiplication was organized on October 26 in Pyay Deputy Regional Officer's Office, by inviting seed multiplication team of the JICA Seed Project.

1-1-4 Encourage rice millers / traders to purchase CS seeds produced by seed growers.

(Progress)

- List of rice millers in the project was developed by DOA C/Ps and key millers who have connection to the model farmers are identified. Then, questionnaire survey to the rice millers was conducted on June and the result is compiling and analyzing by the Post Harvest Group.
- Grain and seed (FS and CS) obtained from seed farmers and private seed growers (including rice millers) were assessed at the quality inspection laboratory in Yangon (OMIC Myanmar). The result was feed backed to the grain/seed providers with detail indicators of quality analysis. Through this activity, the project team tries to raise awareness of quality seed to stakeholders in seed distribution.
- At Project Implementation Committee (PIC) on November 21, PROFIA team including C/Ps discussed for quality seed distribution to the model farmers, and farmer's needs on seed variety was confirmed. Quality seed will be procured from Seed Farms in the project area and Ayeyarwady, and each DOA TS officers and C/Ps are assigned to request the seed to the seed farms.

1-1-5 Involve rice millers for CS distribution and purchase of paddy produced from CS.

(Progress)
- PM and the consultant team held a meeting on collaboration between Seed Growers Association and private sector. In Pyay, advanced rice millers tries quality seed distribution to farmers and procures farmers' products at reasonable prices. The result will be discussed after harvest season of monsoon paddy in 2016 (harvesting is still on-going at the end of December).

- Quality inspection of the advanced rice miller's quality seeds was conducted by the project team on August, and result was feed backed them on November 15. Then, better solution to improve quality improvement was discussed and will continue from now on.
- Milling recovery test at rice mills in 6 Twonships are on-going to collect data for improving milling process of rice millers. Improvement of milling process is also important to make millers keen on quality of rice for better income.

1-1-6 Strengthen the network among Public-Private-Producers for rice.

(Progress)
- The team continues discussion with traders and millers for building network of PPP. Business forum of rice value chain stakeholders will be organized on March 2017 when rice millers/ traders activities on 2016 summer paddy will be settled down. At the business forum, buyers (millers and traders), sellers (model farmers), and DOA officials will be invited to discuss quality requirement from market, price setting mechanism, and how improve quality of products.

1.2. Promote the use of Good Quality Seeds for non-rice crops

1-2-1 Introduce good quality seed of non-rice crops to the Project Site.

(Progress)
- For 2016 winter season, the PROFIA team including C/Ps decided to support Black Gram (BG) production at 3 model sites in Paungde, Nattalin and Zigon. On October 19, the team discussed how we distribute quality seed of Black Gram (BG) to the model sites. 30 baskets of BG quality seed (RS) were procured from DAR Letpadan seed farm, and distributed to BG seed growers in 3 Twonships (Yezin-2 for Paungde, Yezin-3 for Zigon and Yezin-5 for Nattalin) on November 4.
- For crop diversification in summer season, the ROFIA team including C/Ps decided to support sesame production in Pyay model area in where model farmers show a will to introduce sesame in

2017 summer. Based on farmers needs, the consultant team visited Magway Research Center of DAR and discussed with a specialist of sesame. Then, the team procured 6 varieties of sesame for adoptability test in the Western Bago area. The adoptability test will be conducted at Pyay model site, a private miller's field (Le Daw Qyi Farm) and Thegon Research Center of DAR. Result of the adoptability test will be shared with DOA and DAR for their practical guidance to farmers.

1-2-2 Conduct trainings for DOA staff, farmers and the private companies on seed multiplication technique.

(Progress)
- The consultant team visited Nyaung Oo to get lessons learned from JICA Technical Cooperation Team in the Central Dry Zone (WAST Project). Also The team visited to DAR Magway Research Center to discuss future collaboration for crop diversification in the Western Bago Region.
- One-day training on black gram seed multiplication will be organized at DAR Latpadan Seed Farm on January 7, 2017. Participants of the training will include representatives from model farmers/ seed growers and C/Ps of DOA in 3 Townships.
- A seminar for sesame production will be conducted on January by inviting a sesame specialist form Magway, a former employee of DAR-Magway. Since farmers' interest in sesame production is quite high in the project area, model farmers in 6 Townships and private sector will be invited to the seminar.

1-2-3 Involve traders in the good quality seed distribution and the purchase with premium of crops produced from good quality seeds.

(Progress)
- Through baseline survey and discussion with C/Ps and traders, the PROFIA team indentified that farmer-to-farmer distribution of non-rice crop seed (e.g. black gram) is dominant in the project area, and private sector is hardly involved in the quality seed distribution flow. Further discussion with traders on their involvement is required.
- The Project Team collected sample of pulses/ beans seeds from wholesalers and traders for quality inspection, and the analysis is still on-going at private laboratory in Yangon. Result of analysis will be used for quality awareness campaign of wholesalers and traders.

1-2-4 Strengthen the Public-Private-Producers network for non-rice crops.

(Progress)
- The Project Team started discussion with wholesalers and traders of non-rice crops for future collaboration. Possible collaboration with the private sector is to establish quality seed production model, marketing model with higher prices.
- Business forum will be organized on March 2017, and participants will be farmers, wholesalers/ traders, and DOA C/Ps.

2-1. 3-season cropping model and 2-season cropping model with improved profitability are demonstrated in the AMD demonstration farms in the 6 townships

2-1-1 Identify the suitable crops for 3-season cropping in each township by taking market demand prospect into account.

(Progress)
- Based on the baseline survey on water availability, the consultant team identified that irrigation water is not enough to grow summer paddy in whole project area, and it can cover only limited area if farmers grow paddy in summer season. At the PIC meeting on October, therefore, the PROFIA Team including C/Ps decided to promote crop diversification from summer paddy to other crops.
- To identify 3-season cropping model, in addition to the baseline survey, the consultant team with C/Ps developed cropping calendar of each Township, soil map and area map for summer paddy and winter crops, profiling of major paddy variety with vegetative characteristics and market information.
- Through baseline survey and discussion with C/Ps and farmers, the project team indentifies ideal crops for cropping model that includes winter pulses (BG) after monsoon paddy, and summer sesame as a substitute crop of summer paddy. However, field practice of the 3-season cropping cannot be done due to rehabilitation schedule of irrigation facilities and structural problem of the model LCA.
- 3-season cropping model will be established based on water availability, soil condition, machinery use, profitability, market acceptability, and farmer's willingness, and assessment of above factors are still on-going. For example, soil condition (fertility) in model LCA has changed after LCA construction and its recovery is urgently needed.

2-1-2 Enhance the capacity of farmers on the 3-season cropping in the AMD

demonstration farms.

(Progress)
- To promote 3-seasdon cropping, PROFIA Team including C/Ps have conducted several activities including 1) farm record keeping to monitor cost/benefit structure of farming, 2) soil fertility test for proper fertilizer management, 3) soil moisture monitoring for supplemental irrigation during winter and summer, 4) farming method comparison to reduce production cost, 5) machinery use trial to minimize planting period.
- Farmers in the project area have grown summer paddy since they don't have alternative idea except Pyay where farmers plated summer sesame until a decade ago. To encourage farmers to shift from summer paddy to alternative crop, a series of awareness campaign, including study tour to see field practices, information sharing for proper decision making, and variety test using soils in the LCA, for example, is needed and will be start early 2017 based on result of baseline survey.

2-1-3 Identify the suitable crops for 2-season cropping in each township by taking market demand prospect into account.

(Progress)
- Through baseline survey and discussion with C/Ps and farmers, the project team indentifies ideal crops for 2-season cropping that includes monsoon paddy and winter pulses (BG) for the Southern Townships including Paungde, Nattralin and Zigon. The project team continue to identify alternative crops based on field condition and market demand.

2-1-4 Introduce good quality seed of pulses, rice or other important product identified in 2-1-1 and 2-1-3.

(Progress)
- Quality seed of BG from DAR Latpadan Seed Farm was distributed to seed growers in Paungde, Nattralin and Zigon fior their seed multiplication purpose.
- 6 variety of sesame seeds were procured from DAR Magway Research Center for testing adoptability to soil condition in the model LCA.
- Quality seed for monsoon paddy will be procured from Seed Farms in the project area and Ayeyarwady, and each DOA TS officers and C/Ps are assigned to request the seed to the seed farms.

2-1-5 Enhance the capacity of farmers on appropriate use of agricultural inputs.

(Progress) - Baseline survey was conducted to identify current use of agricultural inputs of farmers. Also, training needs assessment was conducted during the first training to the model farmers. Analysis of the result is now on-going.

2-1-6 Enhance the capacity of farmers on on-farm water management techniques for rice production.

(Progress) - Field survey to check condition of LCA and water facilities was started from August and issues identified during the survey was reported to relevant organizations including IWUMD and AMD.
- Action plan to establish Water Users Group (WUG) was developed on November 22, based on discussion with JICA Irrigation Policy Advisor and BWID consultant team. The action plan was presented to C/Ps and Pyay TS Committee to discuss role and responsibility of stakeholders.
- Activities on WUG establishment were started from November in Pyay LCA with collaboration with IWUMD and BWID consultant team.

2-1-7 Enhance the capacity of farmers and AMS staff on appropriate use of combine harvesters.

(Progress) - Field survey and interview to Agricultural Mechanization Stations in 5 TSs was conducted during the monitoring period. Identified issues on combine harvester use are; 1) supply of the service does not meet the growing demand, 2) on the other hand, operating rate of combine harvester is low in some station due to logging of paddy caused by heavy rain in the rate monsoon, 3) over speed of combine harvester results in lots of fallen ears, 4) farm road condition after monsoon is bad to operate combine harvester, and 5) timing of paddy harvest is not uniformed and the operation is not effective.
- Transplanting needs collaboration between DOA and AMD, and discussion of future collaboration has started on November 21 at 3rd PIC meeting.

2-1-8 Introduce plot-to-plot water management practices, especially for pulses, including ridge building techniques.

(Progress) - For BG production in winter season, irrigation is basically not necessary since BG can grow absorbing remaining soil moisture

after monsoon season. However, if soil becomes too dry, supplemental irrigation is needed. For this purpose, the PROFIA Team periodically monitor soil moisture taking soil sample from model farmers plot in Paungde, Nattalin and Zigon. 0.2 acre of BG growing area in each LCA in the 3 TS is prepared for test trial of supplemental irrigation if needed.

- For sesame production in summer season, the PROFIA Team conduct study tour to Nyaung Oo and Magway to collect information on sesame production including irrigation method. A seminar to sesame growers and C/Ps will be organized on January.
- For proper water management, most model LCAs needs rehabilitation, and the PROFIA Team request AMD ad IWUMD for urgent rehabilitation. Discussion at TS Committee for raising and sharing issues among stakeholders and joint field inspection is started for urgent rehabilitation.
- A ridge builder was procured from Japan and test trial was conducted in Pyay where sandy soil is dominant and suitable for ridge building.

2-2 The practice introduced in 2-1 is disseminated in cost effective and sustainable way

2-2-1 Introduce the farm economy record (accounting book) to model farmers and control group farmers.

(Progress)
- Training on farming record keeping was conducted from June 13 to 18 to the model farmers of each TS. Counterpart staffs will monitor and follow-up farmers' record keeping activity.
- The farming records are additionally distributed to farmer cooperators when their number increases as the project activity expand.

2-2-2 Analyze the data of 2-2-1 and visualize the effect of the practices introduced in 2-1.

(Progress)
- Collection of the farming record for 2016 monsoon paddy started from December and data analysis and feed backing will be conducted on January to February in 2017.

2-2-3 Advertise the practice in 2-1 by using the information of 2-2-2 through poster, radio, newspaper advertisement, etc.

(Progress)
- This activity will be done after analyzing result of 2-2-1 activity.

- Newspaper was invited to handover ceremony of paddy seed cleaner/ grader at Paungde and Pwe Pyae in December 7. Also, a newspaper was invited to opening ceremony of Shwe Nyaung Zin Rice Mill in Paungde TS on December 14, 2016. The rice mill will be operated by farmers' group to maximize profit from paddy production.

2-2-4 Create material such as booklet, poster, DVD etc. to disseminate the practice in 2-1 through Farmer Development Center.

(Progress)
- Training materials in Myanmar language are developed when training is conducted. The materials developed as of now includes, 1) seed preparation, 2) farming record manual, 3) soil analysis, 4) baseline survey result feedback (gender), and 5) operation manual for agricultural machineries.
- Training manual of Post Harvest Training is now preparing by the C/Ps based on the TOT provided by the consultant team. The manual in Myanmar language will be completed by Marc 2017.

2-2-5 Disseminate the telephone list of model farmers to contact farmers in each village.

(Progress)
- List of model farmers with phone number was developed on July 2016. The list is shared with C/Ps, and each C/P make contacts to stakeholders including contact farmers when it is necessary.

2-2-6 Select model farmers in non-consolidated land in the 6 townships and adopt the techniques in 2-1.

(Progress)
- Basically, this activity will start from 3rd year of the project implementation (2018), after establishing profitable farming model in land consolidation areas.

3-1. Identify the issues on middle- and long-term use of irrigation facilities in the Project Site through monitoring the Project.

(Progress)
- Irrigation Policy Advisor was assigned on July 8, 2016, and has visited the project site in every month for monitoring purpose.
- During site visit on November, the advisor identified issues on irrigation facilities in the model LCAs, including uneven land leveling, inappropriate design of water structures, deteriorated farm road and footpath, and thin and poor soil condition. PROFIA Team is now

collecting detailed information on irrigation facilities in the model LCAs.

3-2. Develop a guideline on PIM (Participatory Irrigation Management) in the Project Site.

(Progress)
- 1st draft of PIM guideline was completed and submitted to IWUMD, and discussion on the 1st draft is now ongoing through stakeholder meeting.
- For dissemination of the PIM guideline, role of Irrigation Technology Center (ITC) must be important. In this regard, the irrigation policy advisor organized 1st coordination meeting with ITC, IWUMD-Pyay and consultant team, and shared information regarding PIM and water management and discussed future joint activities.

3-3. Assist PIM activities by Water Users Groups after the Groups are established.

(Progress)
- Activities on water users group (WUG) establishment was started from November 23 at Pyay LCA in collaboration with BWID Team and IWUMD. The irrigation policy advisor supports the activities by providing technical advices during monthly visit to the Project sites.

3-4. Assist dissemination of the use of guidelines for land consolidation in the Project Site.

(Progress)
- On August 25 and 26, technical seminar was organized by JIID and many points to be improved were announced by related departments. Then, the policy advisor organized a meeting on September 9, to promote mutual understanding among the related department. AMD agreed to organize the task team for promotion of Land Consolidation. Also, participants agreed on assessing current situation and explaining/suggesting to Executive Members of Ministry for counter measures. Evaluation report for promotion of Land Consolidation is under preparation.

3-5. Provide advices to solve the issues of irrigation sector in Myanmar through meeting with stakeholders and observation of various irrigation systems in Myanmar.

(Progress)
- The various problems occurred in the model LCAs were reported by the irrigation policy advisor and PROFIA Team to DGs of AMD and IWUMD on November 30, and urgent rehabilitation before starting

next cropping season was requested to them. DG of AMD promised that he will dispatch a team to Western Bago to survey and discuss with stakeholders.

- During "Special Training Program on Water Management", organized by ITC on October 31, the irrigation policy advisor made a lecture on "PIM and Role of IWUMD", and presented the real meaning of PIM and the importance of IWUMD officers' learning from farmers and current conditions.
- Training to Japan to enhance technical capacity of IWUMD officials is now under preparation. For this purpose, preparatory mission will be dispatched by National Agriculture and Food Research Organization on March 2017.

1-3 Achievement of Output

Output 1 *Public-Private-Producers (Farmers) Partnership is strengthened*

(Achievement)
- A list of model farmers and a long list of rice millers in the project area were developed by the project team. The project team starts dialogue with private sectors and a business forum will be organized on March 2017.

Output 2 *Profitability of farmers in the Model Site is improved*

(Achievement)
- Model farmers and model area was identified under combined effort of DOA and ID.
- Sesame as more profitable crop in summer season will be introduced at LCA in Pyayb TS. The PROFIA will support this production and a model of alternative crop of summer paddy. At the same time, awareness campaign will be conducted to the model farmers in other TSs.

Output 3 *Guidelines for Participatory Irrigation Management (PIM) in the Project Site is prepared and applied in the Model Site*

(Achievement)
- 1st draft of PIM was developed and shared with relevant officials.

1-4 Achievement of the Project Purpose

- Baseline survey was conducted during May and June, and data analysis started from end of June. Result of baseline survey was attached in this monitoring sheet.

1-5 Changes of Risks and Actions for Mitigation

- After one season of cultivation, various problems of model LCAs are actualized.

The problems include; 1) unleveled farmland, 2) inappropriate design and location of water structures, 3) deterioration of farm road, 4) corruption of footpath, 5) poor and uneven soil. These issues are related to the precondition of the PDM.

- Irrigation facility rehabilitation is progressed during dry season, and second year works is now on-going. Due to the rehabilitation work, LCAs in Thegon, Paungde, Nattalin and Zigon cannot receive irrigation water in 2017 summer season. For Paukkhaung, canals are rehabilitated in dry season of 2017/18, and farmer cannot use irrigation water in 2018 summer.

1-6 Progress of Actions undertaken by JICA

- For LCA issue, the consultant team will report to JICA-HQ on January 6, 2017, and action for the issue will be discussed at the meeting.
- For water availability issue, JICA-HQ instructed that the team can select model area from outside of LCA based on water availability. The team carefully discussed with C/Ps and once decided to select additional model farmers from outside of LCA in Thegon and Nattalin TSs. However, as the project progresses, activities focus on the model farmers in LCA.

1-7 Progress of Actions undertaken by Gov. of Myanmar

- AMD dispatched field inspection team and decided to do land leveling again in damaged LCAs. Also, IWUMD is considering rehabilitation work of water structures in LCA in Pyay and Nattalin. In this connection, IWUMD requested JICA to share fuel of heavy equipment and material cost for turnout structure, so that IWUMD can start the urgent rehabilitation work during this dry season.

1-8 Progress of Environmental and Social Considerations (if applicable)

- Not applicable since the project is categorized in the Category C of the JICA Environmental and Social Consideration Guideline.

1-9 Progress of Considerations on Gender/Peace Building/Poverty Reduction (if applicable)

- Result of baseline survey on gender issue was compiled by November, and feedback seminar to C/Ps and farmers started from December 2017. Presentation material is attached in **ANNEX VI**.

1-10 Other remarkable/considerable issues related/affect to the project (such as other JICA's projects, activities of counterparts, other donors, private sectors, NGOs etc.)

- Daiwa Nouen, a seed company of Japan, made a study seed multiplication of Black

Gram (BG), and visited PM and project office of PROFIA. We discussed possibility of future collaboration in the Western Bago region and continued the discussion.

- One-acre fund (an International NGO) visited the PROFIA office to exchange experiences and future collaboration. We will continue to keep in touch for further collaboration.

2 Delay of Work Schedule and/or Problems (if any)

2-1 Detail

1) Issues on Land Consolidation Area (LCA)

- After one season of cultivation, various problems of model LCAs are actualized. The problems include; 1) unleveled farmland, 2) inappropriate design and location of water structures, 3) deterioration of farm road, 4) corruption of footpath, 5) poor and uneven soil. These issues are related to the precondition of the PDM.

2) Water Management/ Organization Expert

- It was found that tasks of the water management and organization experts is varied, including establishment of water users group (WUG), estimation of crop water requirement, coordination of stakeholders for proper water distribution, and operation and maintenance of water facility in the LCA. For smooth collaboration with the irrigation policy advisor, additional assignments of the expert and his assistant staff are needed.

2-2 Cause

1) Issues on Land Consolidation Area (LCA)

- There are several causes; inappropriate construction works of the contractor, heavy rain in rate monsoon inn 2016, and inappropriate original design of LCA.

2) Water Management/ Organization Expert

- It was found that tasks of the water management and organization experts are varied, but no C/P in DOA. For establishing WUG, the PROFIA Team can collaborate with BWID Consultant Team and IWUMD, but after the establishment, the PROFIA Team and DOA C/P have to shoulder activities at LCA level.

2-3 Action to be taken

1) Issues on Land Consolidation Area (LCA)

- AMD need to order the contractor for urgent rehabilitation, or rehabilitate by themselves so that farmer can use fully functional farmland in LCA. The PROFIA consultant team visited DG of AMD for urgent rehabilitation and the DG promised that they will send a team for inspection for urgent rehabilitation. However, it was found that AMD can do only land reveling for urgent work. Then, the team visited DG of IWUMD to support urgent rehabilitation work for water structure in LCA. The

DG of IWUMD they can support the urgent work if JICA provide fuel and material cost of the work. The PROFIA Team will discussed with JICA –HQ for the urgent work.

2) Water Management/ Organization Expert

- It is needed to identify what kind of work is needed to him and how long does it takes. Then, the PROFIA consultant team will discuss with JICA-HQ for necessity of the contract amendment.

2-4 Roles of Responsible Persons/Organization

1) Issues on Land Consolidation Area (LCA)

- AMD with the contractor should take responsibility for rehabilitation of LCA since AMD is the main implementation body of LCA project. However, IWUMD is ready to support the urgent rehabilitation work by rehabilitating water facilities, if PROFIA team can provide fuel and materials for the urgent work. The cost estimation of the water facility rehabilitation will be provided to the PROFIA Team on January 2017.

2) Water Management/ Organization Expert

- It is an issue of the contract between JICA-HQ and the consultant team.

3 Modification of the Project Implementation Plan

3-1 PO

- Assignment of the water management and organization expert has changed since lots of work was identified through baseline survey.

3-2 Other modifications on detailed implementation plan

- N.A.

4 Preparation of Gov. of Myanmar toward after completion of the Project

- **N.A.**

II. Project Monitoring Sheet I & II

Attached in **Annex I** and **Annex II**

Annex

Annex I	Project Monitoring Sheet I (Revision of Project Design Matrix)
Annex II	Project Monitoring Sheet II (Revision of Plan of Operation)
Annex III	Newspapers for Handover Ceremony of Paddy Seed Graders
Annex IV	List of Equipment
Annex V	Condition of LCA after one season crop production

Project Design Matrix

Project Title: Project for Profitable Irrigated Agriculture in Western Bago Region — **Version 1**

Implementing Agency: Department of Agriculture, **Ministry of Agriculture, Livestock and Irrigation** — **Dated 30, June, 2016**

Target Group: Model farmers, **MOALI** staff, private sectors and farmers in four irrigation systems in Pyay district and Thayawaddy district (116,738 personnel／23,394 House hold)

Period of Project: 5 years after dispatching 1st Japanese expert (supposed to be from March 2016 to February 2021)

Project Site: 4 irrigation schemes in 6 townships (Pyay, Pauk Khaung, Thae Kone, Paung De, Nattalin, Zee Kone) in Western Bago Region

Model Site: 20 places (part of AMD demo farms in the 6 townships, non-land consolidated demo farms 2 each in the 6 townships, DOA seed farms (Thae Kone and Paung De))

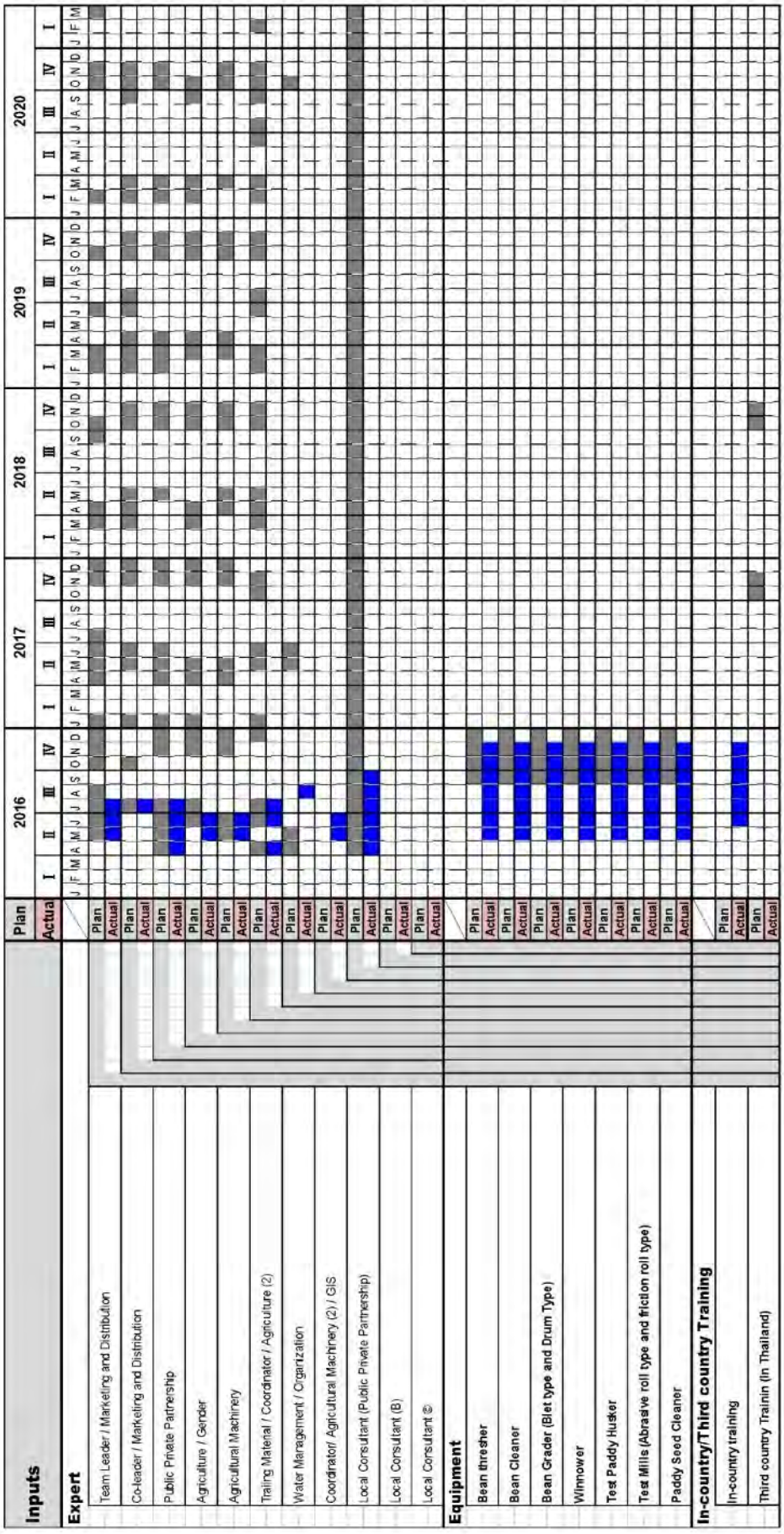
Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumption	Achievement	Remarks
Overall Goal					
Profitability of agricultural activities in the Project Site is improved	Increase of agricultural profit in the Project Site since 2015 exceeds that of the whole country by more than 10%.	**MOALI** Statistics	Policy related to crop selection and trading does not change drastically.	Baseline survey has started from May 28, and data analysis will start from the end of June. Result of baseline survey will be available	Indicators is still draft and will be determine through discussion with CP and JICA
Project Purpose					
Profitable irrigated agriculture model with private sector involvement is established	・At least one of the practices introduced through the Project is adopted in more than 50 % of areas in the 6 AMD demonstration farms	Baseline survey and endline survey of the Project	Water supply is not disturbed due to drought or flood	A long list of rice millers in the project area was developed by the Post Harvest Group of DOA.	Indicators is still draft and will be determine through discussion with CP and JICA
	・Increase of agricultural profit since 2015 among farmers who adopt the practices exceeds that of the control group by more than 10%.	Baseline survey and endline survey of the Project			
Outputs					
1. Public-Private-Producers (Farmers) Partnership is strengthened	1-1 Paddy rice produced from Certified Seed in the Model Site is sold at higher price than paddy rice produced from ordinary seeds.	Baseline survey and endline survey of the Project		A long list of rice millers in the project area was developed by the Post Harvest Group of DOA.	Indicators is still draft and will be determine through discussion with CP and JICA
	1-2 At least one variety of multiplication and distribution flow of good quality seeds of non-rice crops is strengthened.	Baseline survey and endline survey of the Project	Policy and regulations for pulses seed production do not adversely affect the project activities		
2. Profitability of farmers in the Model Site is improved	2-1 Increase of agricultural profit since 2015 among farmers in the Model Site exceeds that of the control group by more than 20%.	Farm economy record taken in the Project		Model farmers/ area was identified. Result of baseline survey will be available by July 2016.	
3. Guidelines for Participatory Irrigation Management (PIM) in the Project Site is prepared and applied in the Model Site	3-1 Guidelines for participatory irrigation management is prepared	Monitoring sheet		N.A.	
	3-2 Stakeholders meetings of irrigation sector are sustainably organized	Monitoring sheet			
	3-3 More than 50 % farmers in the 6 AMD demonstration farms participate in PIM activities	Baseline survey and endline survey of the Project			

Activities	Inputs		Important Assumption
	The Japanese Side	The Myanmar Side	
1-0-1 Conduct a baseline survey and endline survey to collect data on farm profitability of the target group and the control group. 1-0-2 Reconfirm the issues of present farming in the Project Site. 1-0-3 Review the suitable balance between land productivity and labor productivity to examine the project activities <Output1> 1-1. Promote the use of Certify Seed for rice 1-1-1 Review the current seed multiplication practice of DOA (seed farm & T/S extension office) and Model Seed Villages in the project site. 1-1-2 Enhance the capacity of DOA seed farm to improve quality of FS and RS. 1-1-3 Improve awareness of extension staff and farmers on CS. 1-1-4 Encourage rice millers / traders to purchase CS seeds produced by seed growers. 1-1-5 Involve rice millers for CS distribution and purchase of paddy produced from CS. 1-1-6 Strengthen the network among Public-Private-Producers for rice. 1.2 Promote the use of Good quality seeds for non-rice crops 1-2-1 Introduce good quality seed of non-rice crops to the Project Site. 1-2-2 Conduct trainings for DOA staff, farmers and the private companies on seed multiplication technique. 1-2-3 Involve traders in the good quality seed distribution and the purchase with premium of crops produced from good quality seeds. 1-2-4 Strengthen the Public-Private-Producers network for non-rice crops.	(1) Dispatch of Experts Team Leader/ Marketing and Distribution Co-leader/ Marketing and Distribution Public Private Partnership Agriculture/ Gender Agricultural Machinary Training Material/ Coordinator/ Agriculture (2) Water Management/ Organization Coordinator/ Agricultural Machinery (2) / GIS Local Consultant (PPP) Local Consultant (B) Local Consultant (C) (2) Provision of equipment ~~3~~ 2 Seed Cleaners Moisture Meters 6 Motorcycles for field inspectors ~~if budget allows~~ 2 Vehicles for the Project 1 Adopter for ridge building 2 Pulses thresher / cleaner Harvesting machine for pulses (3) Third country / In country training (4) Local cost shared by Japanese side Project office refurbishment cost Travel allowance for the Project Other running cost	a) Office space in DOA West Bago division b) Office space for irrigation policy advisor in ID in Nay Pyi Taw c) Fuel for field inspectors d) 9 designated staff for the Project assigned by DOA West Bago division throughout the project period (1 in division, 2 in districts, 6 in townships) d) Running cost such as electricity and water	The mechanism to facilitate land consolidation is introduced by the state or the union government of Myanmar. **Pre-Conditions** 10 baskets of Yezin 2, 3 and 5 (Black gram variety) is procured before the dry season cultivation in the 1st year. The AMD model land consolidation is completed before the start of the Project without lasting dispute. The AMD model land consolidation site is not destroyed through rainfall, flood or use of machineries. **<Issues and countermesures>** Farmer's coordination mechanism may be introduced through the project activities.

<Output2>			
2-1 3-season cropping model and 2-season cropping model with improved profitability are demonstrated in the AMD demonstration farms in the 6 townships			
2-1-1 Identify the suitable crops for 3-season cropping in each township by taking market demand prospect into account.			
2-1-2 Enhance the capacity of farmers on the 3-season cropping in the AMD demonstration farms.			
2-1-3 Identify the suitable crops for 2-season cropping in each township by taking market demand prospect into account.			
2-1-4 Introduce good quality seed of pulses, rice or other important product identified in 2-1-1 and 2-1-3.			
2-1-5 Enhance the capacity of farmers on appropriate use of agricultural inputs.			
2-1-6 Enhance the capacity of farmers on non-farm water management techniques for rice production.			
2-1-7 Enhance the capacity of farmers and AMS staff on appropriate use of combine harvesters.			
2-1-8 Introduce plot-to-plot water management practices, especially for pulses, including ridge building techniques.			
2-2 The practice introduced in 2-1 is disseminated in cost effective and sustainable way			
2-2-1 Introduce the farm economy record (accounting book) to model farmers and control group farmers.			
2-2-2 Analyze the data of 2-2-1 and visualize the effect of the practices introduced in 2-1.			
2-2-3 Advertise the practice in 2-1 by using the information of 2-2-2 through poster, radio, newspaper advertisement, etc.			
2-2-4 Create material such as booklet, poster, DVD etc. to disseminate the practice in 2-1 through Farmer Development Center.			
2-2-5 Disseminate the telephone list of model farmers to contact farmers in each village.			
2-2-6 Select model farmers in non-consolidated land in the 6 townships and adopt the techniques in 2-1.			

<Output3> 3-1. Identify the issues on middle- and long-term use of irrigation facilities in the Project Site through monitoring the Project. 3-2. Develop a guideline on PIM (Participatory Irrigation Management) in the Project Site. ~~3-3. Establish a stakeholders meeting of irrigation sector, and take a leading role on the meeting.~~ ~~3-4. Discuss about the guideline with stakeholders including donor agencies, and propose it to the central ministry.~~ 3-~~5~~3. Assist PIM activities by Water Users Groups after the Groups are established. 3-~~6~~4. Assist dissemination of the use of guidelines for land consolidation in the Project Site. 3-~~7~~5. Provide advices to solve the issues of irrigation sector in Myanmar through meeting with stakeholders and observation of various irrigation systems in Myanmar.				

Annex II Project Monitoring Sheet II (Revision of Plan of Operation)



Activities	Plan / Actual	20146				2017				2018				2019				2020			
		I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
Sub-Activities		J F M A M J J A S O N D				J F M A M J J A S O N D				J F M A M J J A S O N D				J F M A M J J A S O N D				J F M A M J J A S O N D			
Output 1: Public-Private-Producers (Farmers) Partnership is strengthened																					
1.0.1 Conduct a baseline survey and end line survey to collect data on farm profitability of target group and control group	Plan																				
	Actual																				
1.0.2 Reconfirm the issues of present farming in the Project Site.	Plan																				
	Actual																				
1.0.3 Review the suitable balance between land productivity and labor productivity to examine the project activities	Plan																				
	Actual																				
1.1 Promote the use of Certify Seed for rice	Plan																				
	Actual																				
1.1.1 Review the current seed multiplication practice of DOA (seed farm & T/S extension office) and Model Seed Villages in	Plan																				
	Actual																				
1.1.2 Enhance the capacity of DOA seed farm to improve quality of FS and RS	Plan																				
	Actual																				
1.1.3 Improve awareness of extension worker and seed production farmers on CS quality control	Plan																				
	Actual																				
1.1.4 Involve rice millers / traders to purchase CS seeds produced by seed growers.	Plan																				
	Actual																				
1.1.5 Involve rice millers for CS distribution and purchase of paddy produced from CS.	Plan																				
	Actual																				
1.1.6 Strengthen the network among Public-Private-Producers for rice	Plan																				
	Actual																				
1.2 Promote the use of Good quality seeds for non-rice crops	Plan																				
	Actual																				
1.2.1 Introduce good quality seed of non-rice crops to the Project Site	Plan																				
	Actual																				
1.2.2 Conduct trainings on multiplying the seeds for DOA staff, farmers and the private companies	Plan																				
	Actual																				
1.2.3 Involve traders for good quality seed distribution and purchase of crops made from the good quality seed with	Plan																				
	Actual																				
1.2.4 Strengthen the network among Public-Private-Producers for non-rice crops	Plan																				
	Actual																				

Activities / Sub-Activities	Plan / Actual	20146	2017	2018	2019	2020	Responsible Organization: Japan	Responsible Organization: GOM	Achievements	Issue & Countermeasures
Output 2: Profitability of farmers in the Model Site is improved										
2.1 3-season cropping model and 2-season cropping model with improved profitability are demonstrated in the AMD demonstration	Plan									
	Actual									
2.1.1 Identify the suitable crops for 3 season cropping in each township by taking market demand prospect into account	Plan									
	Actual									
2.1.2 Enhance the capacity of farmers on the 3 season cropping in the AMD demonstration farm.	Plan									
	Actual									
2.1.3 Identify the suitable crops for 2 season cropping in each township by taking market demand prospect into account	Plan									
	Actual									
2.1.4 Introduce good quality seed of pulses, rice or other important product identified in 2-1-1 and 2-1-3.	Plan									
	Actual									
2.1.5 Enhance the capacity of farmers on appropriate use of agricultural inputs.	Plan									
	Actual									
2.1.6 Enhance the capacity of farmers on on-farm water management techniques for rice	Plan									
	Actual									
2.1.7 Enhance the capacity of farmers and AMS staff on appropriate use of combine.	Plan									
	Actual									
2.1.8 Introduce plot to plot water management practice, especially for pulses, including ridge building techniques	Plan									
	Actual									
2.2 The practice introduced in 2-1 is disseminated in cost effective and sustainable way	Plan									
	Actual									
2.2.1 Introduce farm economy record (accounting book) to model farmers and control group farmers.	Plan									
	Actual									
2.2.2 To analyze the data of 2-2-1 and visualize the effect of the practices introduced in 2-1.	Plan									
	Actual									
2.2.3 Advertise the practice in 2-1 by using the information 2-2-2 through poster, radio, newspaper advertisement, etc.	Plan									
	Actual									
2.2.4 Create material such as booklet, poster, DVD etc to disseminate the practice in 2-1 through Farmer Development	Plan									
	Actual									
2.2.5 Disseminate the telephone list of model farmers to contact farmers in each village.	Plan									
	Actual									
2.2.6 Select model farmers in non consolidated land in 6 townships and adopt the techniques in 2-1	Plan									
	Actual									
Output 3. Guidelines for Participatory Irrigation Management (PIM) in the Project Site is prepared and applied in the Model Site										
3.1 Identify the issues on middle- and long-term use of irrigation facilities in the Project Site through monitoring the Project.	Plan									
	Actual									
3.2 Develop a guideline on PIM (Participatory Irrigation Management) in the Project Site.	Plan									
	Actual									
3.3 Assist PIM activities by Water Users Groups after the Groups are established	Plan									
	Actual									
3.4 Assist dissemination of the use of guidelines for land consolidation in the Project Site.	Plan									
	Actual									
3.5 Provide advices to solve the issues of irrigation sector in Myanmar through meeting with stakeholders and observation of	Plan									
	Actual									
Duration / Phasing	Plan									
	Actual									

Monitoring Plan	Plan / Actual	20146 I	20146 II	20146 III	20146 IV	2017 I	2017 II	2017 III	2017 IV	2018 I	2018 II	2018 III	2018 IV	2019 I	2019 II	2019 III	2019 IV	2020 I	2020 II	2020 III	2020 IV
Monitoring																					
Joint Coordinating Committee	Plan		●				●				●				●				●		●
	Actual			●																	
Set-up the Detailed Plan of Operation	Plan		▲																		
	Actual			▲																	
Preparation of Monitoring Sheet	Plan		▲		▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
	Actual		▲																		
Monitoring Mission from Japan	Plan						▲				▲				▲				▲		▲
	Actual																				
Joint Monitoring	Plan									▲											▲
	Actual																				
Post Monitoring	Plan																				
	Actual																				
Reports/Documents																					
Work Plan	Plan			▲							▲										
	Actual			▲																	
Submission of Monitoring Sheet	Plan			▲	▲		▲		▲		▲		▲		▲		▲		▲		▲
	Actual			▲																	
Project Progress Report	Plan								▲												
	Actual																				
Project Completion Report	Plan																				▲
	Actual																				
Public Relations																					
Commencement of the Project (Newspaper, etc)	Plan			▲																	
	Actual																				
Partial achievment of the Project (Newspaper, etc)	Plan											▲									
	Actual																				
Achievement of the Project (Newspaper, etc)	Plan																			▲	
	Actual																				

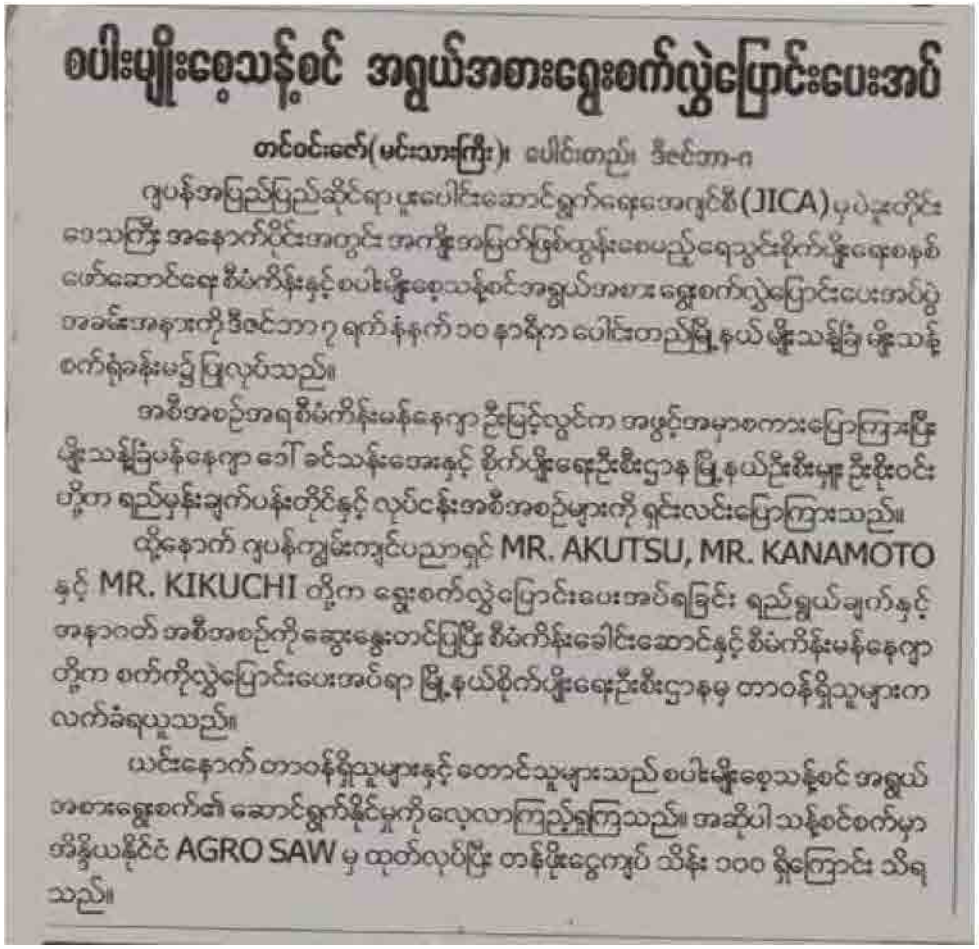
Annex III Newspapers for Handover Ceremony of Paddy Seed Graders

1) Standard Time, December 8, 2016

"Hand Paddy Seed Grader Over"

Tin Win Zaw (Min Thar Gyi), 8th December, Paungde. Ceremony of Handing Over Paddy Seed Grader from Japan International Cooperation Agency (JICA) under "The Project for Profitable Irrigated Agriculture in Western Bago Region (PROFIA)" was held at Paungde DOA Seed Farm at 10:00 AM on 7th December. According to Agenda, Project Manager U Myint Lwin gave Opening Speech, and Seed Farm Manager Daw Khin Than Aye and Township Officer U Soe Win presented the Objective and Plan of Operation. Then, Japanese experts Mr. AKUTSU, Mr. KANAMOTO and Mr. KIKUCHI presented the purpose of handing over and future plans. Team Leader and Project Manager handed over the machine to related officials from Township DOA.

As the last program of Agenda, the participants studied Paddy Seed Grader operating. The Grader is manufactured by AGROSAW from India and cost is around 10 million is known.



စပါးမျိုးစေ့သန့်စင် အရွယ်အစားရွေးစက်လွဲပြောင်းပေးအပ်

တင်ဝင်းတော်(မင်းသားကြီး)။ ပေါင်းတည်၊ ဒီဇင်ဘာ-၈

ဂျပန်အပြည်ပြည်ဆိုင်ရာ ပူးပေါင်းဆောင်ရွက်ရေးအေဂျင်စီ (JICA) မှပံ့ပိုးတိုင်း ဒေသကြီး အနောက်ပိုင်းအတွင်း အကျိုးအမြတ်ပြစီးထွန်းစေမည့် ရေလွှင်းစိုက်ပျိုးရေးစနစ် ဖော်ဆောင်ရေး စီမံကိန်းနှင့် စပါးမျိုးစေ့သန့်စင်အရွယ်အစား ရွေးစက်လွဲပြောင်းပေးအပ်ပွဲ အခမ်းအနားကို ဒီဇင်ဘာ ၇ ရက်နံနက် ၁၀ နာရီက ပေါင်းတည်မြို့နယ် မိုးသန်းခြံ မိုးသန်း စက်ရုံခန်းမ၌ ပြုလုပ်သည်။

အစီအစဉ်အရစီမံကိန်းမန်နေဂျာ ဦးမြင့်လွင်က အဖွင့်အမှာစကားပြောကြားပြီး မိုးသန်းခြံမန်နေဂျာ ဒေါ်ခင်သန်းအေးနှင့် စိုက်ပျိုးရေးဦးစီးဌာန မြို့နယ်ဦးစီးမှူး ဦးစိုးဝင်း တို့က ရည်မှန်းချက်ပန်းတိုင်နှင့် လုပ်ငန်းအစီအစဉ်များကို ရှင်းလင်းပြောကြားသည်။

ထို့နောက် ဂျပန်ကျွမ်းကျင်ပညာရှင် MR. AKUTSU, MR. KANAMOTO နှင့် MR. KIKUCHI တို့က ရွေးစက်လွဲပြောင်းပေးအပ်ရခြင်း ရည်ရွယ်ချက်နှင့် အနာဂတ် အစီအစဉ်ကို ဆွေးနွေးတင်ပြပြီး စီမံကိန်းခေါင်းဆောင်နှင့် စီမံကိန်းမန်နေဂျာ တို့က စက်ကိုလွဲပြောင်းပေးအပ်ရာ မြို့နယ်စိုက်ပျိုးရေးဦးစီးဌာနမှ တာဝန်ရှိသူများက လက်ခံရယူသည်။

ယင်းနောက် တာဝန်ရှိသူများနှင့် တောင်သူများသည် စပါးမျိုးစေ့သန့်စင် အရွယ်အစားရွေးစက်၏ ဆောင်ရွက်နိုင်မှုကို လေ့လာကြည့်ရှုကြသည်။ အဆိုပါ သန့်စင်စက်မှာ အိန္ဒိယနိုင်ငံ AGRO SAW မှ ထုတ်လုပ်ပြီး တန်ဖိုးငွေကျပ် သိန်း ၁၀၀ ရှိကြောင်း သိရသည်။

2)　Myanma Alinn, December 8, 2016

“Hand Paddy Seed Grader Over”

8th December, Paungde Ceremony of Handing Over Paddy Seed Grader from Japan International Cooperation Agency (JICA) under “The Project for Profitable Irrigated Agriculture in Western Bago Region (PROFIA)” was held at Paungde DOA Seed Farm on 7th December. Japanese experts Mr. AKUTSU, Mr. KANAMOTO and Mr. KIKUCHI presented the purpose of handing over and future plans. Then, Team Leader and Project Manager handed over the machine to related officials from Township DOA. **Tin Win Zaw (Min Thar Gyi)**


မြန်မာ့အလင်း

Myanma Alinn Daily

ချမ်းသာ၏

စပါးမျိုးစေ့သန့်စင်အရွယ်အစားရွေးစက် လွှဲပြောင်းပေးအပ်

ပေါင်းတည် ဒီဇင်ဘာ ၈

ဂျပန်အပြည်ပြည်ဆိုင်ရာ ပူးပေါင်းဆောင်ရွက်ရေး အေဂျင်စီ (JICA) မှ ပဲခူးတိုင်းဒေသကြီးအနောက်ပိုင်းအတွင်း အကျိုးအမြတ်ဖြစ်ထွန်းစေမည့် ရေသွင်းစိုက်ပျိုးရေးစနစ် ဖော်ဆောင်ရေးစီမံကိန်းနှင့် စပါးမျိုးစေ့ သန့်စင်အရွယ်အစားရွေးစက် လွှဲပြောင်းပေးအပ်ပွဲ အခမ်းအနားကို ဒီဇင်ဘာ ၇ ရက်က ပေါင်းတည်မြို့နယ် မျိုးသန့်ခြံ၊ မျိုးသန့် စက်ရုံခန်းမ၌ ကျင်းပသည်။

ထို့နောက် ဂျပန်ကျွမ်းကျင်ပညာရှင် Mr.AKUTSU Mr KANAMOTO နှင့် Mr. KIKUCHI တို့က လွှဲပြောင်းပေးအပ်ခြင်း ရည်ရွယ်ချက်နှင့် အနာဂတ်အစီအစဉ်အား ဆွေးနွေးတင်ပြပြီး စီမံကိန်းခေါင်းဆောင်နှင့် စီမံကိန်းမန်နေဂျာတို့က စက်လွှဲပြောင်းပေးအပ်ရာ မြို့နယ်စိုက်ပျိုးရေးဦးစီးဌာနမှ တာဝန်ရှိသူများက လက်ခံယူခဲ့ကြောင်း သိရသည်။

တင်ဝင်းဇော်(မင်းသားကြီး)

Annex IV　Equipment List

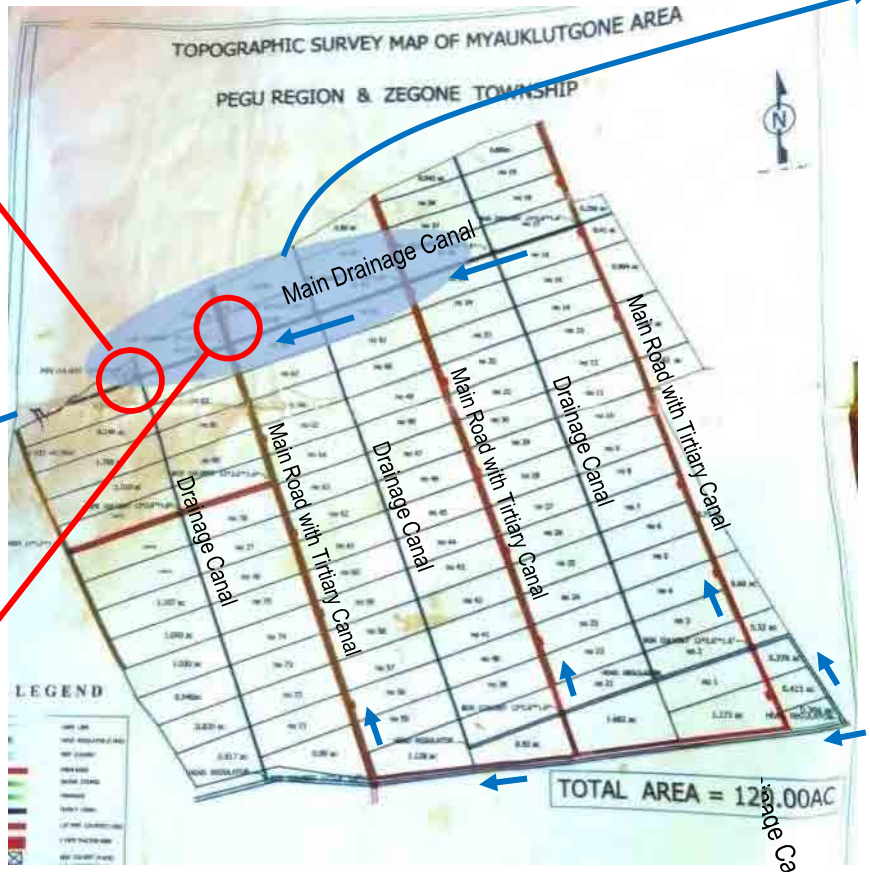
Item	Unit purchased	Remark
Seed Grader (Cleaner)	2	Installed to DOA Seed Farms
Threshing Machine for beans/pulses	2	Transported to Regional office
Cleaner for beans/pulses	4	Transported to Regional office
Pre-Cleaner for beans/pulses	2	Transported to Regional office
Ridge Builder (Attachment)	1	Different type of attachments which are suitable for currently used tractor in project site, are examined by JICA expert.
Test Paddy Husker	2	Transported to Regional office
Test Rice Mill	2	Transported to Regional office
Winnor	2	Transported to Regional office
Small Rice mill set	1	One installed to NyanZin Village
Moisture Meter for rice	5	Kept in Project Office
Moisture Meter for other cereals	4	Kept in Project Office
Portable Moisture Meter	6	Team asked TS CPs to utilize.
Copy Machine	1	Installed to Project office
Printer	1	Installed to Project office
Computer	6	Installed to Project office
Project Vehicle (SUV)	1	Import process is still under going
Project Vehicle (Pick-up)	1	Import process is still under going
Motor-bike	6	Handed over to TS CPs
Sieve sets for small beans/pulses	2	Kept in Project Office
Sieve sets for large beans/pulses	1	Kept in Project Office
Sieve sets for milled rice	4	Kept in Project Office
Sieve sets for Sesame	-	
Sample Divider	2	Kept in Project Office
Autoclave	-	For Laboratory in regional office
Drying sterilizer	-	For Laboratory in regional office
Incubator	-	For Laboratory in regional office
Soil Tester	1	Kept in Project Office
Electrical Generator	2	One for Project office, another for Laboratory in regional office
Water Distiller	-	For Laboratory in regional office
Computer for Labo.		For Laboratory in regional office
Printer for Labo.		For Laboratory in regional office

Annex V Condition of LCA after one season crop production

1. LCA in Zigon TS (under Taung Nyo Scheme)

Usually, about 2 days duration, inundation happens due to insufficient drainage capacity of a river connected to outlet of main drainage in LCA.

After one season of monsoon, slopes of the main drainage collapsed due to insufficient compaction coupled with vertical slope shaping. Footpaths are not functioned well.



Soil type of the LCA is clay, and cultivable soil is quite thin. (soil moisture test in now ongoing)

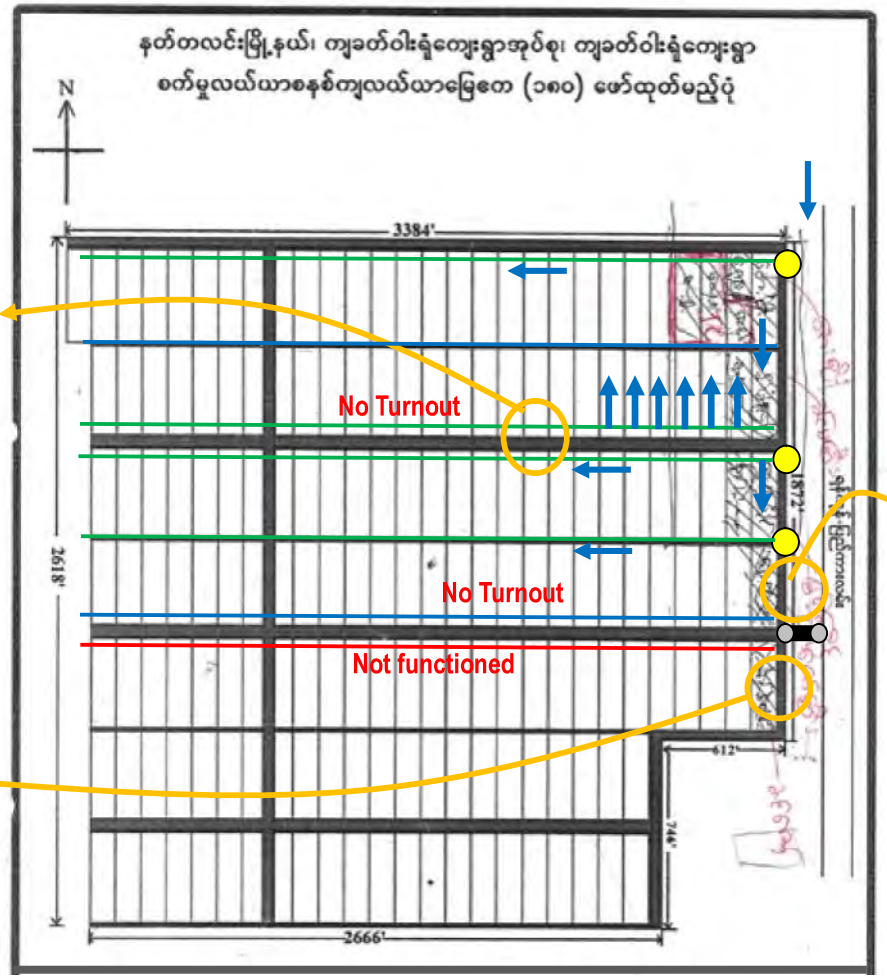
Due to 4-day heavy rain in November 2016, water level of drainage at outlet of LCA increased, and surrounding area of the main drainage in LCA was inundated.

Farm road condition becomes worse during monsoon season due to inappropriate construction material and insufficient compaction. Agricultural mechanization is not easy to apply.

2. LCA in Nattalin TS (under Taung Nyo Scheme)

Green lines are used as drainage canal. It is not sure that design of these canals is planned as irrigation or drainage. Plot-to-plot irrigation is applied to this LCA.

Farm road condition becomes worse during monsoon season due to inappropriate construction material and insufficient compaction, Agricultural mechanization cannot be applied.



- Position of tertiary and drainage canals is inappropriate (not systematic).
- Farmers cannot intake water from secondary canal due to inappropriate arrangement of canals and turnout
- Function of canals is not identified; some are used for not only irrigation purpose but also drainage function. Some canals are not used

Farmers made a protection with sand bags for avoiding overflow from Secondary canal, after collapse of embankment.

3. LCA in Thegon TS (under South Nawin Scheme)

Not only uneven soil fertility, but also unequal land leveling, growth speed of paddy is not even.

Due to poor treatment of sandy soil, footpath between farm lots is easily damaged.

Boundary levee is easily broken due to poor treatment of sandy soil, and strengthening of embankment is urgently required.

According to C/P, since land level of right side is higher than left side, water is not equally distributed, paddy of the right side does not grow well; farmer cannot harvest at once, resulting in not only increase of production cost but also decrease of production.

At the head of LCA, embankment collapsed during the first monsoon season due to improper treatment of sandy soil.

TO CR of JICA Myanmar OFFICE

PROJECT MONITORING SHEET

The Project for Profitable Irrigated Agriculture in Western Bago Region (PROFIA)
Version of the Sheet: Ver.3.0 (Term: January 1, 2017 - June 30, 2017)

Name: Myint Lwin
Title: Project Manager

Name: Kotaro KIKUCHI
Title: Team Leader/ Distribution and Marketing

Submission Date: 30 June, 2017

I. Summary

1 Progress

1-1 Progress of Inputs

Japanese side

- 11 Japanese experts, including 2 additional short-term experts for 1) organization, and 2) PCM moderator in this period, have been dispatched. Since the commencement of the project, a total of assignment period has reached 54.2 person-months.
- Purchase order was made on June 12, 2017 to procure an additional 1 seed grader to be installed at Agricultural Community Learning Center in Paundale in Pyay TS.
- One Japan-made vehicle (Nissan Pick-up Truck) has been procured and become in use at the project office in Pyay on April 2, 2017 and another vehicle (Mitsubishi Pajero) is to be sent to Pyay expectedly by the first week of July 2017.
- "Post-harvest technique and grain quality control laboratory" has been established in the compound of DOA west Bago regional office, in which necessary equipment for quality test, such as incubator, portable milling machine, and moisture meter, have been installed. On March 17, 2017, the opening ceremony was conducted.
- List of major equipment procured is shown in ANNEX III. Also, Equipment lists of Post-harvest technique and grain quality control laboratory is shown in ANNEX IV.

Myanmar side

- Nine (9) DOA officials from Regional (1), District (2), and Township (6) level were assigned as counterparts. Also, eight (8) DOA officials were selected as Post Harvest counterpart group. In addition, two (2) DOA assistant officer has been assigned in Pyay and Paungde TS. Furthermore, one (1) new counterpart on the aspect of marketing is to be assigned as agreed in the JCC meeting held on June 22, 2017.
- In addition to the office space, a building and space in Deputy Regional Officer's Office for establishing "post-harvest technique and grain quality control laboratory"

was provided to the Project Team.

1-2 Progress of Activities

1-0-1 Conduct a baseline survey and endline survey to collect data on farm profitability of the target group and the control group.

- Draft baseline survey report was prepared and submitted to JICA at the end of December 2016. Upon the comments from JICA, supplemental survey has been conducted and some amendments are being made. Revised baseline survey report will be submitted in the next monitoring period.
- Because of the change of model site from the Land Consolidation Areas to other preferable farm lands under one turn out of irrigation canal in Pyay and Paungde, additional baseline survey is being conducted for the farmers in such areas (new target areas).

1-0-2 Reconfirm the issues of present farming in the Project Site.

- Site survey has been conducted at the new target area, which is "PROFIA model site" in Pyay and Paungde.
- To learn farming systems in other areas to be applied in the project area, field surveys have been organized in Magway, Kyaukse, and Nay Pyi Taw (NPT) as well as information gathering at Yezin Agricultural University, and DAR-NPT and DAR-Magway particularly for the issues of sesame and black gram cultivation.
- Major issues identified by the Team includes; 1) occurrence of plants death at the flowering stage of black gram in a relatively wider area, which is likely caused by a type of fungus; 2) commencement of contract farming by the farmers in the LCA in Zigon with a Chinese company for the production of monsoon and summer paddy, which made it difficult to continue smooth conduct of project activity in that area.
- For the issue of 1), the PROFIA Team is gathering information from various source including Yezin Agricultural University and DAR. However, actual cause of the disease is not identified yet. Further research is necessary in collaboration with other institutes.
- For the issue of 2), distribution of RS of paddy for monsoon cropping is canceled in Zigon LCA. To continue project activity in Zigon, seed multiplication activity will be continued with one farmer outside of LCA in Zigon.

1-0-3 Review the suitable balance between land productivity and labor productivity to examine the project activities.

- In light of the suitable balance between land productivity and labor productivity, cropping pattern needs to be well considered. For improving the land productivity, it is necessary to introduce 2 or even 3 cropping. However, it may not be suitable for the farmers' socio-economic condition to manage such an intensive farming system.
- In this regard, baseline survey result has been analyzed. So far, it was found that the more the non-agricultural income and the less the debt, the higher

the cropping intensity and the land productivity. It is implied that remittance of money from migrate family members may contribute to investing in agricultural investment, thus higher land productivity.

- In light of the above, type of cropping pattern promoted by the project should be decided in accordance with the socio-economic capacity of the farmers, in addition to natural condition of the area.

1-1. Promote the use of Certified Seed for rice

1-1-1 Review the current seed multiplication practice of DOA (seed farm & T/S extension office) and Model Seed Villages in the project site.

- The team had discussed with C/Ps from 6 Townships, seed farms in Paungde and Pwe Pyae, and JICA technical cooperation project team for paddy seed multiplication to review current seed multiplication practice. Also, Project Manager (PM) shared a policy on promotion of Seed Growers Association (SGA). Then, PM and the consultant team agreed on collaboration toward the seed multiplication using PPP mechanism.
- Through discussion with C/Ps, the PROFIA consultant team identified seed multiplication issues including: 1) amount of good quality seed is not enough to meet demand (need private sector's involvement); 2) seed farmers need to improve their skill; 3) product from CS cannot make good price in local market; 4) it is not easy to obtain CS with the yellow tag in the project site; and 5) irrigation canal is not connected to DOA seed farm.

1-1-2 Enhance the capacity of DOA seed farm to improve quality of FS and RS.

- During 2016 monsoon season, PROFIA organized a series of trainings in Pathein and in the project area in collaboration with JICA Technical Cooperation Project on Development of Participatory Multiplication and Distribution System for Quality Rice Seeds (hereinafter referred to as "The JICA Seed Project") with which C/Ps of the project in 6 townships and 2 seed farms were trained.
- The training had been conducted from June to November 2016,which was consists of lectures and field practices, covering all process of seed multiplication from seed selection to post harvest handling.
- Two (2) paddy seed cleaners for paddy from India were procured and installed in the 2 seed farms by November 22. Handover ceremony of the seed cleaners was held on December 7, 2016 at each seed farm. They are in operation.

1-1-3 Improve awareness of extension staff, farmers, private companies on the use of CS.

- A series of training on postharvest technique and grain quality control have been provided to the members of the Post-Harvest Group. The training includes not only lectures, but also practical activities such as 1) grain quality assessment using results of grain inspection at Yangon, 2) giving feedbacks to and discussion with the grain/ seed providers, and 3) milling recovery test at rice mills in 6 Townships.

- To assure and extend the groups activity to farmers and private sectors, post-harvest technique and grain quality control laboratory will be continuously utilized.
- As aforementioned, the seed multiplication trainings have been organized in collaboration with the JICA Seed Project, which is one of the good opportunities for awareness improvement of C/Ps. Also, one-day seminar on seed multiplication was organized on October 26, 2016 in Pyay Deputy Regional Officer's office, by inviting seed multiplication team of the JICA Seed Project.

1-1-4 Encourage rice millers / traders to purchase CS seeds produced by seed growers.

- List of rice millers in the project was developed by DOA C/Ps and key millers who have connection to the target farmers are identified. Then, questionnaire survey to the rice millers was conducted in June 2016 and the result is being compiled and analyzed by the Post-Harvest Group.
- Grain and seed (FS and CS) obtained from seed farmers and private seed growers (including rice millers) were assessed at the quality inspection laboratory in Yangon. The result was given back to the grain/seed providers with detail indicators of quality analysis. Through this activity, the project team tries to raise awareness of stakeholders in seed distribution sector on the importance and effectiveness of quality seed.
- Seed multiplication working groups have been established one for the northern three TSs and another for southern three TSs comprised of seed producers, rice millers, DOA (regional office, district office and TS office), and PROFIA members. Objective of the working group is to formulate a framework of seed multiplication and distribution mechanism under PPP concept. So far, two major meetings have been organized in March and June 2017, in which roles of each stakeholder were identified and agreed.
- Plan of seed multiplication have been discussed between PROFIA team members and C/Ps and identified the varieties of RS to be distributed to seed farmers/millers. RS was procured from seed farms in the project area and Ayeyarwady region; then distributed to the collaborating farmers in the LCAs of five townships and out of LCA in Zigon.

1-1-5 Involve rice millers for CS distribution and purchase of paddy produced from CS.

- Quality inspection of the quality seeds produced by rice miller was conducted by the project team in August 2016, and the result was given back to the miller. The quality of the seeds was found not much preferable as to be CS due probably to poor postharvest handling especially in drying. Therefore, a series of possible solutions to improve quality of seeds were suggested to the miller, which will be practiced in the following monsoon season in 2017.
- Milling recovery test at rice mills in 6 Townships have been done to collect data for improving milling process of rice millers. Improvement of milling process is also important to make millers being keen on quality of rice for better income.

- Plan of quality seeds distribution (CS) have been discussed between PROFIA team members and C/Ps and identified the varieties to be distributed to farmers in consideration with the farmers' needs. CS was procured from seed farms in the project area; then distributed to the target farmers in the PROFIA model areas in Pyay and Paungde TSs.

1-1-6 Monitor and introduce measures to improve the network among Public-Private-Producers for rice.

- As mentioned in 1-4-4, seed multiplication working group was established, with which producers, rice millers and DOA officers have been discussing for establishing quality seeds multiplication and distribution using PPP mechanism. This activity will continue throughout the project period.
- Market information including quality requirement has been compiled and provided to the target farmers so that a win-win situation can be created, that is, high quality grain is produced by farmers and sold at higher price, then, rice miller can enjoy the benefit of improved milling recovery rate, for example.

1.2. Promote the use of Good Quality Seeds for non-rice crops

1-2-1 Introduce good quality seed of non-rice crops to the model site.

- For 2016 winter season, the PROFIA team including C/Ps decided to support Black Gram (BG) production at 3 model sites in Paungde, Nattalin and Zigon. On October 25, 2016. 30 baskets of BG quality seed (RS) were procured from DAR Letpadan seed farm, and distributed to BG seed growers in 3 Townships (Yezin-2 for Paungde, Yezin-3 for Zigon and Yezin-5 for Nattalin) on November 4.
- The cultivation of black gram in above three model sites have faced a problem due to poor soil fertility and physical condition coupled with the land consolidation works, and also insufficient irrigation water hindered by the rehabilitation work of canal especially in Paungde. As a result, average production was about 5 to 8 baskets/acre (5-6 in Zigon, 5-8 in Nattalin and no harvest in Paungde) as compared to 15-20 baskets/acre in preferable field.
- Of the black gram seeds produced in three model sites, twice as much as provided amount was returned back to the Project, which were then graded using the seed grader provided by the Project. Graded seeds are now stored in the laboratory in the project office in Pyay.
- For crop diversification in summer season, the PROFIA team including C/Ps decided to support sesame production in Pyay model area where model farmers show a willingness to introduce sesame in 2017 summer. Based on farmers' needs, the consultant team visited Magway Research Center of DAR and discussed with a specialist of sesame.
- Then, the team procured 6 varieties of sesame for adoptability test in the Western Bago area. The adoptability test was conducted at Pyay model site, a private miller's field (Le Daw Qyi Farm) and Thegon Research Center of DAR. As a result, potential four varieties were identified (Sin Yadanar-3, Magway Net 1/13, Magway Net 2/14, Theik Pan Huan Hnet). Result of the

adoptability test was shared with DOA and DAR for their practical guidance to farmers.

1-2-2 Conduct trainings for DOA staff, farmers and the private companies on seed multiplication technique and use of good quality seed.

- The consultant team visited Nyaung Oo to learn lessons from JICA Technical Cooperation Team in the Central Dry Zone (WAST Project). Also the team visited DAR Magway Research Center to discuss future collaboration for crop diversification in the Western Bago Region.
- One-day training on black gram seed multiplication was organized at DAR Latpadan Seed Farm on January 7, 2017. Participants of the training include representatives from target farmers and C/Ps of DOA in 3 townships of Paungde, Nattalin and Zigon.
- A study tour was organized on June 26-28, 2017 with the members of Post-Harvest Group to visit sesame seed farm in Magway, in which they have learned better cultivation techniques of sesame especially for seed multiplication.

1-2-3 Enhance the coordination between farmers and private companies in the good quality seed distribution so that crops produced from quality seeds are sold with premium price.

- The Project Team collected sample of pulses/ beans seeds from wholesalers and traders for quality inspection, and the analysis was done at private laboratory in Yangon. Result of analysis was used for quality awareness campaign held at the post-harvest technique and grain quality control laboratory for private seed growers of such crops and also the government officers.

1-2-4 Monitor and introduce measures to improve the Public-Private-Producers network for non-rice crops.

- The Project Team started discussion with wholesalers and traders of non-rice crops for future collaboration. Possible collaboration with the private sector is to establish quality seed production model, and marketing model with higher prices. One of the practical collaboration is the seed multiplication of sesame in collaboration with private company (also rice miller).
- A study tour was organized in June 2017 for the members of Post-Harvest Group to visit sesame seed farm and machinery shop in Magway to establish a network between private sector and the government sector and then with producers in the future on the aspect of production, postharvest and marketing of sesame.
- Discussion with Japanese trading companies and local traders has been done to facilitate the trade of summer sesame in the future. In particular, demand from buyers' side has been confirmed, including required acid value, limit of chemical residual and minimum amount of volume for shipping which are required for Japanese market. After the harvest of summer sesame, sample of sesame seeds were delivered to these three Japanese trading

companies for evaluation.

2-1 3-season cropping model and 2-season cropping model with improved profitability are demonstrated in the model sites in the 6 townships

2-1-1 Identify the suitable crops for 3-season cropping in each model site by taking market demand prospect into account.

- Based on the baseline survey on water availability and irrigation water requirement, the consultant team identified that irrigation water is not enough to grow paddy in whole project area during summer season. If farmers grow paddy in summer season, only about 7% of whole project site can be irrigated, which is approximately 25% of current summer paddy area. Therefore, the PROFIA Team decided to promote crop diversification from paddy to other crops in summer season such as sesame.
- To serve for identifying 3-season cropping model, PROFIA team developed cropping calendar of each township, soil map and area map for summer paddy and winter crops, profiling of major paddy variety with vegetative characteristics and market information. In addition, baseline survey result was analyzed to consider suitable balance between land productivity and labor productivity.
- Through baseline survey and discussion with C/Ps and farmers, the project team identified suitable crops for 3 cropping model that includes winter pulses (BG) after monsoon paddy, and summer sesame as a substitute crop of summer paddy.
- 3-season cropping model will be established based on water availability, soil condition, machinery use, profitability, market acceptability, and farmer's socio-economic conditions and willingness. As schedule of 3 cropping practice is quite tight, if something unexpected happens, then, it cannot be managed as planned.
- For example, if the harvest of monsoon paddy delayed due to prolonged rain, then, commencement of black gram cultivation will also delay. As a result, black gram plants would encounter severe Yellow Mosaic Virus (YMV) disease. Moreover, as start of summer sesame would also delay, then, it might suffer from too much moisture at the onset of monsoon season in May to June—loss of harvest or quality reduction.

2-1-2 Identify more profitable crops for 2-season cropping in each model site by taking market demand prospect into account.

- To identify the potential and adaptability of 2 and/or 3 cropping, PROFIA Team has conducted several activities including 1) farm record keeping to monitor cost/benefit structure of farming, 2) soil fertility test for proper fertilizer management, 3) soil moisture monitoring for supplemental irrigation during winter and summer, 4) farming method comparison to reduce production cost, 5) machinery use trial to minimize planting period.
- Through baseline survey and discussion with C/Ps and farmers, the project team identified suitable crops for 2-season cropping that includes monsoon paddy and winter pulses (BG) mainly for the southern townships of Paungde,

Nattralin and Zigon. Also, monsoon paddy – summer sesame cropping is proposed especially for northern three townships of Pyay, Paukkhaung, and Thegon.

- The advantages of 2 cropping is to be able to combine green manure cultivation in between two cropping, by which agricultural production will be more sustainable. Also, if pursuing 2 cropping, longer duration variety of monsoon paddy can be selected, which enjoys higher selling price for its better taste and aroma.

2-1-3 Promote the cultivation of suitable crops identified in 2-1-1 and 2-1-2.

- Farmers in the project area have been growing summer paddy since they do not have alternative idea except for Pyay where farmers had grown summer sesame until a decade ago. To encourage farmers to shift from summer paddy to alternative crops, a series of awareness campaign, including field day to see field practices (sesame), seminar on sesame cultivation techniques, information sharing about market demand for proper decision making, and variety test of sesame in the LCA in Pyay, for example, have been conducted.
- To be composed of 2 cropping and even 3 cropping, trial cultivation of sesame under irrigation was conducted in the LCA of Pyay from February to May 2017. In this trial, different land preparation methods, such as deep plow, sowing method, such as line sowing, fertilization management, and varieties have been introduced and tried. The harvest was then sold to local trader at relatively preferable price of 40,000 kyat/basket.
- It is planned to have a series of dialogues with farmer groups if they are willing to practice 3 cropping and are capable of practicing it with regard to the above. After setting up the cropping pattern as a group, it will be consulted with the general administration office. Then, irrigation water demand will be sent to irrigation department (IWUMD) so that necessary amount of water can be delivered in right timing for the planned cropping pattern.
- Changing the type of crop from paddy in summer season was found not so easy because it used to be designated by the government to grow only paddy in irrigated areas. Farmers as well as government officers may still maintain such a mindset as to cultivate paddy as an obligation for food security of the region or the state. Now, explanation in the necessity of changing the type of crops is being made to high officials at regional and state government leve.

2-1-4 Enhance the capacity of farmers on appropriate use of agricultural inputs and on soil improvement.

- Soil analysis have been done in each model site of six townships in different forms, including soil composition analysis at laboratory, soil compaction test, and test on soil chemical characteristics at laboratory, in addition to pH and EC test using handy devise. Also, pot test have been implemented using soil from the model sites to see the growth of plants in different fertilizer application.

- As there were some rumors that some fertilizers in the market are not reliable, laboratory test of chemical component of common commercial fertilizers have been conducted. The result showed that the amount of each chemical component was not so different from what are indicated on the package—it was explained to the C/P for further dissemination.
- Use of green manure has been promoted as one of the methods to improve soil condition. To make sure, trial of *crotalaria* cultivation as green manure is being conducted in Pyay, Thegon and Paungde. Also, it was learned that it is not so easy to obtain seeds of crotalaria or similar green manure plants in the area, crotalaria seeds are being multiplied in a small scale.
- To minimize the use of seeds and to facilitate a suitable plant population in the field, an appropriate amount of seeds have been taught to target farmers as a part of paddy cultivation training: 1.5 baskets/acre. Also, line sowing methods have been demonstrated in the model sites for various crops: black gram (Thegon), sesame (Pyay), and monsoon paddy (Pyay). As for sowing methods, use of machineries is also tested (see 2-1-6).
- As for an appropriate use of agricultural chemicals, information gathering has been organized especially on the issue of chemical residue on sesame. In particular, *Imidacloprid* and *Carbaryl* are pesticides which are now a central issue associated with sesame exportation to Japan.

2-1-5 Introduce appropriate water management practices for rice production in addition to non-rice crops, including furrow irrigation through Water Users Group (WUG).

- Field survey to check condition of LCA and water facilities was done from August 2016 and issues identified during the survey was reported to relevant organizations including IWUMD and AMD. Based on the result, additional work for rehabilitation, including land leveling and canal re-alignment, was requested to responsible departments. As a result, re-leveling was done by AMD in Thegon, Paungde, and Nattalin and some repairmen of canal was done by IWUMD.
- Action plan to establish Water Users Group (WUG) was developed based on discussion with JICA Irrigation Policy Advisor and BWID consultant team. The action plan was presented to C/Ps and TS Committees to discuss role and responsibility of stakeholders.
- Activities on WUG establishment have been facilitated in Pyay LCA with collaboration with IWUMD and BWID consultant team in addition to other 5 places in 5 townships. In addition to WUG which is established in each turnout, land consolidation groups are being established, composed of several WUGs. Land consolidation groups are to be established in 5 townships excluding Pyay where Water Users Association is to be established under BWID project.
- For BG production in winter season, irrigation is basically not necessary since BG can grow absorbing remaining soil moisture after monsoon season. However, if soil becomes too dry, supplemental irrigation is needed. For this purpose, PROFIA Team periodically monitored soil moisture taking soil

sample from target farmers' plot in Paungde, Nattalin and Zigon.

- For sesame production in summer season, PROFIA Team conducted study tour to Nyaung Oo, Kyaukse, and Magway to collect information on sesame production including irrigation method. A seminar to sesame growers and C/Ps was organized on January 30, covering irrigation method as to apply water at the beginning of season with flood irrigation, etc.
- Irrigated farming of black gram in Thegon in winter season and sesame in Pyay in summer season was practiced as a trial basis. In the former case, line sowing + furrow irrigation plot performed 2.7 times of higher profit than broad casting + no irrigation plot. In the latter case, it was found that application of irrigation water hinders the use of tractor especially for deep plowing.

2-1-6 Enhance the capacity of farmers, private companies and AMS staff on appropriate use of agricultural machinery.

- Field survey and interview to Agricultural Mechanization Stations in 5 TSs was conducted during the monitoring period. Issues on the use of combine harvester are: 1) supply of the service does not meet the growing demand; 2) on the other hand, operating rate of combine harvester is low in some station due to logging of paddy caused by heavy rain in the late monsoon in 2016; 3) over speed of combine harvester results in lots of fallen grains; 4) farm road condition after monsoon is bad to operate combine harvester; and 5) timing of paddy harvest is not uniform and the operation is not efficient.
- Use of transplanter needs collaboration between DOA and AMD, for which discussion of future collaboration is being done. In particular, preparation of quality nursery using plastic tray is essential, which is not the core domain of AMD's task. By early 2017, AMD Pyay district has purchased 2 rice transplanters (riding type, 6 row, Kubota), which is being used for service provision.
- As for the use of rice transplanter, collaboration with private service provider is being facilitated in Pyay and Thegon. In particular, seed multiplication activity in Thegon is being done with private service provider from Shwedaung TS and the same is being done with nearby service provider in Pyay.
- A ridge builder was procured from Japan and test trial has been done in Pyay and Thegon where sandy soil is dominant and suitable for ridge building for black gram. In addition, implement of ridge builder was fabricated (metal) at the local manufacturer with technical assistance by the expert, which is about 80,000 kyat, about one third of the Japan-made (plastic).
- Applicability test of agricultural machineries such as sesame/black gram seeders (small/large), have been conducted. Result will be analyzed after harvest.
- Information gathering is being done on other agricultural machineries such as seeder, leaper/ leaper binder of sesame, which are available in the local dealers. Now, applicability is analyzed in terms of the spec of the machine and field design (i.e., distance between the rows, and interval between the

plants).

2-2 The practice introduced in 2-1 is disseminated in cost effective and sustainable way

2-2-1 Introduce the farming record (accounting book) to the target farmers and ordinary farmers.

- The first year training on farming record keeping was conducted from June 13 to 18 2016 to the target farmers of each TS. Most of farming record had been collected toward the end of 2016 by PROFIA team to compile as dataset and analyze the cost-benefit structure of these farmers.
- The second year farming record training is being conducted together with the feedback seminar above mentioned. Farming record format was revised based on the suggestion from farmers in the first year participants as well as the participants in the second year.

2-2-2 Analyze the data of 2-2-1 and visualize the effect of the practices introduced in 2-1.

- The result of the analysis was tabulated/ visualized and is being presented to the farmers in late June 2017 so that farmers can get proper understanding on their typical farming activity from the quantitative point of view.
- It was found, for example, gross income was higher in some areas (i.e., Nattalin and Zigon) notwithstanding the fact that cost of inputs was not so different across the townships. It implies that soil condition is more preferable in these plots; thus, there might be more potential for relatively intensive farming practices.
- Also, net income did not depend on the scale of field, suggesting that scale merit is not functioning well. Furthermore, farmers who cultivated 2 crops earned the biggest net income from monsoon paddy as compared to farmers who cultivated 1 or 3 crops, implying 2 cropping might be more appropriate in this area, rather than more labor intensive 3 cropping.
- Possible reason for above may include that 3 cropping is too intensive to manage; as a result, even the monsoon paddy cultivation cannot be managed well as it depends on the time schedule of previous crop a lot. Also, in 2 cropping, the earnings from winter/ summer cropping can be invested to monsoon paddy; as a result, production becomes higher than those who cultivate only monsoon paddy.

2-2-3 Advertise the practice in 2-1 by using the information of 2-2-2 through poster, radio, newspaper advertisement, etc.

- Newspaper (Standard Times/ Myanmar Alinn Daily) was invited to handover ceremony of paddy seed cleaner/ grader at Paungde and Pwe Pyae in December 7. Also, a newspaper was invited to opening ceremony of Shwe Nyaung Zin Rice Mill in Paungde TS on December 14, 2016. The rice mill is operated by farmers' group to maximize profit from paddy production.
- On March 20, 2017, newspaper (Myanmar Alinn Daily) visited the opening ceremony of "post-harvest technique and grain quality control laboratory." In addition, newspaper was invited to the field day on summer sesame

cultivation. Successful production of sesame in Pyay was reported nationwide on the newspaper (seven days journal) dated on May 11, 2017. Sesame cultivation activity was also taken up at web news (DVB media on June 5, 2017 and News Watch Journal on June 10, 2017). Newspapers for PROFIA activities are shown in ANNEX V.

2-2-4 Create and distribute material such as booklet, poster, DVD etc. to disseminate the practice in 2-1.

- Training materials in Myanmar language were developed when training was conducted. The materials developed by today include: 1) seed preparation, 2) farming record manual, 3) soil improvement, 4) baseline survey result feedback (gender), and 5) operation manual for agricultural machineries.
- Training manual of Post Harvest Training is now being prepared by the C/Ps based on the TOT provided by the consultant team. The manual in Myanmar language will be completed in the next monitoring period.

2-2-5 Promote extension activities, including study tour, field day, farmer field school, farmer to farmer extension, as well as extension activities through knowledge center.

- A seminar for sesame production was conducted on January 30, 2017 by inviting a sesame specialist from Magway, a former researcher of DAR-Magway. Since farmers' interest in sesame production was quite high in the project area, a total of 38 people have participated in the seminar, of which 24 farmers from the northern 3 townships and one person from private sector.
- Field day was organized in Pyay on May 4, 2017, on the issue of summer sesame cultivation, inviting 17 farmers in Pyay (11) and Theogn (6) and government staff from 6 townships.

3-1. Identify the issues on middle- and long-term use of irrigation facilities in the Project Site through monitoring the Project.

- Irrigation policy advisor was assigned on July 8, 2016, and has visited the project site in almost every month for monitoring purpose.
- During site visit on November 2016, the advisor identified issues on irrigation facilities in the model LCAs, including uneven land leveling, inappropriate design of water structures, deteriorated farm road and footpath, and thin and poor soil condition. PROFIA Team has reported the related DGs about above issues and requested them taking any actions to improve existing condition. PROFIA Team is monitoring additional work by AMD and collecting detailed information on irrigation facilities in the model LCAs.
- Regarding poor soil condition, the irrigation policy advisor advised that PROFIA should collaborated with AMD to improve preparatory work.
- Utilization and maintenance of watercourse in LCAs and construction of watercourse in non-LCAs have been encouraged to the WUGs and land consolidation groups (LCGs).

3-2. Develop a guideline on PIM (Participatory Irrigation Management) in the Project Site.

- Forward development of a guideline, the process for the establishment of WUAs/WUGs in the pilot areas of BWID has been started from August 2016. Activities on establishment of WUGs and/or LCGs were started from November 23, 2016 at Pyay LCA and the other LCAs in collaboration with BWID Team and IWUMD. The irrigation policy advisor supports the activities by providing technical advices during monthly visit to the Project sites. 2nd draft of PIM guideline at national level was completed and submitted to IWUMD. This draft will be modified/updated taken account not only PROFIA but also BWID pilot activities.
- For development and dissemination of the PIM guideline, role of Irrigation Technology Center (ITC) must be important. In this regard, the irrigation policy advisor organized 1st coordination meeting with ITC, IWUMD-Pyay and consultant team, and shared information regarding PIM and water management and discussed future joint activities. Also, the irrigation policy advisor conducted special training on water management twice in cooperation with ITC and started capacity building of IWUMD on PIM.

3-3. Assist PIM activities by Water Users Groups/ Water Users Association after establishment.

- In LCAs, in case the WUA will not be established under a distributary canal near future, land consolidation group (LCGs) are under establishment. Now all the WUGs for each watercourse were completed, and out of the 9 proposed organization procedures, step 5 and 6, which is to hold management board meeting and general assembly meeting, are on-going process. At the same time, WUGs/WUAs are under establishment by IWUMD and BWID Team, in the distributary canals of CL3 (Pyay), DY25 (Thegon), LDY4 (Paungde), and MDY4 (Nattalin).
- For LCAs, where watercourses are ready for use, WUG were encouraged to maintain watercourse for summer season and monsoon season and assisted as the group activities.
- For non-LCAs, where watercourses are not yet constructed, watercourse construction was assisted in collaboration with IWUMD.
- In above activities, materials to explain necessity and benefit of the group, example of group activities, and benefit of watercourse, were prepared in collaboration with BWID Team.

3-4. Assist dissemination of the use of guidelines for land consolidation in the Project Site.

- On August 25 and 26, 2016, technical seminar was organized with support of JIID and MAFF, Japan. Irrigation policy advisor participated as a member of panel discussion. Many points to be improved were announced by related departments. Then, the policy advisor organized a meeting on September 9, 2016, to promote mutual understanding among the related department. AMD agreed to organize the task team for promotion of Land Consolidation. Also, participants agreed on assessing current situation and explaining/suggesting to Executive Members of Ministry for counter measures. Evaluation report for promotion of Land Consolidation is under preparation. On December 1 and 2, International Symposium regarding land consolidation was organized with

support of JIID. Thailand and Cambodia delegation attended to this symposium and 4 countries including Japan had exchanged opinions to promote this project.

3-5. Provide advices to solve the issues of irrigation sector in Myanmar through meeting with stakeholders and observation of various irrigation systems in Myanmar.

- The various problems occurred in the model LCAs of PROFIA were reported by the irrigation policy advisor and PROFIA Team to DGs of DOA, AMD and IWUMD on November 30, 2016, and urgent rehabilitation before starting next cropping season was requested to them. DG of AMD dispatch a team to Western Bago to survey and discuss with stakeholders, and rehabilitation work was done in the Project sites.
- Through initial evaluation of irrigation system in Myanmar, the irrigation policy advisor recognized one of weak points in the irrigation sector of Myanmar is water management. During "Special Training on Water Management (one week training)", organized by ITC on October 2016 and February 2017, the irrigation policy advisor made a lecture on "PIM and Role of IWUMD", and presented the real meaning of PIM and the importance of IWUMD officers' learning from farmers and current conditions. Continuously, Special Training Program on water management including physical training in field will be considered for IWUMD officials in 2017.
- Also, country training in Japan to strengthening of water management of IWUMD officials is now under preparation. For this purpose, preparatory mission was dispatched by National Agriculture and Food Research Organization on March 2017.

1-3 Achievement of Output

Output 1 Public-Private-Producers (Farmers) Partnership is strengthened

Indicator 1-1: Paddy rice produced from Certified Seed by farmers in the Model Site is sold at higher price than paddy rice produced from ordinary seeds.

- Certified Seeds procured from DOA seed farm were distributed to target farmers in the new target areas (PROFIA model area) in Pyay and Paungde in June 2017.
- Depending on the trial design, nursery preparation was done or seeds were directly sown on the main field by the end of June 2017. A series of trainings are being provided to the target farmers, including seed selection using salt water, nursery preparation using bio-charcoal, and different seeding methods.
- Post harvest technique and grain quality control laboratory was established to analyze seeds and grain quality so that rice miller can check the quality of grain produced from CS as to consider buying them at higher price.
- Milling recovery test has been conducted in several rice millers as practice for both millers and the counterparts of post harvest group. Having cultivated a good relationship with private sector (rice miller), a series of activity planned for output 1 will be smoothly conducted at the time of harvesting.
- As to secure certified seeds of paddy, seed multiplication working group was

established in 2017, composed of representatives from producer, rice miller, government offices.

- Seed multiplication is to be carried out by the farmers mainly in LCAs of six townships, for which Registered Seeds have been distributed to these farmers and some technical guidance are given.

Indicator 1-2: At least one variety of multiplication and distribution flow of good quality seeds of non-rice crops is strengthened.

- A series of discussion have been made with Japanese seed production company that are now working in Pyay especially for seed production of black gram. Collaboration with this company will be pursued to secure one distribution flow of black gram.
- Four potential varieties of sesame were identified based on the field trial. One of which will be multiplied in collaboration with a local private company in a small scale for further project activity purpose.
- A relationship with seed growers of sesame in Magway region is being cultivated thorough repeated exchange visits by the project members, C/P, farmers, and researcher. In the future, quality seeds of sesame may be procured from Magway region as one of the distribution flows.

Output 2 Profitability of farmers in the Model Site is improved

Indicator 2-1: Increase of agricultural profit since 2015 among farmers in the Model Site exceeds that of the control group by more than 20%.

- Possible cropping patterns which are considered more profitable are identified based on the baseline survey result and a series of field survey and exchange of opinions with counterparts and farmers. They are: 1) Monsoon Paddy (MP) – Black Gram (BG) – Summer Sesame (SS), 2) MP – BG, and 3) MP – SS, with some variations in the varieties of each crop.
- Sesame as more profitable crop in summer season has been introduced at LCA in Pyay TS. PROFIA is supporting this production as a model of alternative crop to summer paddy. At the same time, awareness campaign was conducted to the target farmers in other TSs.
- Linkage is being established with local traders as well as Japanese traders for sesame trading from the project area. Sample from the first trial products was given favorable evaluation from these traders, with its lower acid value and uniformed size and color of the grain (sesame seeds).
- A series of soil improvement trials have been conducted as soil condition of the project area is seen fairly low. It is expected that more economical fertilization management method is established for this area based on these trials.

Output 3 Guidelines for Participatory Irrigation Management (PIM) in the Project Site is prepared and applied in the Model Site

Indicator 3-1: Guidelines for participatory irrigation management is prepared.

- 2nd draft of PIM was developed and shared with relevant officials.

Indicator 3-2: Stakeholders meetings of irrigation sector are sustainably organized.

- Not applicable yet.

Indicator 3-3: More than 50 % of farmers in the model site participate in PIM activities

- The lawful tillers (or in case actual cultivators and agricultural lessees) in the model area are being organized WUG/LCGs. During the several meetings to establish WUGs/LCGs, all the members of WUGs/LCGs are being invited, and the important decision making for the WUGs/LCGs activities are being conducted in general assembly meeting to which all the members participate in the model area.

1-4 Achievement of the Project Purpose

Indicator A: At least one of the practices introduced through the Project is adopted in more than 50 % of the model site.

- Definition of the “model site” was changed: AMD demo farms were found not favorable enough to establish profitable model due to poor condition of soil just after the land consolidation work. Therefore, primary target sites were sifted from "AMD demonstration farms" to "PROFIA model area"

Indicator B: Increase of agricultural profit since 2015 among farmers who adopt the practices exceeds that of the control group by more than 10%.

- Not applicable yet.

1-5 Changes of Risks and Actions for Mitigation

- *Condition of the Model Site*: After one season of cultivation, various problems of model LCAs were observed. The problems include: 1) unleveled farmland, 2) inappropriate design and location of water structures, 3) deterioration of farm road, 4) corruption of footpath, 5) poor and uneven soil condition. These issues are related to the precondition of the PDM.
- To cope with this situation, repair/rehabilitation of subject LCAs was requested to responsible department, AMD and IWUMD through multiple channels. Thereafter, some rehabilitation works have been done.
- *Stoppage of Irrigation for BWID’s Construction Work*: Irrigation facility rehabilitation is implemented during dry season. Construction work is still on-going and the schedule has been extended up to 2018/2019 season. Due to the rehabilitation work, LCAs in Thegon, Paungde, Nattalin and Zigon were not able to receive irrigation water in 2017 summer season. For Paukkhaung, canals will be rehabilitated in dry season of 2017/18, and farmer cannot use irrigation water in 2018 summer.
- Rehabilitation work at the said LCAs in Thegon, Paungde, Nattalin and Zigon will be completed by winter/ summer 2017/2018. Thus, irrigation water is expected to be available in these areas. On the other hand, in Paukkhaung, summer cropping is not able to be cultivated.
- *Bad weather condition*: In 2016, heavy rain has occurred in November, which is usually an out of monsoon season. As a result, harvest of monsoon paddy has delayed and thus commencement of black gram cultivation has also delayed, which has increase a risk of Yellow Mosaic Virus disease.

- If promoting 3 cropping of MP-BG-SS, this kind of bad weather/ climate change may cause a big damage because delay of black gram cultivation further affect the commencement of sesame cultivation. Then, if sesame's harvest time goes into monsoon season, there is a risk of total loss of sesame as it is susceptible to high moisture.
- To cope with this kind of risk, project team is trying to promote more extensive cropping pattern, that is, two cropping of paddy and black gram or paddy and summer sesame.
- *Outbreak of pest and disease*: In the project area, a sudden death of black gram plants has widely occurred at the time of flowering stage. Cause is not clear it but it is believed that a kind of fungus has affected the growth of black gram. As no effective countermeasure is yet known, cultivation of black gram itself entails a high risk of total loss.
- If black gram is cultivated under the project activity to pursue more profitable farming model, there would be also a risk of failure. Therefore, at least for a couple of years, it is recommended not to cultivate black gram but sesame or any other crops in winter and/or summer.

1-6 Progress of Actions undertaken by JICA

- *Condition of the Model Site*: the consultant team reported to JICA-HQs on January 6, 2017. JICA-HQs instructed that the team can select model area from outside of LCA. The team discussed with C/Ps and selected new model site (PROFIA model area) from outside of LCAs in Pyay and Paungde where condition is rather favorable in terms of water availability, soil fertility, and so on. It was proposed in the second JCC meeting and approved.

1-7 Progress of Actions undertaken by Gov. of Myanmar

- *Condition of the Model Site*: AMD dispatched field inspection team and implemented land leveling again in the damaged LCAs. Also, IWUMD has done additional rehabilitation work of water structures in LCA in Pyay at their own cost.

1-8 Progress of Environmental and Social Considerations (if applicable)

- Not applicable since the project is categorized in the Category C of the JICA Environmental and Social Consideration Guideline.

1-9 Progress of Considerations on Gender/Peace Building/Poverty Reduction (if applicable)

- Result of baseline survey on gender issue was compiled and feedback seminar to C/Ps and farmers has been carried out in December 2016.

1-10 Other remarkable/considerable issues related/affect to the project (such as other JICA's projects, activities of counterparts, other donors, private sectors, NGOs etc.)

- Yamato Nouen, a seed company of Japan, studied on seed multiplication of Black Gram (BG), and visited PM and project office of PROFIA. PROFIA members and Yamato Nouen have been discussing the possibility of future collaboration in Western Bago region. Reportedly, Yamato Nouen will continue seed multiplication in Western

Bago region with JICA's assistant scheme.

- One-acre fund (an International NGO) visited PROFIA office to exchange experiences and information for future collaboration. We will continue keeping a close communication for further collaboration.
- JICA Two-Step Loan (TSL) program in collaboration with Myanmar Agricultural Development Bank (MADB) is on-going. As for the pilot activity, TSL has selected Pyay township MADB branch for the first disbursement. Then, exchange of information and opinions is being closely done between the two projects. For example, PROFIA's baseline data was used to design evaluation sheet/ application form of TSL. Also, candidates of borrowers are being selected from group of farmers inclusive of those introduced by PROFIA's stakeholders.

2 Delay of Work Schedule and/or Problems (if any)

2-1 Detail

1) Cultivation of Non-rice Crops in Summer Season (sesame)

- Sesame cultivation was planned with farmers of LCA in Pyay for about 100 acres to be cultivated under irrigation in summer time. However, it was not conducted as planned because farmers changed their mind at the last minutes. Instead, sesame was cultivated in about 4 acres as a trial including variety test, and sowing method trial, and deep plowing trial. Then, they were harvested in May 2017.

2) Occurrence of Severe Disease for Black Gram

- In many areas of black gram field, plants death at the flowering stage has been observed in a relatively wider area, especially in southern 3 townships. In some case, all the plants in the plot were dead.

3) Farmers Commitment with Other Program (contract farming with a Chinese Company)

- Farmers in the originally targeted LCA in Zigon has started a contract farming with a Chinese company for the production of paddy starting from monsoon season of 2017, which made it difficult to continue on-farm project activity in that area.
- For the issue of 1), the PROFIA Team is gathering information from various source including Yezin Agricultural University and DAR. However, actual cause of the disease is not identified yet. Further research is necessary in collaboration with other institutes.

4) Collaboration among WUGs/LCGs and Farmers' Motivation to the Voluntary Activities

- In case, WUG members are composed of farmers who came from different villages, the communication and collaboration among different villagers tend to be weak.
- A part of newly constructed watercourse was broken by a newcomer-cultivator (non-member) who did not know about WUG activities in model area under LDY4 (Paungde).
- Watercourse maintenance activities of a WUG under Pyay LCA, stop in the middle portion of watercourse due to low participation of some farmers.

2-2 Cause

1) *Cultivation of Non-rice Crops in Summer Season (sesame)*

- Reportedly, it was still difficult for farmers to change their summer crops from paddy to other crops without clear instruction from the government such as the general administration office. Although policy of compulsory cultivation of paddy in the irrigated area is no longer in effect nationwide, people on the ground may have not known the change yet; thus, they were afraid to cultivate any crop other than paddy.

2) *Occurrence of Severe Disease for Black Gram*

- Cause of this disease is yet unknown but it is different from Yellow Mosaic Virus disease. According to a series of observations, it is likely caused by a type of fungus. It is also assumed that repeated cultivation of black gram in the same field may have accelerated the degradation of micro-ecosystem in the field.

3) *Farmers Commitment with Other Program (contract farming with a Chinese Company)*

- As explained in 2-1 detail, contract farming has started with other program.

4) *Collaboration among WUGs/LCGs and Farmers' Motivation to the Voluntary Activities*

- Communication among different villagers are not active so far generally throughout the Project site.
- Information sharing on WUG/LCG activities among lawful tillers, actual cultivators and agricultural lessees was not enough strengthen.
- Farmers are not familiar with canal-wise group activities and some have less interest on group and/or voluntary activities.

2-3 Action to be taken

1) *Cultivation of Non-rice Crops in Summer Season (sesame)*

- Interview surveys have been conducted to identify the real cause of sudden change of farmers' mind at several offices including, DOA, general administration office (Pyay District), and regional government. It was however not clear whether any office gave instruction to farmers not to change the crops from paddy. Then, it was further confirmed at the regional government and NLD that compulsory cultivation of paddy is no longer in effect.
- Now, it is being done to explain the necessity of changing crop from paddy to other crops during summer season due to insufficient volume of water available. So far, reginal government and NLD have shown their understanding on this issue and basically agreed to precede the policy on that direction.
- This kind of dialogue with high officials will be continued so that farmers can cultivate whatever crops they prefer in the next summer season including sesame cultivation as one of the recommendable cropping patterns promoted by PROFIA.

2) *Occurrence of Severe Disease for Black Gram*

- Soil analysis is being done at a laboratory in Yangon to see general soil condition of the affected field. Also, consultation has been done with experts at Yezin agricultural university, DAR and university in Japan. To cope with this problem, cause of the disease needs to be identified first. Then, possible countermeasures need to be planned especially at longer-term point of view.

- As there is a limitation of doing the whole process of such by PROFIA, it is planned to introduce general soil improvement technique like use of green manure, and deep plow. Also, it is planned not to continue cultivation of black gram for a couple of years. It is considered as one of the biggest risk factors in realizing profitable agriculture.

3) *Farmers Commitment with Other Program (contract farming with a Chinese Company)*

- Distribution of RS of paddy for monsoon cropping for seed multiplication was canceled in Zigon LCA as farmers were already committed to the other program. To continue project activity in Zigon, seed multiplication activity will be continued with one farmer outside of LCA in Zigon based on strong request from the counterpart.
- In fact, there were several farmers who were willing to do seed multiplication with PROFIA. However, they have cultivated summer paddy with non-quality seeds in the same field. As contamination of different varieties and/or off-types is expected, they were not able to join the activity.
- Even though, on-farm activity cannot be done for model establishment, it was decided to continue supporting these farmers to establish water users group as it was already started.

4) *Collaboration among WUGs/LCGs and Farmers' Motivation to the Voluntary Activities*

- Assign a representative from each village within a WUG, in case a WUG is composed of more than two villages. And increase opportunities to communicate and to do collaborative activities, such as preparation of contact list and so on.
- In case there is a WUG/LCG meeting, invite not only members such as lawful tillers but also actual cultivators and agricultural lessees even if those are not proper members. And encourage information sharing among lawful tillers, actual cultivators and agricultural lessees.
- Prepare materials to show the benefit, advantages, and requirements of group activities clearly. Increase the opportunities of group activities and find countermeasures to attract and motivate farmers through trial and error on the ground.

2-4 Roles of Responsible Persons/Organization

1) *Cultivation of Non-rice Crops in Summer Season (sesame)*

- PROFIA will continue consulting with farmers through WUG/LCG meetings and try accumulating a best practice for future extension.
- As this issue is highly associated with the government policy, state and regional governments should make effort to promote cropping of non-rice crops where applicable.

2) *Occurrence of Severe Disease for Black Gram*

- As the cause of this disease is still unknown, research institute such as DAR and Yezin Agricultural University should take charge of identifying the cause and propose effective countermeasures, and then, PROFIA should promote these countermeasures.

3) *Farmers Commitment with Other Program (contract farming with a Chinese Company)*

- PROFIA should continue collaboration with farmers anywhere in Zigon township and

implement whatever effective for improving farmers' profit.

4) Collaboration among WUGs/LCGs and Farmers' Motivation to the Voluntary Activities

- PROFIA will continue encouraging WUGs/LCGs in collaboration with relevant departments as well as BWID.

3 Modification of the Project Implementation Plan

3-1 PO

- Some experts have been newly assigned in charge of: 1) PCM moderator, and 2) organization.
- Activity in the PO was modified based on the revised PDM (PDM ver.2).

3-2 Other modifications on detailed implementation plan

- At the second JCC meeting held on June 22, 2017, a revision of the Project Design Matrix (PDM) was proposed from PROFIA consultant team and counterparts at regional level and it was approved by the JCC members with some amendment. Revised PDM (PDM ver.2) is attached as Annex I Project Monitoring Sheet I.
- This revision includes change in the definition of project site, target group, etc., restructuring of project activities, and collection/ change of wording and spelling. Detailed explanation of such modification is explained in Annex III Explanation of Change of PDM.

4 Preparation of Gov. of Myanmar toward after completion of the Project

- N.A.

II. Project Monitoring Sheet I & II

Attached in Annex I and Annex II

List of Annex

Annex I	Project Monitoring Sheet I (PDM ver.2 revised as of June 22, 2017)
Annex II	Project Monitoring Sheet II (Plan of Operation ver.2)
Annex III	List of Equipment Procured
Annex IV	Equipment lists of Post-harvest technique and grain quality control laboratory
Annex V	Newspapers for PROFIA Activities

Annex I Project Monitoring Sheet I (PDM ver.2 revised as of June 22, 2017)

Project Design Matrix

Version 2

Dated June 22, 2017

Project Title: Project for Profitable Irrigated Agriculture in Western Bago Region

Implementing Agency: Department of Agriculture, **Ministry of Agriculture, Livestock and Irrigation**

Target Group: **MOALI** staff, private sectors and farmers in four irrigation systems in Pyay district and Thayawaddy district (116,738 personnel／23,394 House hold)

Period of Project: March 2016 to February 2021

Project Site: 6 townships (Pyay, Paukkhaung, Thegon, Paungde, Nattalin, Zigon) in 4 irrigation schemes in Western Bago Region

Model Site: 20 sites including PROFIA model areas[/a], AMD demo farms and DOA seed farms.

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumption	Remarks
Overall Goal				
Profitability of agricultural activities in the Project Site is improved	Increase of agricultural profit in the Project Site since baseline year 2015 exceeds that of the whole country by more than 10%.	**MOALI** Statistics	Policy related to crop selection and trading does not change drastically.	
Project Purpose				
Profitable irrigated agriculture model with private sector involvement is established	・At least one of the practices introduced through the Project is adopted in more than 50 % of the model site. ・Increase of agricultural profit since 2015 among farmers who adopt the practices exceeds that of the control group by more than 10%.	Baseline survey and endline survey of the Project Baseline survey and endline survey of the Project	Policy related to crop selection and trading does not change drastically. Water supply is not disturbed due to drought or flood	
Outputs				
1. Public-Private-Producers (Farmers) Partnership is strengthened	1-1 Paddy rice produced from Certified Seed by farmers in the Model Site is sold at higher price than paddy rice produced from ordinary seeds. 1-2 At least one variety of multiplication and distribution flow of good quality seeds of non-rice crops is strengthened.	Baseline survey and endline survey of the Project Baseline survey and endline survey of the Project	Policy and regulations for pulses seed production do not adversely affect the project activities	
2. Profitability of farmers in the Model Site is improved	2-1 Increase of agricultural profit since 2015 among farmers in the Model Site exceeds that of the control group by more than 20%.	Baseline survey, endline survey, and farming record of the Project.		
3. Guidelines for Participatory Irrigation Management (PIM) in the Project Site is prepared and applied in the Model Site	3-1 Guidelines for participatory irrigation management is prepared. 3-2 Stakeholders meetings of irrigation sector are sustainably organized. 3-3 More than 50 % of farmers in the model site participate in PIM activities	Monitoring sheet Monitoring sheet Baseline survey and endline survey of the Project		

Activities	Inputs		Important Assumption
	The Japanese Side	**The Myanmar Side**	
1-0-1 Conduct a baseline survey and endline survey to collect data on farm profitability of the target group and the control group. 1-0-2 Reconfirm the issues of present farming in the Project Site. 1-0-3 Review the suitable balance between land productivity and labor productivity to examine the project activities <Output1> <u>1-1. Promote the use of Certified Seed for rice</u> 1-1-1 Review the current seed multiplication practice of DOA (seed farm & T/S extension office) and Model Seed Villages in the project site. 1-1-2 Enhance the capacity of DOA seed farm to improve quality of FS and RS. 1-1-3 Improve awareness of extension staff, farmers, private companies on the use of CS. 1-1-4 Encourage rice millers / traders to purchase CS seeds produced by seed growers. 1-1-5 Involve rice millers for CS distribution and purchase of paddy produced from CS. 1-1-6 Monitor and introduce measures to improve the network among Public-Private-Producers for rice. <u>1.2 Promote the use of Good quality seeds for non-rice crops</u> 1-2-1 Introduce good quality seed of non-rice crops to the model site. 1-2-2 Conduct trainings for DOA staff, farmers and the private companies on seed multiplication technique and use of good quality seed. 1-2-3 Enhance the coodination between farmers and private companies in the good quality seed distribution so that crops produced from quality seeds are sold with premium price. 1-2-4 Monitor and introduce measures to improve the Public-Private-Producers network for non-rice crops.	(1) Dispatch of Experts[/d] Team Leader / Marketing and Distribution Co-leader/ Marketing and Distribution Public Private Partnership Agriculture/ Gender Agricultural Machinery Training Material/ Coordinator/ Agriculture (2) Water Management/ Organization Coordinator/ Agricultural Machinery (2) / GIS Local Consultant (PPP) Local Consultant (B) Local Consultant (C) (2) Provision of equipment 3 Seed Cleaners Moisture Meters 6 Motorcycles for field inspectors 2 Vehicles for the Project 1 Adopter for ridge building 2 Pulses thresher / cleaner Harvesting machine for pulses (3) Third country / In country training (4) Local cost shared by Japanese side Project office refurbishment cost Travel allowance for the Project Other running cost	a) Office space in DOA West Bago division b) Office space for irrigation policy advisor in IWUMD in Nay Pyi Taw c) Fuel for field inspectors d) 9 designated staff for the Project assigned by DOA West Bago division throughout the project period (1 in division, 2 in districts, 6 in townships) e) Running cost such as electricity and water	The mechanism to facilitate land consolidation is introduced by the state or the union government of Myanmar. **Pre-Conditions** 10 baskets of Yezin 2, 3 and 5 (Black gram variety) is procured before the dry season cultivation in the 1st year. The AMD model land consolidation is completed before the start of the Project without lasting dispute. The AMD model land consolidation site is not destroyed through rainfall, flood or use of machineries. **<Issues and countermeasures>** Farmer's coordination mechanism may be introduced through the project activities.

<Output2> 2-1 3-season cropping model and 2-season cropping model with improved profitability are demonstrated in the model sites in the 6 townships 2-1-1 Identify the suitable crops for 3-season cropping in each model site by taking market demand prospect into account. 2-1-2 Identify more profitable crops for 2-season cropping in each model site by taking market demand prospect into account. 2-1-3 Promote the cultivation of suitable crops identified in 2-1-1 and 2-1-2. 2-1-4 Enhance the capacity of farmers on appropriate use of agricultural inputs and on soil improvement. 2-1-5 Introduce appropriate water management practices for rice production in addition to non-rice crops, including furrow irrigation through Water Users Group (WUG). 2-1-6 Enhance the capacity of farmers, private companies and AMS staff on appropriate use of agricultural machinery. 2-2 The practice introduced in 2-1 is disseminated in cost effective and sustainable way 2-2-1 Introduce the farming-record (accounting book) to the target farmers [/b] and ordinary farmers. [/c] 2-2-2 Analyze the data of 2-2-1 and visualize the effect of the practices introduced in 2-1. 2-2-3 Advertise the practice in 2-1 by using the information of 2-2-2 through poster, radio, newspaper, advertisement, etc. 2-2-4 Create and distribute material such as booklet, poster, DVD etc. to disseminate the practice in 2-1. 2-2-5 Promote extension activities, including study tour, field day, farmer field school, farmer to farmer extension, as well as extension activities through knolwedge center.			

<Output3>			
3-1. Identify the issues on middle- and long-term use of irrigation facilities in the Project Site through monitoring the Project.			
3-2. Develop a guideline on PIM (Participatory Irrigation Management) in the Project Site.			
3-3. Assist PIM activities by Water Users Groups / Water Users Association after establishment.			
3-4. Assist dissemination of the use of guidelines for land consolidation in the Project Site.			
3-5. Provide advices to solve the issues of irrigation sector in Myanmar through meeting with stakeholders and observation of various irrigation systems in Myanmar.			

Remarks: a/ "PROFIA Model Area": Farm plots irrigated under one designated turnout where target farmers' plots (demo-plots) are located
b/ "Target Farmers": farmers who directly receive technical support from the Project.
c/ "Ordinary Farmers": farmers who have farmland in surrounding area of the target farmers' land.
d/ Experts not mentioned in this PDM version 2 (excluded from PDM version 0) will be dispatched if necessary.

Annex II Project Monitoring Sheet II (Plan of Operation ver.2)

Activities / Sub-Activities	Responsible Organization (Japan / GOM)	Achievements	Issue & Countermeasures
Output 1: Public-Private-Producers (Farmers) Partnership is strengthened			
1.0.1 Conduct a baseline survey and end line survey to collect data on farm profitability of target group and control group.	Additional baseline survey is conducted for new target areas.	New area will be added in 2017 and 2018.	Additional baseline survey will also be conducted 2018.
1.0.2 Reconfirm the issues of present farming in the Project Site.	Additional site survey is conducted for new target areas.	Inappropriate condition of LCA were observed.	AMD and D rehabilitated the inappropriate LCAs.
1.0.3 Review the suitable balance between land productivity and labor productivity to examine the project activities	Analysis is being conducted for new target areas.		
1.1 Promote the use of Certified Seed for rice			
1.1.1 Review the current seed multiplication practice of DOA(seed farm & T/S extension office) and Model Seed Villages in the project site.			
1.1.2 Enhance the capacity of DOA seed farm to improve quality of FS and RS	Participated in JICA Seed Project's training in 2016.	Seed quality improvement	Paddy seed cleaners were installed in 2 seed farms in November 2016.
1.1.3 Improve awareness of extension staff, farmers, private companies on the use of CS.	A series of post-harvest training is being conducted.	Quality awareness through Grain Quality Control Laboratory	Enhance capacity of PH-Group through Labo activity
1.1.4 Involve rice millers / traders to purchase CS seeds produced by seed growers.	Seed multiplication working group start activity from March 2017.	On-going.	
1.1.5 Involve rice millers for CS distribution and purchase of paddy produced from CS.	A series of post-harvest group's activity is being conducted.	Involvement of rice millers	Milling recovery tests are being done to increase awareness.
1.1.6 Monitor and introduce measures to improve the network among Public-Private-Producers for rice.	Seed multiplication working group start activity from March 2017.	On-going.	
1.2 Promote the use of Good quality seeds for non-rice crops			
1.2.1 Introduce good quality seed of non-rice crops to the model site.	Black gram seed for winter, and sesame seed for summer.	Summer sessame is almost new to the project site.	Variety test with Dar was done in 2016, and identify 6 varieties.
1.2.2 Conduct trainings for DOA staff, farmers and the private companies on seed multiplication technique and use of good quality seed.	Training on black gram seed and sesame seed were conducted.	Difficult to find resource person in the project area.	Invite resource person from Magway, Let Padan, etc.
1.2.3 Enhance the coordination between farmers and private companies in the good quality seed distribution so that crops produced from quality seeds are sold with premium price.	Enhancement/establishment of market linkage is needed to sumer sesame and black gram.	Quality control is quite important to export international market including Japan.	Quality improvement based on market requirement.
1.2.4 Monitor and introduce measures to improve the Public-Private-Producers network for non-rice crops.	A series of post-harvest group's activity is being conducted.	On-going.	
Output 2: Profitability of farmers in the Model Site is improved			
2.1 3-season cropping model and 2-season cropping model with improved profitability are demonstrated in the model sites in the 6 townships		On-going.	
2.1.1 Identify the suitable crops for 3-season cropping in each model site by taking market demand prospect into account.	Farmers wish 3 cropping, but is quite challengeing with high risk.	Shifting from summer paddy to other crops are needed.	Establishment of summer sesame production model (e.g.)
2.1.2 Identify more profitable crops for 2-season cropping in each model site by taking market demand prospect into account.	More profitable 2 cropping is needed.	Black gram death at flowering time is widely spreaded in Southern TS.	No solution yet and need to find/ try potential solutions.
2.1.3 Promote the cultivation of suitable crops identified in 2-1-1 and 2-1-2.	Farmers wish 3 cropping, but is quite challengeing with high risk.	Shifting from summer paddy to other crops are needed.	Establishment of summer sesame production model (e.g.)
2.1.4 Enhance the capacity of farmers on appropriate use of agricultural inputs and on soil improvement.	Soil is quite poor in LCA (but seemd free from fungus.	Improvement of soil condition in LCA.	Improve soil by low cost including green manure, bio-charcoal.
2.1.5 Introduce appropriate water management practices for rice production in addition to non-rice crops, including furrow irrigation through Water Users Group (WUG).	WUGs and LCGs are being established in the project site.	Some LCA has problem on water delivery and need rehabilitation.	ID supported farmers to rehabilitate watercoursess in 2016.
2.1.6 Enhance the capacity of farmers, private companies and AMS staff on appropriate use of agricultural machinery.	Introduction of farm machinery for pulses and sesame, e.g.	Comparison between labor cost and machinery cost	Data collection for cost-benefit analysis
2.2 The practice introduced in 2-1 is disseminated in cost effective and sustainable way		Start collection of record on 2016 monsoon paddy	
2.2.1 Introduce the farming record (accounting book) to the target farmers and ordinary farmers.	Necessary to duttibute to all target farmers.	Periodical monitoring is needed.	Ask C/P to assign staff for monitoring purpose.
2.2.2 To analyze the data of 2-2-1 and visualize the effect of the practices introduced in 2-1.	Feed back seminar for farm record is needed.	On-going.	
2.2.3 Advertise the practice in 2-1 by using the information 2-2-2 through poster, radio, newspaper advertisement, etc.	Periodical advertizement to mass media is effective.	On-going.	
2.2.4 Create and distribute material such as booklet, poster, DVD etc. to disseminate the practice in 2-1.	Visualized dissemination material is effective.	Effencive extention materials need to be developed.	
2.2.5 Promote extension activities, including study tour, field day, farmer field school, farmer to farmer extension, as well as extension activities through	Extention is quite important to expand the model to project area.	Extention of summer sesame need to start from 2018 summer.	Collaboration with DOA and private sector is important.
Output 3. Guidelines for Participatory Irrigation Management (PIM) in the Project Site is prepared and applied in the Model Site			
3.1 Identify the issues on middle- and long-term use of irrigation facilities in the Project Site through monitoring the Project.	Irrigation policy advisor was assigned on July 2016.	LCA issues were identified through field survey in 2016.	AMD and D rehabilitated the inappropriate LCAs.
3.2 Develop a guideline on PIM (Participatory Irrigation Management) in the Project Site.	ITC takes important role for PIM activity.	1st draft of PIM guideline was submitted to IWUMD.	Need modification based on pilot activities.
3.3 Assist PIM activities by Water Users Groups/ Water Useres Association after Establishment	WUGs are being organized from August 2016.	Collaboration among WUG/WUA and farmers motivation.	Need to assign representative to manage different villagers.
3.4 Assist dissemination of the use of guidelines for land consolidation in the Project Site.	Technical seminar was conducted on August 2016.		
3.5 Provide advices to solve the issues of irrigation sector in Myanmar through meeting with stakeholders and observation of various irrigation systems in Myanmar.	Country training to Japan will be conducted on October 2017.	LCA issues were identified through field survey in 2016.	AMD and D rehabilitated the inappropriate LCAs.

Duration / Phasing	Plan / Actual																						Remarks	Issue	Solution
Monitoring Plan	Plan / Actual	20146				2017				2018				2019				2020							
		I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	IV			
Monitoring																									
Joint Coordinating Committee	Plan		●				●				●				●				●			●	2nd JCC was organized on June 22, 2017.	Revision of PDM based on site change, etc.	Revised PDM was approved at the 2nd JCC.
	Actual			●			●																		
Set-up the Detailed Plan of Operation	Plan		▲																						
	Actual		▲																						
Preparation of Monitoring Sheet	Plan		▲		▲		▲		▲		▲		▲		▲		▲		▲		▲	▲	Monitoring sheet ver.2 is submitted on June 30, 2017.		
	Actual		▲		▲		▲																		
Monitoring Mission from Japan	Plan						▲				▲				▲				▲			▲	JICA Advisory mission was visited and stay 2 weeks in June		
	Actual						▲																		
Joint Monitoring	Plan										▲											▲	PIC is organized basically once a month for monitoring purpose.		
	Actual																								
Post Monitoring	Plan																								
	Actual																								
Reports/Documents																									
Work Plan	Plan		▲								▲														
	Actual		▲																						
Submission of Monitoring Sheet	Plan		▲		▲		▲		▲		▲		▲		▲		▲		▲		▲				
	Actual		▲		▲		▲																		
Project Progress Report	Plan								▲																
	Actual																								
Project Completion Report	Plan																					▲			
	Actual																								
Public Relations																									
Commencement of the Project (Newspaper, etc)	Plan			▲																					
	Actual																								
Partial achievment of the Project (Newspaper, etc)	Plan											▲											Project activities are periodically made in public via medias.		
	Actual				▲	▲	▲ ▲																		
Achievement of the Project (Newspaper, etc)	Plan																			▲					
	Actual																								

Annex III List of Equipment Procured

Item	Unit purchased	Remark
Seed Cleaner	2	Installed to DOA Seed Farms
Threshing Machine for beans/pulses	2	Transported to Regional office
Cleaner for beans/pulses	4	Transported to Regional office
Pre-Cleaner for beans/pulses	2	Transported to Regional office
Ridge Builder (Attachment)	1	Different type of attachments which are suitable for currently used tractor in project site, are examined by JICA expert.
Test Paddy Husker	2	Transported to Regional office
Test Rice Mill	2	Transported to Regional office
Winnor	2	Transported to Regional office
Small Rice mill set	1	One installed to NyanZin Village
Moisture Meter for rice	5	Kept in Project Office
Moisture Meter for other cereals	4	Kept in Project Office
Portable Moisture Meter	6	Team asked TS CPs to utilize.
Copy Machine	1	Installed to Project office
Printer	1	Installed to Project office
Computer	6	Installed to Project office
Project Vehicle (SUV)	1	Import process is still under going
Project Vehicle (Pick-up)	1	Import process is still under going
Motor-bike	6	Handed over to TS CPs
Sieve sets for small beans/pulses	2	Kept in Project Office
Sieve sets for large beans/pulses	1	Kept in Project Office
Sieve sets for milled rice	4	Kept in Project Office
Sieve sets for Sesame	-	To be purchased as needed basis
Sample Divider	2	Kept in Project Office
Dry Heat Sterilizer	1	For Laboratory in regional office
Incubator	1	For Laboratory in regional office
Soil Tester	1	Kept in Project Office
Electrical Generator	2	One for Project office, another for Laboratory in regional office
Water Distiller	1	For Laboratory in regional office
Computer for Labo.	1	For Laboratory in regional office
Printer for Labo.	1	For Laboratory in regional office

Annex IV Equipment lists of Post-harvest technique and grain quality control laboratory

Sr.No	Equipment lists of Post-harvest technique and grain quality control laboratory	Quantity
1.	Distilled-water Maker - ေပါင္းခံရည္စက္	(1) လုံး
2.	Dry Heat Sterilizer	(1) လုံး
3.	Desicator (250mm/300mm)	(3) လုံး
4.	Test Husking Machine (Satake) - အခြံခြာတစ္စက္	(2) လုံး
5.	Test Milling Machine (Satake) - ဆန္ျဖဖြတစ္စက္	(2) လုံး
6.	Test Milling Machine (Yamamoto) - ဆန္ျဖဖြတစ္စက္	(1) လုံး
7.	Sample Divider one set	(2) လုံး
8.	Scale (0.01 g- 1g) - အေလးခ်ိန္တိုင္းကရိယာ	(1) ခု
9.	Scale (1 g- 3Kg) - အေလးခ်ိန္တိုင္းကရိယာ	(2) ခု
10.	Seive for Bran (1.4 mm) - ဖဲြ့ႏုိ့ေကာ	(1) ခု
11.	Seives for Grain (1.5 mm-2.1 mm)	(1) စုံ
12.	Seives for Grain (1.5 mm-6.1 mm) - ပဲေကာ	(1) စုံ
13.	Seives for Grain (2.6 mm-5.5 mm) - ပဲေကာ	(1) စုံ
14.	Cartoons - နမူနာယူသည့္ခြက္	(20) ခ်ပ္
15.	Digital Thermometer	(1) ခု
16.	Lens	(1) ခု
17.	Rice Moisture Tester - အစိုခါတ္တိုင္းကရိယာ	(3)ခု
18.	Grain Moisture Tester - အစိုခါတ္တိုင္းကရိယာ	(2) ခု
20.	Grain Scope	(1) ခု
21.	Inspection Board	(2) ခု
22.	Sealer - အိတ္ပိတ္စက္	(1) ခု
23.	Dial Thickness Guage (0.1 mm-20 mm) - စပါးေစ့တိုင္းကရိယာ	(2) ခု
24.	Stereo Microscope	(1) ခု
25.	Petridish (10 cm)	(90) ခု
26.	Petridish (15 cm)	(8) ခု
27.	Beaker (1000 ml)	(1) ခု
28.	Beaker (100 ml)	(1) ခု
29.	Pippet (1ml)	(1) ခု

30.	Pippet (5ml)	(5) ခု
31.	Test tube (1000 ml)	(1) ခု
32.	Test tube (500 ml)	(1) ခု
33.	Test tube (100 ml)	(1) ခု
34.	Test tube (25 ml)	(1) ခု
35.	Test tube (10ml)	(5) ခု
36.	Filter Paper (11 cm)	(5) package
37.	Filter Paper (15 cm)	(3) package
38.	Computer	(1)လုံး
39.	Epson Printer (L-360)	(1) လုံး
40.	Small Table	(15) လုံး
41.	Big Table	(2) လုံး
42.	Chair	(12) လုံး
43.	Basin	(1) ခု
44.	Aircon	(3)လုံး
45.	Whiteboard	(2) ခ်ပ္
46.	Aluminium Cabinet	(5) လုံး
47.	Cabinet	(3)လုံး
48.	Generator (7.5 Hp)	(1) လုံး

Annex V Newspapers for PROFIA Activities

(1) Opening Ceremony of Post-harvest and Grain Quality Control Laboratory

Myanmar Alin Daily News printed on 20, Marc h, 2017

JICA နှင့် ပူးပေါင်းဆောင်ရွက်သော ဂိုတ်သိမ်းချိန်လွှန် နည်းပညာနှင့် သီးနှံစေ့အရည်အသွေးစစ်ဆေးတံခွန်း အဖောင်အထည်ဖော်

The opening ceremony of Postharvest Tecniques and Grain Quality Control Laboratory with cooperation of JICA Project (Project for Profitable Irrigated Agriculture in Western Bago was held at the in front of those laboratory in Deputy Regional Director Office Compound on the morning 9:30 AM, 17th March, 2017.

In the ceremony, U Myint Lwin Project manager, Deputy Regional Director of DOA West Bago was remarked opening speech that “it was implemented to improve the grain quality of crops and to increase the benefits more in performing agriculture farming activities or in processing (milling the paddy) for private sector (rice miller, wholesalers), producers (farmers) relating with agriculture with the cooperation JICA PROFIA project in West Bago. And then, Daw Khin San Myint, Bago Regional Seed In-Charge, Assistant Director, Bago Region was explained “Importance of Seed and Grain Quality Control in Agriculture Sector”.

Continuously, JICA Experts explained the purposes that this is aimed to improve postharvest techniques and grains’ quality and to gain profits for all the stakeholders who act in the interests of the agriculture under JICA project, PROFIA; Profitable Irrigated Agriculture in West Bago region.

Utilizing irrigated water effectively, transferring appropriate techniques of cultivation, establishing seed multiplication system and initiating smooth distribution/ marketing system, the laboratory takes necessary supports for beneficiaries with feedback-information and relevant instructions.

Then, all the participants attending the ceremony from DOA office, Private sector (rice millers, wholesalers, seed growers) and farmers studied the sample analysis and its equipments showing in the laboratory. The project is now implementing inside the irrigable area of North Nawin, South Nawin, Wegyi and Taung Nyo Dams.

(2) Sesame Production in Pyay

7 Days Journal on 11th May, 2017

ပြည်တွင် JICA အကူအညီဖြင့် ရေသွင်းနှမ်းစမ်းသပ်စိုက်ပျိုးမှု အောင်မြင်

Irrigated Sesame Cultivation Supported by JICA is Successful

It is known from the Project for Profitable Irrigated Agriculture in Western Bago Region (PROFIA) that irrigated summer sesame cultivation trial plots in Pyay township, western Bago region supported by JICA is successful.

By collaboration between DOA and JICA, to examine the most suitable varieties, 8 different varieties of sesame were cultivated as trial in lowland area of Alotawya village, Pyay township in Feb, 2017 and have being harvested starting from 8th May 2017.

“We intend farmers to interest in cultivating other crop with more profit and need lesser amount of irrigation water than paddy in the future” was said by U Aung Htay Win, project assistant.

8 varieties such as Sin Yadana (3), Magway 1/13, Magway 2/14, Samone Nat, Bote Ne, Salat Phyu, Thailand variety which are suitable for Pyay and surrounding area were cultivated by 30 farmers in 5 acres of trail plots. It is known from PROFIA project team that Sin Yadana-3 is the most successful variety among the trail plots.

“I own 2 among 5 acre of trail plots. We made ridge and used line seeding method instead of broadcasting. The methods are able to increase yield in the future. I cannot say exactly how much yield since harvesting is not finished yet. It can be said just after drying and threshing. Higher yield and farm gate price are expected” was said by U Than Shwe, farmer from Alotawya village.

Lowland is for paddy cultivation and sesame is mostly cultivated in upland in Pyay. Pre-monsoon sesame is sow in June and harvest in September, and summer sesame is sow in February and harvest in May was learnt from the farmers.

By Zaw Min Htike

(3) PROFIA Project found suitable sesame variety for farmers in Pyay District

1) DVB media

https://www.youtube.com/watch?v=dkskwAQl5ag

2) News Watch Journal on 10th June, 2017

Project for profitable irrigated agriculture (PROFIA), implemented by JICA, found the highest potential variety that can be suitable for this area, Pyay District, Bago Region.

That varietal trial was done in Alotawya Village, Pyay Township in this summer season from Feb 13th to the 1st week of May. It included 9 varieties with 2 local varieties. According to the experimentation of Department of Agriculture from MOALI, Sin Yadanar (3) variety is the highest yield and it has high resistant to pests and diseases and it is the best resistance to insect and diseases among the tested varieties.

U Hla Moe, assistant officer of the Department of Agriculture, Pyay Township said that although our department intends to produce 100 baskets per acre, farmers got a gradual decrease in the production of paddy because of their inputs had decreased years by years. Besides, the farmers are used to grow paddy every years, so soil fertility is becoming poor and poor. We persuade farmers to make crop rotation with sesame to recover soil fertility. Therefore we made varietal trial in Alotawya village with 9 varieties. Then we invited farmers to evaluate which variety they prefer. Then they chose 4 varieties. Among 4, Sin Yadanar-3 is the most suitable with that area and it can resistant to bad weather and pests. So we selected that variety for this area. By choosing the good quality seeds we shall get high yield production and profits.

Ms.Hitsuda, Japanese expert from JICA, explained regarding with the various kinds of sesame varieties that Sa Mone Nat sesame seeds which grown in local farm produces 4.9 baskets per acre and Sin Yadanar (3) sesame produces 7.8 baskets per acre and it has export market. Moreover, sesame needs less of water and it can grow in other area. But there are very few farmers who grow such kinds of sesame in Pyay District.

In order to get the interest of farmers, we cultivated and made varietal trial. According to results of trial, Sin Yadanar (3) is suitable with the local farmers and it has good quality and high yield. – Translated by Khin san and edited by Aung Khing Myint ♦

TO CR of JICA Myanmar OFFICE

PROJECT MONITORING SHEET

The Project for Profitable Irrigated Agriculture in Western Bago Region (PROFIA)
Version of the Sheet: Ver.4.0 (Term: July 1, 2017 - December 31, 2017)

Name: Myint Lwin
Title: Project Manager

Name: Kotaro KIKUCHI
Title: Team Leader/ Distribution and Marketing

Submission Date: December 31, 2017

I. Summary

1 Progress

1-1 Progress of Inputs

Japanese side

- The project activity has commenced in Myanmar with the first dispatch of Japanese expert in March 20, 2016. (Hereinafter, activities carried out in the previous period is shown in blue color, while activities specifically in this period is shown in black color)
- 11 Japanese experts have been dispatched during this period, which includes shot-term experts of 1) Farming economy/ baseline analysis, 2) training, and 3) farm management.
- Since the commencement of the project, a total assignment period of all the Japanese experts has reached 69.97 person-months (42% of the total person-months), excluding the ones who have been dispatched by the consultant's own expenses.
- During this period, both of two Japan-made vehicles have become in practical use: Nissan Pick-up Truck (April 2017) and Mitsubishi Pajero (July 2017).
- One reaper binder was purchased in September 2017 for harvesting sesame.
- An additional seed grader had been imported from India and installed at Agricultural Community Learning Center in Paungdale in Pyay TS. Inauguration ceremony was held on December 5, 2017.
- List of major equipment procured is shown in ANNEX III.

Myanmar side

- Nine (9) DOA officials from Regional (1), District (2), and Township (6) level, together with two (2) DOA assistant officers in Pyay and Paungde, have been engaged in the project activities as counterparts. Also, eight (8) DOA officials have been engaged in post-harvest aspect of the project activity.
- Furthermore, two (2) new counterparts on the aspect of marketing were assigned as

agreed in the JCC meeting held on June 22, 2017. And, two (2) administration officers are to be assigned for the sustainable use of the "post-harvest technique and grain quality control laboratory"

1-2 Progress of Activities

1-0-1 Conduct a baseline survey and endline survey to collect data on farm profitability of the target group and the control group.

- Draft baseline survey report reviewed by JICA had been revised based on the comments from JICA. Then, the summery of the survey result was explained at the PIC meeting held on December 13, 2017. Then, revised baseline survey report was distributed with soft copy to the members of the PIC and the JCC.
- In addition, essence of the survey report was summarized as an attachment of the revised report, with which baseline values of the PDM indicators (project purposes and output 2-1) were proposed. Specifically, an average net income per farmer household by township was selected as the baseline value, instead of an average of whole area.
- After the PIC meeting, the summery of the baseline survey result and proposed baseline value of the indicators were explained to the director general of the DOA on December 22, 2017 (Attachment V: explanation material on baseline survey result). The DG personally agreed to set the baseline value as proposed but he requested organizing a presentation for core members of the JCC.

1-0-2 Reconfirm the issues of present farming in the Project Site.

- In the previous period from January 1 to June 30, 2017, a series of site surveys had been organized especially for new target areas in Pyay and Paungde, and information gathering had been done in other area/region especially on sesame and black gram cultivation.
- In this period, further study had been carried out, which includes the attendance in the sesame seminar held in Magway in August 4, 2017, organized in collaboration between JAICAF (Japan Association for International Collaboration of Agriculture and Forestry) and DAR.
- Following the previous visit to Yezin Agricultural University and DAR, an entomologist of Yezin Agricultural University and a pathologist of DAR were invited to the black gram fields in the target areas of Paungde township on November 25 and December 2, 2017, respectively.

1-0-3 Review the suitable balance between land productivity and labor productivity to examine the project activities.

- Review of the sustainable balance between land productivity and labor productivity had been carried out in the previous period, concluding that intensive farming system (i.e., 3 cropping) would not be suitable to the farmers in the area.
- In light of the above, type of cropping pattern promoted by the project should be decided in accordance with the socio-economic capacity of the farmers, in

addition to natural condition of the area.

1-1. Promote the use of Certified Seed for rice

1-1-1 Review the current seed multiplication practice of DOA (seed farm & T/S extension office) and Model Seed Villages in the project site.

- The team had discussed with C/Ps from 6 Townships, seed farms in Paungde and Pwe Pyae, and JICA technical cooperation project team for paddy seed multiplication to review current seed multiplication practice. Also, Project Manager (PM) shared a policy on promotion of Seed Growers Association (SGA). Then, PM and the consultant team agreed on collaboration toward the seed multiplication using PPP mechanism.
- Through discussion with C/Ps, the PROFIA consultant team identified seed multiplication issues including: 1) amount of good quality seed is not enough to meet demand (need private sector's involvement); 2) seed farmers need to improve their skill; 3) product from CS cannot make good price in local market; 4) it is not easy to obtain CS with the yellow tag in the project site; and 5) irrigation canal is not connected to DOA seed farm.
- In addition, it was learned that registration is required for those who deal with multiplication and distribution (sales) of seeds more than a certain amount per season (reportedly, 600 baskets or 10 acre). This regulation became in effect and announced in and around September 2017, then, office was opened in Nay Pyi Taw (NPT) only for a month for registration.

1-1-2 Enhance the capacity of DOA seed farm to improve quality of FS and RS.

- During 2016 monsoon season, PROFIA organized a series of trainings in Pathein and in the project area in collaboration with JICA Technical Cooperation Project on Development of Participatory Multiplication and Distribution System for Quality Rice Seeds (hereinafter referred to as "The JICA Seed Project") with which C/Ps of the project in 6 townships and 2 seed farms were trained.
- The training had been conducted from June to November 2016, which was consists of lectures and field practices, covering all process of seed multiplication from seed selection to post harvest handling.
- Two (2) paddy seed cleaners for paddy from India were procured and installed in the 2 seed farms by November 22, 2016. Handover ceremony of the seed cleaners was held on December 7, 2016 at each seed farm. They are in operation.

The third seed cleaner from India is being installed in Paundale, Pyay township.

- In the past one year, however, the use of seed cleaner at Pwe Pyae Seed Farm had been found not full in operation. Due to an inappropriate use of the machine (adjustment of wind speed, for example), output amount was not as much as

designed. Therefore, additional training, cleaning and amendment of the duct and re-adjustment of the cleaner were conducted in December 2017.

- In addition, given the request from the DOA at the time of JCC meeting held in June 2017, another seed cleaner was procured from India and installed at the DOA community learning center in Paundale, Pyay township. Then, inauguration ceremony was held on December 5, 2017.

1-1-3 Improve awareness of extension staff, farmers, private companies on the use of CS.

- A series of training on postharvest technique and grain quality control have been provided to the members of the Post-Harvest Group. The training includes not only lectures, but also practical activities such as 1) grain quality assessment using results of grain inspection at Yangon, 2) giving feedbacks to and discussion with the grain/ seed providers, and 3) milling recovery test at rice mills in 6 Townships.
- To assure and extend the group's activity to farmers and private sectors, post-harvest technique and grain quality control laboratory has been continuously utilized.
- As aforementioned, the seed multiplication trainings have been organized in collaboration with the JICA Seed Project, which is one of the good opportunities for awareness improvement of C/Ps. Also, one-day seminar on seed multiplication was organized on October 26, 2016 in Pyay Deputy Regional Officer's office, by inviting seed multiplication team of the JICA Seed Project.
- In addition, PROFIA has received a number of visitors from other areas/ regions, including a group from Rakhine region, a group from Magway and high-ranked officers from NPT and Bago regions who observed the laboratory, for which members of post-harvest group played a main role of explanation.
- Seed multiplication working group has been established comprised of seed producers, rice millers, DOA (regional office, district office and TS office), and PROFIA members, with which importance of using quality seeds and also seed multiplication system and its functions have been discussed (see 1-1-4 for more information).

1-1-4 Encourage rice millers / traders to purchase CS seeds produced by seed growers.

- List of rice millers in the project was developed by DOA C/Ps and key millers who have connection to the target farmers are identified. Then, questionnaire survey to the rice millers was conducted in June 2016 and the result was compiled and analyzed by the Post-Harvest Group.
- Grain and seed (FS and CS) obtained from seed farmers and private seed growers (including rice millers) were assessed at the quality inspection laboratory in Yangon. The result was given back to the grain/seed providers with detail indicators of quality analysis. Through this activity, the project team tries to raise awareness of stakeholders in seed distribution sector on the

importance and effectiveness of quality seed.

- Seed multiplication working group has been established. Objective of the working group is to formulate a framework of seed multiplication and distribution mechanism under PPP concept. So far, four major meetings have been organized in March, June and September, and December 2017, in which roles of each stakeholder were identified and agreed.
- With the members of the seed multiplication working group, seed multiplication had been carried out during monsoon and being carried out in winter season of 2017, for which PROFIA team supported some of the growers to obtain registration as seed growers of paddy and some other crops (black gram and sesame). Seed multiplication had been monitored and technical guidance had been given to these growers to obtain certificate and thus sell their seeds at a higher price. The price of paddy seeds were 9,900～13,200 kyat/basket, as compared to the price of grain around 5,400 kyat/basket.
- In addition to the above mentioned seed multiplication activity by the seed multiplication groups, seed multiplication had been carried out in the land consolidation areas of five townships, excepting for Zigon township where small field out of LCA was selected (because LCA was utilized for grain production under the contract farming with Chinese company).

  In principle, seed multiplication was carried out in 10 acre/LCA for which Registered Seeds (RS) have been provided from the team with the condition to return twice as much amount of seeds (CS) after harvest. For the multiplication, monitoring as well as arrangement of field inspection by DOA seed division had been conducted so that farmers can obtain certificate.

1-1-5 Involve rice millers for CS distribution and purchase of paddy produced from CS.

- Quality inspection of the quality seeds produced by rice miller was conducted in August 2016, and the result was given back to the miller. The quality of the seeds was found not much preferable as to be CS due probably to poor postharvest handling especially in drying. Therefore, a series of possible solutions to improve quality of seeds were suggested to the miller.
- Since the beginning of the project, collaborations between the project and rice millers (a total of 41 millers) in six townships have been practiced in the form of milling recovery test, data collection, consultation on the milling machines.
- In 2017, paddy produced from CS in three target areas of CL-3 (PY), LDY-4 (PD), and LDY-6 (PD) have been brought to these rice millers and milling recovery tests have been organized to see the difference of the recovery between the ones produced from CS and common seeds.

Milling recovery test is carried out at the local miller. Hostharvest counterpart record the result.

- Except for the ones farmers claimed to keep for their home consumption, millers have purchased some of these paddies produced from CS at higher price than paddies produced from ordinary seeds. In particular, price of paddy produced from CS was on average 6,320 k/basket (LDY-6 case) as compared to 5,500 k/basket produced from ordinary seeds. Furthermore, the profit (net income) per basket was estimated; while profit of paddy produced from ordinary seeds was 3,210 k/basket, the profit of paddy produced from CS reached 3,960 k/basket, which is 23.4% greater.
- As a part of seed multiplication working group's activity, some rice millers have multiplied paddy seeds and sold them to the neighboring famers. These seeds were sold at higher price (see 1-1-4) and millers are expecting to purchase quality paddy produced from these seeds next season.

1-1-6 Monitor and introduce measures to improve the network among Public-Private-Producers for rice.

- As mentioned in 1-1-3 and 1-4-4, seed multiplication working group was established, with which producers, rice millers and DOA officers have been discussing for establishing quality seeds multiplication and distribution using PPP mechanism. By this monitoring period, number of the members (rice miller and seed farmers) has increased from 5 to 6, excepting for DOA staff and the project team members. This activity will continue throughout the project period.
- Market information, including quality requirement, has been compiled and provided to the target farmers so that a win-win situation can be created, that is, high quality grain is produced by farmers and sold at higher price, then, rice miller can enjoy the benefit of improved milling recovery rate, for example.
- Agricultural marketing forum was organized in November 28, 2017 inviting stakeholders along with the food value chain such as farmers, input suppliers, wholesalers, rice miller, DOA staff, AMD staff, staff from the Ministry of Commerce district office and the project team.

Participants of the forum include traders, input suppliers, and rice millers in addition to gov. officers.

In the forum, problem analysis along with food value chain of three major crops, paddy, beans/pulses, and sesame, was conducted. Based on the analysis, participants discussed possible countermeasures of the challenges/bottlenecks. Agricultural marketing forum will be held sometimes throughout the project period.

1.2. Promote the use of Good Quality Seeds for non-rice crops

1-2-1 Introduce good quality seed of non-rice crops to the model site.

- For 2016 winter season, 30 bags of quality seed (RS) of black gram procured from DAR Letpadan seed farm were distributed to the then model farmers of

Paungde, Nattalin and Zigon. However, due to several problems associated with land condition and water availability, yield was not as much as expected (5-6 basket/acre in Zigon, 5-8 in Nattalin and no harvest in Paungde) as compared to 15-20 baskets/acre in preferable field.

- Of the black gram seeds produced in three model sites, twice as much as provided amount were returned back to the Project, which were then graded using the seed grader provided by the Project. Graded seeds (CS generation) were then stored, fumigated and used in the winter cultivation in 2017.
- As for crop diversification in summer season, variety test of 6 sesame varieties was conducted at Pyay model site, a private miller's field (Le Daw Qyi Farm) and Thegon Research Center of DAR. As a result, potential four varieties suitable for summer season were identified (Sin Yadanar-3, Magway Net 1/13, Magway Net 2/14, Theik Pan Huan Hnet). Result of the adoptability test was shared with DOA and DAR for their practical guidance to farmers.
- The variety test of sesame had been conducted even in the monsoon season, and winter season to see the adoptability of these varieties in different conditions. Then, it was concluded that Sin Yadanar-3 can be a potential variety to be promoted in winter or summer season when climate is rather in dry condition.
- In the winter season, therefore, Sin Yadanar-3 varieties had been multiplied to be distributed to some cooperating farmers who have some experience in sesame cultivation to see how they evaluate the performance of this variety in summer season.
- In addition, as is confirmed as potential variety, quality seeds (CS grade) of Sin Yadana-3 variety was procured from the private seed farm in Magway as much as 32 bags, which is equivalent to about 250 acre (3 pyi/ac = 1/8 bags/acre). Then, seeds were distributed to cooperating farmers in and around three target areas of CL-3, LDY-4 and LDY-6 as well as newly identified potential area (direct turnout from the right main canal of North Nawin irrigation project, near village of CL-3). In general, seeds were distributed for free for the target farmers and with the purchased price for other farmers.
- Seed multiplication of non-rice crops had been also promoted through the seed multiplication working group comprised of stakeholders from the private sector. To be able to multiply and distribute quality non-rice seeds officially in the future, the project supported some members to register themselves as seed growers of non-rice crops such as black gram and sesame. Now, they are growing black gram under the guidance of the project team.

1-2-2 Conduct trainings for DOA staff, farmers and the private companies on seed multiplication technique and use of good quality seed.

- In 2016, the project team visited Nyaung Oo to learn lessons from JICA Technical Cooperation Team in the Central Dry Zone (WAST Project). Also the team visited DAR Magway Research Center to discuss future collaboration for crop diversification in the Western Bago Region.

- One-day training on black gram seed multiplication was organized at DAR Latpadan Seed Farm on January 7, 2017. Participants of the training include representatives from target farmers and C/Ps of DOA in 3 townships of Paungde, Nattalin and Zigon.
- A study tour was organized on June 26-28, 2017 with the members of Post-Harvest Group to visit sesame seed farm in Magway, in which they have learned better cultivation techniques of sesame especially for seed multiplication.
- In the seed multiplication working group, seed multiplication of non-rice crops has been promoted and then some members (rice miller and farmer) have started seed multiplication of black gram (5 members) and groundnuts (2) under the guidance of the project team.

1-2-3 *Enhance the coordination between farmers and private companies in the good quality seed distribution so that crops produced from quality seeds are sold with premium price.*

- The Project Team collected sample of pulses/ beans seeds from wholesalers and traders for quality inspection, and the analysis was done at private laboratory in Yangon. Result of analysis was used for quality awareness campaign held at the post-harvest technique and grain quality control laboratory for private seed growers of such crops and also the government officers.
- The project helped connecting the Japanese trading company (including its partner supplier) to an influential local private entity in Pyay to promote the use of good quality seeds of sesame and to establish a certain size of production area with a close coordination of farmers under the said private entity. Only with the production in a certain scale, then, Japanese company can purchase sesame for exportation. To date, it was agreed for the Japanese company to provide quality seeds (variety not identical) to this local partner for trial cultivation in summer season 2017/18.

Farmers try tasting the final product of sesame brought by the group of Japanese trader, processer and maker.

1-2-4 *Monitor and introduce measures to improve the Public-Private-Producers network for non-rice crops.*

- The Project Team had discussed with wholesalers and traders of non-rice crops for future collaboration. Possible collaboration with the private sector is to establish quality seed production model, and marketing model with higher prices. One of the practical collaboration is the seed multiplication of sesame in collaboration with private company (also rice miller).
- A study tour was organized in June 2017 for the members of Post-Harvest Group to visit sesame seed farm and machinery shop in Magway to establish

a network between private sector and the government sector and then with producers in the future on the aspect of production, postharvest and marketing of sesame.

- Discussion with Japanese trading companies and local traders has been made to facilitate the trade of summer sesame in the future. In particular, demand from buyers' side has been confirmed, including acceptable level of acid value, limit of chemical residual and minimum amount of volume for shipping which are required for Japanese market.
- After the harvest of summer sesame in 2017, sample of sesame seeds were delivered to three Japanese trading companies for evaluation and confirmed the quality is within the acceptable range in terms of color, and acid value. However, one trading company claimed that some moldy smell was detected from the sample, which is now one of the central issues of sesame trading in Japan especially the ones imported from Myanmar.
- The project team suspects the smell was caused directly or indirectly by improper handling during the drying and/or transporting period. To make sure, therefore, technical guidance will be given to the farmers focusing heavily on post-harvest handling, i.e., avoidance of piling on the ground after harvest.

2-1 3-season cropping model and 2-season cropping model with improved profitability are demonstrated in the model sites in the 6 townships

2-1-1 Identify the suitable crops for 3-season cropping in each model site by taking market demand prospect into account.

- Based on the baseline survey on water availability and irrigation water requirement, the project team identified that amount of irrigation water in the dams is not enough to grow paddy in whole project area during summer season. Therefore, the PROFIA Team decided to promote crop diversification from paddy to other crops in summer season such as sesame.
- 3-season cropping model shall be considered based on water availability, soil condition, machinery use, profitability, market acceptability, and farmer's socio-economic conditions and willingness. As schedule of 3 cropping practice is quite tight, if something unexpected happens, then, it cannot be managed as planned.
- For example, if the harvest of monsoon paddy delayed due to prolonged rain, then, commencement of black gram cultivation will also delay. As a result, black gram plants would encounter severe Yellow Mosaic Virus (YMV) disease. Moreover, as start of summer sesame would also delay, then, it might suffer from too much moisture at the onset of monsoon season in May to June—loss of harvest or quality reduction. Therefore, even though PROFIA keeps 3 cropping pattern as a target of project activity, the project will establish, at first, profitable 2 cropping pattern with rotation cropping for sustainable purpose.
- As is also discussed in 2-2-2, farming record revealed that 2 cropping is the most profitable pattern among 1 to 3 cropping systems. While farmers cannot earn enough from one cropping as the earning opportunity itself is limited,

they also cannot earn enough from intensive 3 cropping systems attributing rather smaller income per investment. From this lesson, therefore, 2 cropping system seems to be more suitable for the common farmers in the area.

2-1-2 Identify more profitable crops for 2-season cropping in each model site by taking market demand prospect into account.

- To identify the potential and adaptability of 2 and/or 3 cropping, PROFIA Team has conducted several activities including 1) farming record keeping to monitor cost/benefit structure of farming, 2) soil fertility test, 3) soil moisture monitoring for supplemental irrigation during winter and summer, 4) farming method comparison to reduce production cost (i.e., sowing method and use of transplanter), 5) machinery use trial to minimize planting period.
- Through baseline survey and discussion with C/Ps and farmers, the project team identified suitable crops for 2-season cropping: monsoon paddy and winter pulses (BG) mainly for the southern townships of Paungde, Nattralin and Zigon where clay soil is dominant, and monsoon paddy and summer sesame cropping for northern three townships of Pyay, Paukkhaung, and Thegon where sandy soil is pronouncing.
- The advantages of 2 cropping is to be able to practice green manure cultivation in between two cropping, by which agricultural production will be more sustainable in this area where soil fertility is not so rich especially in Pyaya and Thegon. Also, if pursuing 2 cropping, longer duration variety of monsoon paddy can be selected, which enjoys higher selling price for its better taste and aroma. Therefore, the project will establish at first profitable 2 cropping pattern with rotation cropping.
- For consideration of cropping patterns, market condition is really important. Year 2017 was an upheaval year for the market of black gram, in August 2017, India government, the biggest importer of black gram from Myanmar, had declared to introduce a quota system to pulses importation and the price of black gram sharply dropped in Myanmar. It is a lesson that depending too much on one crop is risky. Thus, in 2017 winter season, project is trying to find out alternative crops to black gram during winter season, for which several crops, namely green gram, cowpea, chickpea, sunflower, and dent corn, are being cultivated as an adoptability trial.

Farmers at the potential WUG (NL) discuss with IWUMD and DOA officers for making decision on what to cultivate next season.

2-1-3 Promote the cultivation of suitable crops identified in 2-1-1 and 2-1-2.

- Farmers in the project area have been growing summer paddy since they do not have alternative idea except for Pyay where farmers had grown summer sesame until a decade ago. To encourage farmers to shift from summer paddy to alternative crops, a series of awareness campaign, including field

day to see field practices (sesame), seminar on sesame cultivation techniques, information sharing about market demand for proper decision making, and variety test of sesame in the LCA in Pyay have been conducted.

- Expecting to be a part of 2 cropping, trial cultivation of sesame under irrigation was conducted in the LCA of Pyay from February to May 2017. In this trial, different land preparation methods, such as deep plow, sowing method, such as line sowing, fertilization management, and varieties have been tried. The harvest was then sold to local trader at relatively preferable price of 40,000 kyat/basket (samples of them were sent to Japanese company as shown in 1-2-4).
- Changing the type of crop from paddy in summer season was found not so easy because it used to be designated by the government to grow only paddy in irrigated areas. Farmers as well as government officers may still maintain such a mindset as to cultivate paddy as an obligation for food security of the region or the state. As a result, farmers' plan in summer sesame cultivation in 2017 had changed again and again, and resulted in just 4 acres of lands as compared to originally planned 50 or more acres. It implies that changing the type of crop is not so easy.
- Given the lesson, the project team has repeated a series of discussion with authorities concerned, such as General Administration Department at different levels, to confirm if the obligation of cultivating paddy in the irrigated areas is still effective or not. Then, result of the confirmation, it is not an obligation anymore, had been disseminated to farmers through different channels, including extension channel and also through water users associations.
- In addition, it became an extremely essential task for the team to coordinate with IWUMD for the adjustment of commencement date of the irrigation. In principle, irrigation usually starts at the beginning of January, which is designed for summer paddy cultivation. For diversification of the crops, it is necessary to change the timing of irrigation, affecting the irrigation practice in the whole irrigation scheme. Through a series of discussions, then, it was agreed to release water starting from December 15, 2017 particularly for the supplemental irrigation for the winter crops as well as preparation of summer sesame, which are to be cultivated in the target areas of PROFIA.

2-1-4 *Enhance the capacity of farmers on appropriate use of agricultural inputs and on soil improvement.*

- In 2016, as an onset of the project, a series of soil analysis have been done in each model site of six townships in different forms, including soil composition analysis at laboratory, soil compaction test, and test on soil chemical characteristics at laboratory, in addition to pH and EC test using handy devises.
- In addition, pot tests have been implemented using soil from the targeted farm plots of the Land Consolidation Areas (LCA) of six townships to see the growth of plants in different fertilizer application. The result of pot test had shown that phosphorus is the most limiting elements in many plots especially

in Pyay and Thegon. With respect to the result of pot test, fertilizer application was designed for the following cropping season.

A series of pot tests have continued in 2017 in new target areas of LDY-4 and LDY-6 as well as black gram fields (2 fields) in PD, and also the field of direct outlet from the right main canal of North Nawin.

- Use of green manure, coupled with the use of bio-charcoal (biochar), has been promoted as one of the effective soil improvement methods in a long run.
- In addition, in-field fertilizer trials (application of N:P:K:S) have been conducted in seven places in the monsoon season of 2017.
- As a result of the series of soil test and field trials, recommendable fertilization designs have been prepared especially for soil-poor townships of Pyay and Thegon.

  In Thegon where soil fertility is generally low, after the application of biochar with Armo compound fertilizer, growth of plants had become significantly better than other fields. Famers in the surrounding area had also applied the compound fertilizer and then, growth of paddy in that area had outperformed the other areas (no quantitative data available though).
- An appropriate amount of seeds of paddy have been instructed to target farmers: 1.5 baskets/acre. Also, line sowing methods have been demonstrated in the model sites for various crops: black gram (Thegon), sesame (Pyay), and monsoon paddy (Pyay). As for sowing methods, use of machineries was also tested (see 2-1-6).
- As for an appropriate use of agricultural chemicals, information especially on the issue of chemical residue on sesame was gathered. In particular, *Imidacloprid* and *Carbaryl* are pesticides which are now a central issue associated with sesame exportation to Japan. As a result of this, draft guideline for chemical use to control the vector of sesame phyllody disease was prepared.
- As for the prevailing disease of black gram which occurs during the flowering time of the plant, site observations had been carried out, inviting experts from DAR NPT and Yezin Agricultural University. The cause of the disease was not yet concluded but some kinds of fungus are seen as possible cause.

  As a symptomatic treatment, a series of chemical applications have been designed and being tried, composed of seed treatment, and applications of fungicide. It is expected to be able to conclude if these treatments are effective to control the said disease even without identifying the real cause of the disease.

An assistant professor of Yezin Agricultural University instructs farmers and project members on the field.

- In relation with the above mentioned chemical treatment to black gram, awareness campaign had been carried out in the southern three townships of Paungde, Nattalin, and Zigon and distributed some samples of recommended type of chemicals as for the purpose of applied experiment.

2-1-5 *Introduce appropriate water management practices for rice production in addition to non-rice crops, including furrow irrigation through Water Users Group (WUG).*

- Field survey to check condition of LCA and water facilities was done from August 2016 and issues identified during the survey was reported to relevant organizations. Based on the result, additional work for rehabilitation, including land leveling and canal re-alignment, was requested to responsible departments. Accordingly, re-leveling was done by AMD in Thegon, Paungde, and Nattalin and repairmen of canal was done by IWUMD.
- In addition to the water users associations being established and strengthened through the pilot project of BWID project, activities on WUG establishment have been facilitated in Pyay LCA along with CL-3 distributary canal. Also, land consolidation groups are being established and strengthened in 5 townships excluding Pyay where Water Users Association is to be established under BWID project. These activities have continued during this monitoring period.
- For sesame production in summer season, PROFIA team conducted study tour to Nyaung Oo, Kyaukse, and Magway to collect information on sesame production including irrigation method. A seminar to sesame growers and C/Ps was organized on January 30, covering irrigation method as to apply water at the beginning of season with flood irrigation, etc.
- Irrigated farming of black gram in Thegon in winter season and sesame in Pyay in summer season was practiced as a trial basis. In the former case, line sowing + furrow irrigation plot performed 2.7 times higher profit than broad casting + no irrigation plot. In the latter case, it was found that application of irrigation water hinders the use of tractor especially for deep plowing.
- During the trial cultivation of sesame in 2017 summer season, furrow irrigation was found very difficult to apply in such an area where land size is relatively large (1 ac per field) and soil is mixture of sand and clay. Through a series of interviews to expert in Magway and farmers in the other areas, it was concluded to apply water only or mainly at the beginning of the growing season, i.e., middle of December for summer season, and supplemental irrigation at around flowering season only when plants started wilting due to dry condition.
- To organize such an irrigation method, the project team facilitated the farmers through water users groups to form up a consolidated area where they cultivate sesame together, enabling plot-to-plot irrigation without harming other plots where other crops would be growing.
- As for supplemental irrigation for sesame, water courses (in other term, farm ditch or tertiary canal) had been dug under the guidance of the project team but a full responsibility of the farmers groups. In LDY-4 and LDY-6, as the soil of the area is rather too hard, IWUMD helped farmers to dig the water course

using backhoe, for which fuel cost was born by farmers. In direct outlet area, water course was dug by farmers themselves by hand (hoes) and tractors. In CL-3 target area, as the size of the area is rather small, farmers decided not to dig the water course.

2-1-6 Enhance the capacity of farmers, private companies and AMS staff on appropriate use of agricultural machinery.

- Field survey and interview to Agricultural Mechanization Stations in 5 TSs was conducted during the monitoring period. Issues on the use of combine harvester are: 1) supply of the service does not meet the growing demand; 2) on the other hand, operating rate of combine harvester is low in some station due to logging of paddy caused by heavy rain in the late monsoon in 2016; 3) over speed of combine harvester results in lots of fallen grains; 4) farm road condition after monsoon is bad to operate combine harvester; and 5) timing of paddy harvest is not uniform and the operation is not efficient.
- Use of transplanter needs collaboration between DOA and AMD, for which discussion of future collaboration is being done. In particular, preparation of quality nursery using plastic tray is essential, which is not the core domain of AMD's task. By early 2017, AMD Pyay district has purchased 2 rice transplanters (riding type, 6 row, Kubota), which is being used for service provision.
- As for the use of rice transplanter, collaboration with private service provider is being facilitated in Pyay and Thegon. In particular, seed multiplication activity in Thegon was done with private service provider from Shwedaung TS and the same had been done with nearby service provider in Pyay.
- A ridge builder was procured from Japan and test trial has been done in Pyay and Thegon where sandy soil is dominant and suitable for ridge building for black gram. In addition, implement of ridge builder was fabricated (metal) at the local manufacturer with technical assistance by the expert, which was about 80,000 kyat, about one third of the Japan-made (plastic).
- Applicability test of agricultural machineries such as sesame/black gram seeders (small/large), have been conducted. As far as seeder (Thai-made) is concerned, it is a bit difficult to operate properly in the clay soil just after the harvest of monsoon paddy. First, soil clods are big but not much land cultivation is being carried out in this area especially for winter crop.

Black gram seeds are sown by the seeder (made in Thailand).

Also, there are so much plant residues, which are twisted around the implement, making it difficult for the tractor to continue operation. Third, not much economic viability can be expected as against the common way of broadcasting method. Seeder can be only used for seed multiplication that requires removal of off-type or weeds

taking an advantage of line sowing.

- Reaper binder was procured and several times of demonstrations had been organized. From the test operation, it was found that the size (diameter) of the bundle bound by the machine is a bit too big for farmers who facilitate drying on the ground after harvest. Thus, parts of the machine were replaced with different size. As for the cultivation of sesame in a larger area, especially for exportation, harvesting in a short time in a large area would help farmers to be able to start harvesting at the right timing rather than starting earlier than it is supposed to be.

A demonstration of reaper binder is carried out in Thegon for the harvest of winter sesame.

- The third seed grader was procured from India and installed at the DOA community learning center in Paungdale (Pyay township). Immediately after the completion of installation in December 5, 2017, DOA started full operation by assigning the person in charge of this machine. It is expected to boost the distribution of good quality seeds of paddy.

2-2 The practice introduced in 2-1 is disseminated in cost effective and sustainable way

2-2-1 Introduce the farming record (accounting book) to the target farmers and ordinary farmers.

- The first year training on farming record keeping was conducted from June 13 to 18 2016 to the target farmers of each township. Most of farming record had been collected toward the end of 2016 by PROFIA team to compile as dataset and analyze the cost-benefit structure of these farmers.
- Alternative method of keeping farming information is studied. Today, several kinds of ICT tools (application of smartphone) are being developed and some are already in trial use. Some of them had been tried by the project members and tentatively concluded that some more modification must be made to be able to promote in the project area, which include the improvement of the drop-down list of fertilizers, seeds, chemicals which are prevailing in the area.
- The second year farming record training was carried out together with the feedback seminar of the previous year's outcome. Farming record format was revised based on the suggestion from farmers in the first year participants as well as the participants in the second year.

Monitoring of farming record is conducted, which includes the explanation to their children.

- The farming record format was distributed to a total of 57 households and periodically monitored by the staff

of the project team, counterparts and also supporting staff of DOA officer who had been assigned for this activity.

- Upon the request from DOA sub reginal office, farming record format was even distributed to the outside of the project area too (Tharrawaddy region) and explanation meeting was held for DOA officers.
- Upon the harvest of monsoon paddy and the completion of marketing, farming record formats are to be collected and analyzed.

2-2-2 *Analyze the data of 2-2-1 and visualize the effect of the practices introduced in 2-1.*

- The result of the analysis was tabulated/ visualized and presented to the farmers in late June 2017 so that farmers can get proper understanding on their typical farming activity from the quantitative point of view.
- It was found, for example, gross income was higher in some areas (i.e., Nattalin and Zigon) notwithstanding the fact that cost of inputs was not so different across the townships. It implies that soil condition is more preferable in these plots; thus, there might be more potential for relatively intensive farming practices.
- Also, net income did not depend on the scale of field, suggesting that scale merit is not functioning well. Furthermore, farmers who cultivated 2 crops earned the biggest net income from monsoon paddy as compared to farmers who cultivated 1 or 3 crops, implying 2 cropping might be more appropriate in this area, rather than more labor intensive 3 cropping.
- Possible reason for above may include that 3 cropping is too intensive to manage; as a result, even the monsoon paddy cultivation cannot be managed well as it had been influenced by the time schedule of previous crop. Also, in 2 cropping, the earnings from winter/ summer cropping can be invested to monsoon paddy; as a result, production becomes higher than those who cultivate only monsoon paddy (one cropping).

2-2-3 *Advertise the practice in 2-1 by using the information of 2-2-2 through poster, radio, newspaper advertisement, etc.*

- Newspaper (Standard Times/ Myanmar Alinn Daily) was invited to handover ceremony of paddy seed cleaner/ grader at Paungde and Pwe Pyae in December 7. Also, a newspaper was invited to opening ceremony of Shwe Nyaung Zin Rice Mill in Paungde TS on December 14, 2016. The rice mill is operated by farmers' group to maximize profit from paddy production.
- On March 20, 2017, newspaper (Myanmar Alinn Daily) visited the opening ceremony of "post-harvest technique and grain quality control laboratory." In addition, newspaper was invited to the field day on summer sesame cultivation. Successful production of sesame in Pyay was reported nationwide on the newspaper (Seven Days Journal) dated on May 11, 2017. Sesame cultivation activity was also taken up at web news (DVB media on June 5, 2017 and News Watch Journal on June 10, 2017).
- On July 15, 2017, a half-day presentation on introduction of PROFIA was made at community learning center, Pyay township for the participants

(roughly 30 farmers) of 3-day workshop held by a local NGO.

- Upon a request from the DOA's, a 3-day lecture on seed multiplication, fumigation, and post-harvest technology was carried out on October 23-25, 2017, which was organized by the Myanmar Rice Federation (MRF) and the Ministry of Industry. There were about 40 participants of rice miller and trader from the nation-wide.
- Signboards were prepared and put in front of major trial fields, showing what kind of activities are being conducted in these fields.

2-2-4 *Create and distribute material such as booklet, poster, DVD etc. to disseminate the practice in 2-1.*

- Training materials in Myanmar language were developed when training was conducted. The materials developed by today include: 1) seed preparation, 2) farming record manual, 3) soil improvement, 4) baseline survey result (gender), 5) baseline survey result (farming), 6) operation manual for agricultural machineries, and 7) guideline for sesame cultivation.
- Training manual of Post Harvest Training is being prepared by the C/Ps based on the Training of Trainers (TOT) provided by the consultant team. It is expected that the manual in Myanmar language be completed in the next monitoring period.
- Posters have been installed at the model area of LDY-4, Paungde for showing the project activities along with the water users' group/association. These were shown especially for the site visit by his excellency the ambassador of Japan in August 2017.

The Japanese ambassador visits a Water Users´Group to see their effort in irrigated farming by group.

2-2-5 *Promote extension activities, including study tour, field day, farmer field school, farmer to farmer extension, as well as extension activities through knowledge center.*

- A seminar for sesame production was conducted on January 30, 2017 by inviting a sesame specialist from Magway, a former researcher of DAR-Magway. Since farmers' interest in sesame production was quite high in the project area, a total of 38 people have participated in the seminar, of which 24 farmers from the northern 3 townships and one person from private sector.
- Field day was organized in Pyay on May 4, 2017, on the issue of summer sesame cultivation, inviting 17 farmers in Pyay (11) and Theogn (6) and government staff from 6 townships.
- For sesame production in summer season, PROFIA team conducted study tour to Nyaung Oo, Kyaukse, and Magway to collect information on sesame production including irrigation method.
- A study tour was organized in June 2017 for the members of Post-Harvest

Group to visit sesame seed farm and machinery shop in Magway to establish a network between private sector and the government sector and then with producers in the future on the aspect of production, postharvest and marketing of sesame.

- Field day was carried out in Paungde for two times by inviting expert from NPT to survey and identify the cause and countermeasure of the prevailing disease of black gram in these areas.
- A series of PH counterpart seminars have been organized at the project office. In this monitoring period, a 5-day seminar from September 17-20 on quality inspection and fumigation was held in the PROFIA laboratory, inviting an expert from private company.

PROFIA team makes presentation on sesame cultivation methods for summer season.

- Review meeting for Seed Multiplication Working Group was held in December 2017, which was the fourth meeting of the working group. This time, result of milling recovery test at LDY-6 site was shared and discussed.
- Explanation workshops of summer sesame cultivation, using power point presentation on the "guideline on summer sesame cultivation" had been carried out in the target farmers of CL-3, LDY-4, LDY-6 and DO (Pyay) who are interested in cultivating sesame in coming summer season.
- Pesticide/fungicide use campaign had been carried out for the farmers in the target areas of southern 3 townships.

3-1. Identify the issues on middle- and long-term use of irrigation facilities in the Project Site through monitoring the Project.

- Irrigation policy advisor was assigned on July 8, 2016, and has visited the project site in almost every month for monitoring purpose.
- During site visit on November 2016, the advisor identified issues on irrigation facilities in the model LCAs, including uneven land leveling, inappropriate design of water structures, deteriorated farm road and footpath, and thin and poor soil condition. PROFIA Team has reported the related DGs about above issues and requested them taking any actions to improve existing condition.
- It was advised to the relevant departments and BWID consultants to confirm the amount of irrigation water at the distributary canal level so that farmers' group activity can be ensured.

3-2. Develop a guideline on PIM (Participatory Irrigation Management) in the Project Site.

- For development of a guideline, the process for the establishment of WUAs/WUGs in the pilot areas of BWID has been started from August 2016. WUGs and/or LCGs were established at Pyay LCA and the other LCAs of

PROFIA model sites in collaboration with BWID Team and IWUMD. The irrigation policy advisor has continued supporting the activities by providing technical advices during monthly visit to the Project sites.

- For development and dissemination of the PIM guideline, role of Irrigation Technology Center (ITC) is important. In this regard, the irrigation policy advisor conducted special training on water management in October 2016 and in February 2017 in cooperation with ITC and started capacity building of IWUMD on PIM. Also, the irrigation policy advisor organized a meeting in February 2017 with ITC, IWUMD-Pyay and BWID consultant team to share information regarding PIM and water management.
- In April 2017, the task force for establishment of PIM guideline has been organized composed of relevant experts and officers of both Japanese side and Myanmar side. Draft final PIM guideline at national level is being discussed among the relevant officers. This draft has been modified/updated taking account both PROFIA and BWID activities.

3-3. Assist PIM activities by Water Users Groups/ Water Users Association after establishment.

- In LCAs, for the case the WUA will not be established under a distributary canal near future, land consolidation group (LCGs) have been established but still need assistance to be functional.

  At the same time, WUGs/WUAs are under establishment by IWUMD and BWID Team in the distributary canals of CL3, North Nawin (Pyay, on-going), DY25, South Nawin (Thegon, completed), LDY4, Wegyi (Paungde, completed), and MDY4 Taungnyo (Nattalin, on-going).
- For promotion and strengthening of WUG/LCG activities, training material (explanation banner) explaining 1) necessity and benefit of the group, 2) example of group activities, and 3) benefit of watercourse, was prepared, with which promotion of group activities has been carried out in collaboration with BWID Team.
- Excavation of water course for irrigation and drainage has been facilitated for the target water users' groups of LDY-4 (PD), LDY-6 (PD), and Direct Outlet of the North Nawin Irrigation System. Excavation of water courses of all sites have been completed by December 15, 2017, which was the commencement date of irrigation for summer season and for supplemental irrigation for winter crops at the trial plots. This activity has been facilitated in collaboration with IWUMD.

Excavation of water course is carried out by farmers themselves with a support from IWUMD and DOA officers.

3-4. Assist dissemination of the use of guidelines for land consolidation in the Project Site.

- On August 25 and 26, 2016, technical seminar was organized with support of

JIID and MAFF, Japan. Irrigation policy advisor participated as a member of panel discussion. Many points to be improved were announced by related departments.

- The policy advisor organized a meeting on September 9, 2016, to promote mutual understanding among the related department. AMD agreed to organize the task team for promotion of Land Consolidation. Also, participants agreed on assessing current situation and explaining/suggesting to Executive Members of Ministry for counter measures.
- Evaluation report for promotion of Land Consolidation is under preparation. On December 1 and 2, 2016, International Symposium regarding land consolidation was organized with support of JIID. Thailand and Cambodia delegation attended to this symposium and 4 countries including Japan had exchanged opinions to promote this project.
- A follow-up monitoring of the LCAs has been done to confirm the repairing works of the land consolidation areas which had been pointed out in November 2016 (also see 3-1).
- In November 2017, the DG of AMD has been invited to Japan with a support from JIID. During his stay in Japan, a technical seminar on promotion of land consolidation was held. Then, exchange of opinions on the advanced technology had been facilitated and a site visit to advanced land consolidation area had been organized, for which the policy adviser participated.

3-5. Provide advices to solve the issues of irrigation sector in Myanmar through meeting with stakeholders and observation of various irrigation systems in Myanmar.

- The various problems occurred in the model LCAs of PROFIA were reported by the irrigation policy advisor and PROFIA Team to DGs of DOA, AMD and IWUMD on November 30, 2016, and urgent rehabilitation before starting next cropping season was requested to them. DG of AMD dispatch a team to Western Bago to survey and discuss with stakeholders, and rehabilitation work was done in the Project sites.
- Through initial evaluation of irrigation systems in Myanmar, the irrigation policy advisor recognized one of weak points in the irrigation sector of Myanmar is water management. During "Special Training on Water Management (one week training)", organized by ITC on October 2016 and February 2017, the irrigation policy advisor made a lecture on "PIM and role of IWUMD", and presented the real meaning of PIM and the importance of IWUMD officers' learning from farmers and current conditions.

Participants of the in-Japan training observe an advanced water management system in Japan.

- Furthermore, the advisor had organized an in-Japan training on the

"Strengthening of Water Management." In this training program, a total of 6 officers from IWUMD, including one assistant engineer of Construction Circle 2 and one assistant engineer of maintenance division from the Project site had participated. Of about 4 weeks of the training period from October 15 to November 12, 2017, the advisor also joined from October 26 and led the program until the end of the period.

1-3 Achievement of Output

Output 1 Public-Private-Producers (Farmers) Partnership is strengthened

Indicator 1-1: Paddy rice produced from Certified Seed by farmers in the Model Site is sold at higher price than paddy rice produced from ordinary seeds.

- Post harvest technique and grain quality control laboratory was established to analyze seeds and grain quality so that rice miller can check the quality of grain produced from CS as to consider buying them at higher price.
- As to secure certified seeds of paddy, seed multiplication working group was established in 2017, composed of representatives from seed farmers, rice miller, government offices, and meetings have been held for four times. In the monsoon season of 2017, five members of the working group have conducted seed multiplication with a total cultivation area of 7.1 acre. The selling price ranged from 9,900 to 13,200 kyat/basket. Variety names cultivated were: Yadanar Toe and Sin Twe Latt.
- In the monsoon season of 2017, seed multiplication has been also carried out by the farmers mainly in LCAs of six townships, for which Registered Seeds have been distributed and some technical guidance have been given. The total land area cultivated for seed multiplication was 51.1 acres by the total of 31 farmers. Seeds were sold immediately after harvest for the farmers' cash needs, resulting in about 1,000 kyat/basket higher price than grain price.
- Through the test cultivation of paddy with seeds in different generations including RS, Generation 1 (CS), and Generation 2, it was revealed that there was no significant difference among the performances (i.e., yield, and off-type rate, etc.) of the seeds in different generation. Given the fact, one of the partner millers who have been selling RS for the farmers in Pyay, due to better reputation of RS more than CS, decided to multiply and sell CS instead of RS. It will definitely help expand the market volume of quality seeds as the amount of RS in the market is quite limited. Note that under the current regulation, up to second generation of the seeds (multiplied from CS) can be sold as "seeds."
- In the monsoon season of 2017, grain production using certified seeds have been carried out in three target areas of CL-3 (PY), LDY-4 (PD), and LDY-6 (PD). The harvested grains were sun-dried by farmers, with which milling recovery tests have been conducted at partner millers.
- By the time this report is prepared, result of milling recovery test became available for the target area of LDY-6. While farm-gate price of paddy

produced from ordinary seeds was 5,500 kyat/basket, the price of paddy produced from certified seeds by the same farmers was 6,320 kyat/basket. After deducting the cost required for each of them, profit of these ones were: 3,210 kyat/basket and 3,960 kyat/basket, respectively. The price of paddy produced from certified seeds was 23.4% higher than that of paddy produced from ordinary seeds (non-CS).

Indicator 1-2: At least one variety of multiplication and distribution flow of good quality seeds of non-rice crops is strengthened.

- A series of discussion have been made with Japanese seed production company which has been doing its trial cultivation of black gram especially for seed production. Collaboration with this company is being pursued to secure one distribution flow of black gram. The company has a plan to shift its trial cultivation from Pyay to Nattalin from 2018.
- Four potential varieties of sesame were identified based on the field trial in the summer season of 2017. Sesame variety trials have been conducted in monsoon season and are being done in winter season to see the difference in the applicability of these varieties in different season. The potential variety for dry condition (Sin Yadanar-3) was multiplied in a small scale for further project activity purpose.
- Through the variety trials, it was concluded that seed production during monsoon season is not suitable due to phyllody disease associated with prolonged high moisture. On the other hand, seed production in winter season is more suitable as it requires less or no chemical application; it can be used in summer season immediately after harvest, suggesting less needs of storing; and seeds are dry enough.
- A relationship with seed growers of sesame in Magway region is being cultivated thorough repeated exchange visits by the project members, C/P, farmers, and researcher. For the summer season, quality seeds of sesame have been procured from this seed grower for a purpose to distribute quality seeds to a total of 250 acres (based on the seed rate of 3 pyi/acre) in the project site, aiming to link the farmers to this seed grower for the future.
- Seed growers working group was established and, with the support from the project, one members of the group have obtained the license to grow seeds of non-rice crops of black gram and sesame. Then, seed multiplication of black gram and groundnuts have started in the fields of five farmers and two farmers, respectively and multiplication of sesame will be done by three members in the coming summer season.

Output 2 Profitability of farmers in the Model Site is improved

Indicator 2-1: Increase of agricultural profit since 2015 among farmers in the Model Site exceeds that of the control group by more than 20%.

- Possible cropping patterns which are considered more profitable are identified based on the baseline survey result and a series of field survey and exchange of opinions with counterparts and farmers. They are: MP – BG, and MP – SS, with some variations in the varieties of each crop and combination

with green manure.

- Sesame as potential crop in summer season has been introduced at LCA in Pyay TS. PROFIA is supporting this production as a model of alternative crop to summer paddy. At the same time, awareness campaign was conducted to the target farmers in other TSs.
- Linkage is being established with local traders as well as Japanese traders for sesame trading from the project area. Sample from the first trial products was given favorable evaluation from these traders, with its lower acid value and uniformed size and color of the grain (sesame seeds).
- Baseline value has been set through the discussion among the members of the PIC and also some members (project director and chairperson) of the JCC. Through the discussion, it was confirmed that baseline values shall be set by township as the value of the sampled household income vary a lot among them. Also, the same values shall be applied to the baseline of all the groups: target farmers and control farmers. Still, evaluation will be done by the comparison between farmers in the model sites and others (control) in the other areas.

Output 3 Guidelines for Participatory Irrigation Management (PIM) in the Project Site is prepared and applied in the Model Site

Indicator 3-1: Guidelines for participatory irrigation management is prepared.

- Draft final of the PIM guideline has been developed and being discussed among relevant officials.

Indicator 3-2: Stakeholders meetings of irrigation sector are sustainably organized.

- A series of meetings have been organized at NPT for the formulation of national level PIM guideline with the members of the task force: irrigation policy advisor, BWID consultants, ITC staff and the relevant officials of IWUMD.
- A series of meetings for the establishment and strengthening of WUGs/WUAs have been organized in collaboration with IWUMD and BWID consultants for LDY-4 (WUA), LDY-6 (WUG), CL-3 (WUG and LCG), Thegon LCA (LCG), Paukkhaung LCA (LCG), and Nattalin LCA (LCG).

Indicator 3-3: More than 50 % of farmers in the model site participate in PIM activities

- The lawful tillers (or actual cultivators and agricultural lessees) in the model areas are being organized for the activities of WUG/LCGs. During the several meetings to establish WUGs/LCGs, all the members of WUGs/LCGs were invited, and the important decision making for the WUGs/LCGs activities were conducted in general assembly meetings to which more than 70% of the members are supposed to participate.
- Water courses have been dug by the members of WUGs at LDY-4, LDY-6, and Direct Outlet (DO) of the right main canal of North Nawin irrigation system. For the construction of water course, IWUMD has supported farmers by providing excavator, for which farmers' group have paid the cost of fuel in LDY-4 and LDY-6. In the DO site, on the other hand, farmers managed the

construction of water course by themselves as the soil is soft with sandy soil.

1-4 Achievement of the Project Purpose

Indicator A: At least one of the practices introduced through the Project is adopted in more than 50 % of the model site.

- Definition of the “model site” was changed: AMD demo farms were found not favorable enough to establish profitable model due to poor condition of soil just after the land consolidation work. Therefore, primary target sites were sifted from "AMD demonstration farms" to "PROFIA model area"
- The definition of “PROFIA model area” is the farm plots irrigated under one designated turnout where target farmers' plots (demo-plots) are located.

Indicator B: Increase of agricultural profit since 2015 among farmers who adopt the practices exceeds that of the control group by more than 10%.

- Baseline value has been set through the discussion among the members of the PIC and also some members (project director and chairperson) of the JCC. Through the discussion, it was confirmed that baseline values shall be set by township as the value of the sampled household income vary a lot among them. Also, the same values shall be applied to the baseline of all the groups: target farmers and control farmers. Still, evaluation will be done by the comparison between farmers in the model sites and others (control) in the other areas.

1-5 Changes of Risks and Actions for Mitigation

- *Condition of the Model Site*: After one season of cultivation, various problems of model LCAs were observed. The problems include: 1) unleveled farmland, 2) inappropriate design and location of water structures, 3) deterioration of farm road, 4) corruption of footpath, 5) poor and uneven soil condition. These issues are related to the precondition of the PDM.
- To cope with this situation, repair/rehabilitation of subject LCAs was requested to responsible department, AMD and IWUMD through multiple channels. Thereafter, some rehabilitation works have been done. Then, improvement of soil using green manure and application of fertilizer has been carried out in some of the LCAs.
- *Stoppage of Irrigation for BWID's Construction Work*: Due to the rehabilitation work, LCAs in Thegon, Paungde, Nattalin and Zigon were not able to receive irrigation water in 2017 summer season. In 2017/2018 summer season, no such areas are expected except for a certain period in the project site of North Nawin dam for the replacement of conduct pipe at the dam body (still a tentative plan). In 2018/2019, canals will be rehabilitated in Paukkhaung (South Nawin).
- *Outbreak of pest and disease*: In the project area, a sudden death of black gram plants has widely occurred at the time of flowering stage. Cause is not clear but it is believed that a kind of fungus has affected the growth of black gram. As no effective countermeasure is yet known, cultivation of black gram itself entails a high risk of total loss.
- If black gram is cultivated under the project activity to pursue more profitable farming

model, there would be also a risk of failure. Therefore, at least for a couple of years, it is recommended not to cultivate black gram but sesame or any other crops in winter and/or summer.

- In addition, damage caused by rat has become significant especially in the target fields of CL-3 model area. Some plots have shown no harvest because of the damage.
- *Fluctuation of Market Condition:* In the late August 2017, the government of India has declared to set a limitation in the amount of importation of some beans/pulses. As a result, market price of black gram, for example, has sharply dropped (18,000 to 20,000 kyat/basket at farm gate price in December 2017, as compared to 30,000 to 35,000 kyat/basket in 2016 in the same season), making it difficult for farmers in the project area to expect a usual profit from black gram cultivation.
- On the other hand, the price of paddy has increased in 2017 (5,500 to 5,700 kyat/basket (Yadana Toe variety) as of December 2017 as compared to 5,000 kyat/basket at maximum in 2016 in the same season), which affected the farmers' decision making especially for the summer crops. In particular, many of farmers in and around the CL-3 model area who originally requested sesame seeds to cultivate sesame have changed their plan to grow paddy instead.
- *Policy change on cultivation of summer paddy:* It is understood that, in principle, farmers can choose the type of crops to cultivate even in summer season under irrigation. Yet, IWUMD has targeted to increase the area of summer paddy in the nation from 900,000 acre in 2016/2017 to 1,800,000 acre in 2017/2018, which may affect the decision making of farmers in the area.
- *Transfer of counterpart personnel:* It was learned at the beginning of December 2017 that two of the project counterpart personnel have officially transferred to the other townships, one from Pyay deputy regional director's office to Padaung township office, Pyay district and other from Thegon township office to Zigon township office.

1-6 Progress of Actions undertaken by JICA (Relating to 1-5)

- *Condition of the Model Site*: the consultant team reported to JICA-HQs on January 6, 2017. JICA-HQs instructed that the team can select model area from outside of LCA. The team discussed with C/Ps and selected new model site (PROFIA model area) from outside of LCAs in Pyay and Paungde where condition is rather favorable in terms of water availability, soil fertility, and so on. It was proposed in the second JCC meeting and approved.
- *Stoppage of Irrigation for BWID's Construction Work*: As for the irrigation of 2017/2018 summer season, there is no problem of irrigation expected expect for project area of North Nawin dam. Yet, irrigation water will be released up to the late summer season to make the dam reservoir empty for construction work, and thus no significant problem is expected for sesame cultivation that are now planned by the project during summer season in that area.
- *Outbreak of pest and disease*: It was considered that solving this kind of problem is rather out of scope of the project. However, project has tried to identify the cause of the problem by inviting some experts from research institute, Yezin Agricultural College and Department of Agricultural Research (DAR). Now, the sample of the

disease is being analyzed.

Also, some symptomatic countermeasures without identifying the specific cause of the disease have been proposed and a set of chemical treatments have been tried to see the effectiveness of the proposed treatment.

- It was concluded that damage caused by rat would become worse if paddy is planted earlier than surrounding areas. Thus, the information is to be disseminated to encourage farmers, especially in the WUGs, to facilitate their farming practice to be uniform as much as possible.
- *Fluctuation of Market Condition:* As it is virtually impossible to control the international market, the project has launched a new trial to find out applicable crops in winter season as alternative crops to black gram: green gram, cowpea, chickpea, sunflower, and dent corn.

  In addition, as the farmers in and around the CL-3 model areas have changed their mind, another place has been identified for the relatively large-scale cultivation of summer sesame, which is the Direct Outlet area of the right main canal of North Nawin irrigation project.
- *Transfer of counterpart personnel:* Immediately after it was known, project has sent a request letter to the project director, asking not to transfer the experienced staff to the other area.

1-7 Progress of Actions undertaken by Gov. of Myanmar (Relating to 1-5)

- *Condition of the Model Site*: AMD dispatched field inspection team and implemented land leveling again in the damaged LCAs. Also, IWUMD has done additional rehabilitation work of water structures in LCA in Pyay at their own cost.
- *Irrigation Arrangement*: Upon the request from the project and also farmers engaged in the project activities, IWUMD has arranged the irrigation water from North Nawin Dam and also Wegy Dam starting on December 15, 2017.
- *Policy change on cultivation of summer paddy:* According to DOA, increment of summer paddy area is not yet incorporated into its policy.
- *Transfer of counterpart personnel:* Upon the request from the expert team, DOA has agreed that these two counterparts will be physically working in the original place even though the order of the transfer is still effective in the document. In addition, some additional counterpart personnel have been assigned for the project: 1) Marketing (2 officers), 2) Postharvest (1), 3) Laboratory (administration), and 4) Laboratory (computer works).

1-8 Progress of Environmental and Social Considerations (if applicable)

- Not applicable since the project is categorized in the Category C of the JICA Environmental and Social Consideration Guideline.

1-9 Progress of Considerations on Gender/Peace Building/Poverty Reduction (if applicable)

- Result of baseline survey on gender issue was compiled and feedback seminar to C/Ps and farmers has been carried out in December 2016.

1-10 Other remarkable/considerable issues related/affect to the project (such as other JICA's projects, activities of counterparts, other donors, private sectors, NGOs etc.)

- Yamato Nouen, a seed company of Japan, is trying to establish a seed multiplication and marketing business in Myanmar with a support from JICA's program "Support for Japanese Small and Medium Enterprises (SMEs) Overseas Business Development." In particular, Yamato Nouen carries out trial cultivation of black gram among others, with which Yamato Nouen and PROFIA are seeking for a room for the collaboration. So far, exchange of information has been done periodically.
- One-acre fund (an International NGO) visited PROFIA office in October 27, 2017 again to exchange experiences and information for future collaboration. Both parties agreed to continue keeping a close communication for further collaboration.
- JICA Two-Step Loan (TSL) program in collaboration with Myanmar Agricultural Development Bank (MADB) is on-going. As for the pilot activity, TSL has selected Pyay township MADB branch for the first disbursement. Then, exchange of information and opinions is being closely done between the two projects. For example, PROFIA's baseline data was used to design evaluation sheet/ application form of TSL. Also, candidates of borrowers had been selected from group of farmers inclusive of those introduced by PROFIA's stakeholders.
- Two of the counterpart personnel have applied to the In-Japan Training on "Vegetable Production Technology for Livelihood Improvement of Small Scale Farmers" from February 4, 2018 to November 3, 2018. By the end of this monitoring period, both of them have been accepted by JICA.

2 Delay of Work Schedule and/or Problems (if any)

1) Change of the Schedule of Compilation of the Progress Report

<Detail>

- Schedule of the preparation and submission of the progress report was changed from December 2017 to June 2018.

<Cause>

- As the project activity has delayed for about a year due to the change of model areas from still disadvantageous Land Consolidation Areas to other areas, progress to be able to report is still insufficient.

<Action to be Taken>

- Schedule is already changed based on the discussion between JICA headquarters and expert team; then, it was reported at the PIC meeting to the relevant officers.

<Roles of Responsible Persons/Organization>

- PROFIA team in collaboration with the counterpart personnel are responsible to gather necessary information and compile the report.

Other remarkable problems are already described in 1-5 to 1-7 above.

3 Modification of the Project Implementation Plan

3-1 PO

- In the previous monitoring period, PDM and PO were modified as is attached as Annex I Project Monitoring Sheet I.

3-2 Other modifications on detailed implementation plan

- In the previous monitoring period, PDM and PO were modified as is attached as Annex I Project Monitoring Sheet I.

4 Preparation of Gov. of Myanmar toward after completion of the Project

- N.A.

II. Project Monitoring Sheet I & II

Attached in Annex I and Annex II

List of Annex

Annex I	Project Monitoring Sheet I (PDM ver.2 revised as of June 22, 2017)
Annex II	Project Monitoring Sheet II (Plan of Operation ver.2)
Annex III	List of Equipment Procured
Annex IV	Equipment lists of Post-harvest technique and grain quality control laboratory
Annex V	Explanation materials of baseline survey result

Project Design Matrix

Project Title: Project for Profitable Irrigated Agriculture in Western Bago Region

Version 2

Implementing Agency: Department of Agriculture, **Ministry of Agriculture, Livestock and Irrigation**

Dated June 22, 2017

Target Group: **MOALI** staff, private sectors and farmers in four irrigation systems in Pyay district and Thayawaddy district (116,738 personnel ／23,394 House hold)

Period of Project: March 2016 to February 2021

Project Site: 6 townships (Pyay, Paukkhaung, Thegon, Paungde, Nattalin, Zigon) in 4 irrigation schemes in Western Bago Region

Model Site: 20 sites including PROFIA model areas [a], AMD demo farms and DOA seed farms.

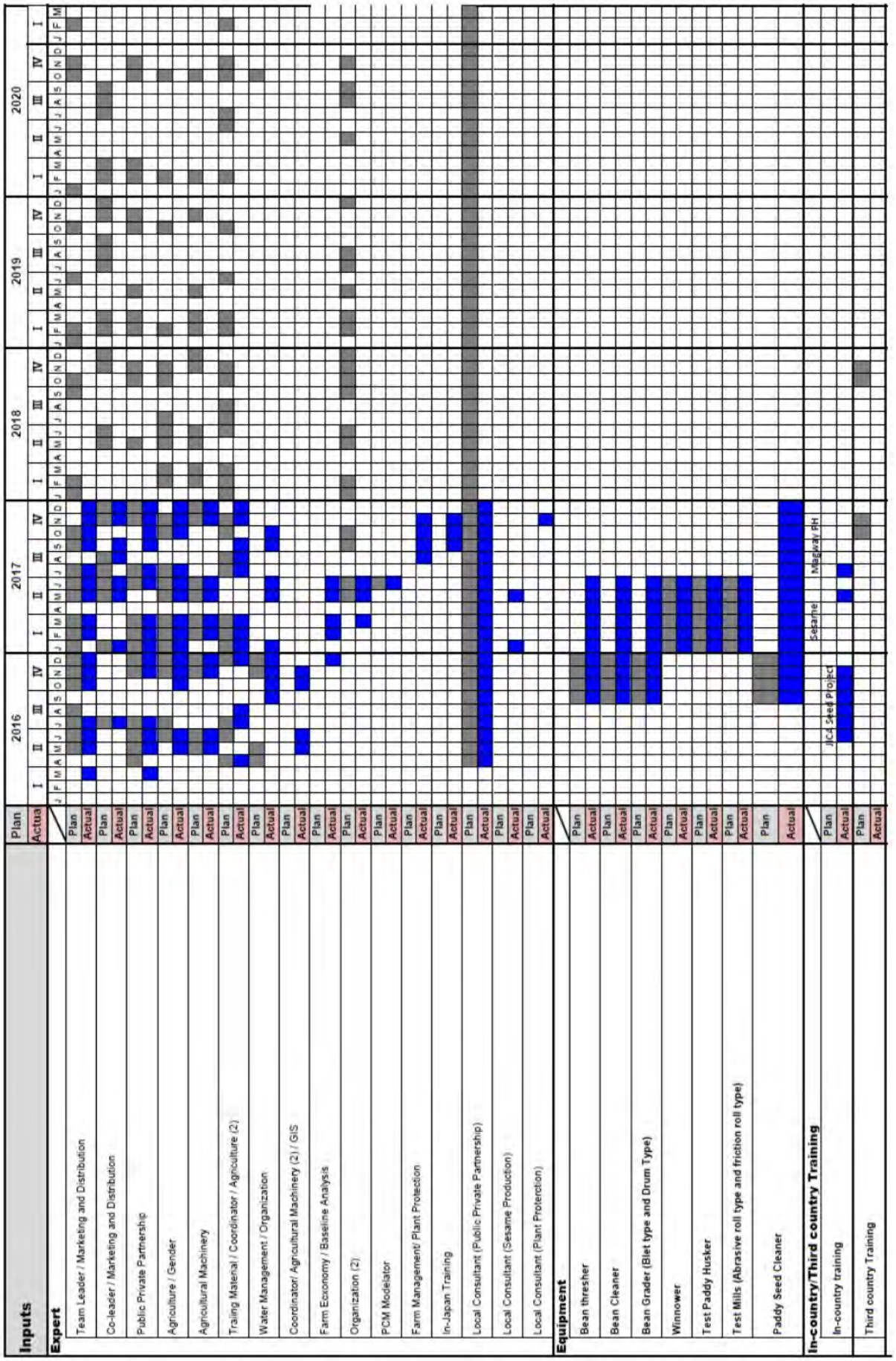
Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumption	Remarks
Overall Goal				
Profitability of agricultural activities in the Project Site is improved	Increase of agricultural profit in the Project Site since baseline year 2015 exceeds that of the whole country by more than 10%.	MOALI Statistics	Policy related to crop selection and trading does not change drastically.	
Project Purpose				
Profitable irrigated agriculture model with private sector involvement is established	・At least one of the practices introduced through the Project is adopted in more than 50 % of the model site.	Baseline survey and endline survey of the Project	Policy related to crop selection and trading does not change drastically.	
	・Increase of agricultural profit since 2015 among farmers who adopt the practices exceeds that of the control group by more than 10%.	Baseline survey and endline survey of the Project	Water supply is not disturbed due to drought or flood	
Outputs				
1. Public-Private-Producers (Farmers) Partnership is strengthened	1-1 Paddy rice produced from Certified Seed by farmers in the Model Site is sold at higher price than paddy rice produced from ordinary seeds.	Baseline survey and endline survey of the Project		
	1-2 At least one variety of multiplication and distribution flow of good quality seeds of non-rice crops is strengthened.	Baseline survey and endline survey of the Project	Policy and regulations for pulses seed production do not adversely affect the project activities	
2. Profitability of farmers in the Model Site is improved	2-1 Increase of agricultural profit since 2015 among farmers in the Model Site exceeds that of the control group by more than 20%.	Baseline survey, endline survey, and farming record of the Project.		
3. Guidelines for Participatory Irrigation Management (PIM) in the Project Site is prepared and applied in the Model Site	3-1 Guidelines for participatory irrigation management is prepared.	Monitoring sheet		
	3-2 Stakeholders meetings of irrigation sector are sustainably organized.	Monitoring sheet		
	3-3 More than 50 % of farmers in the model site-participate in PIM activities	Baseline survey and endline survey of the Project		

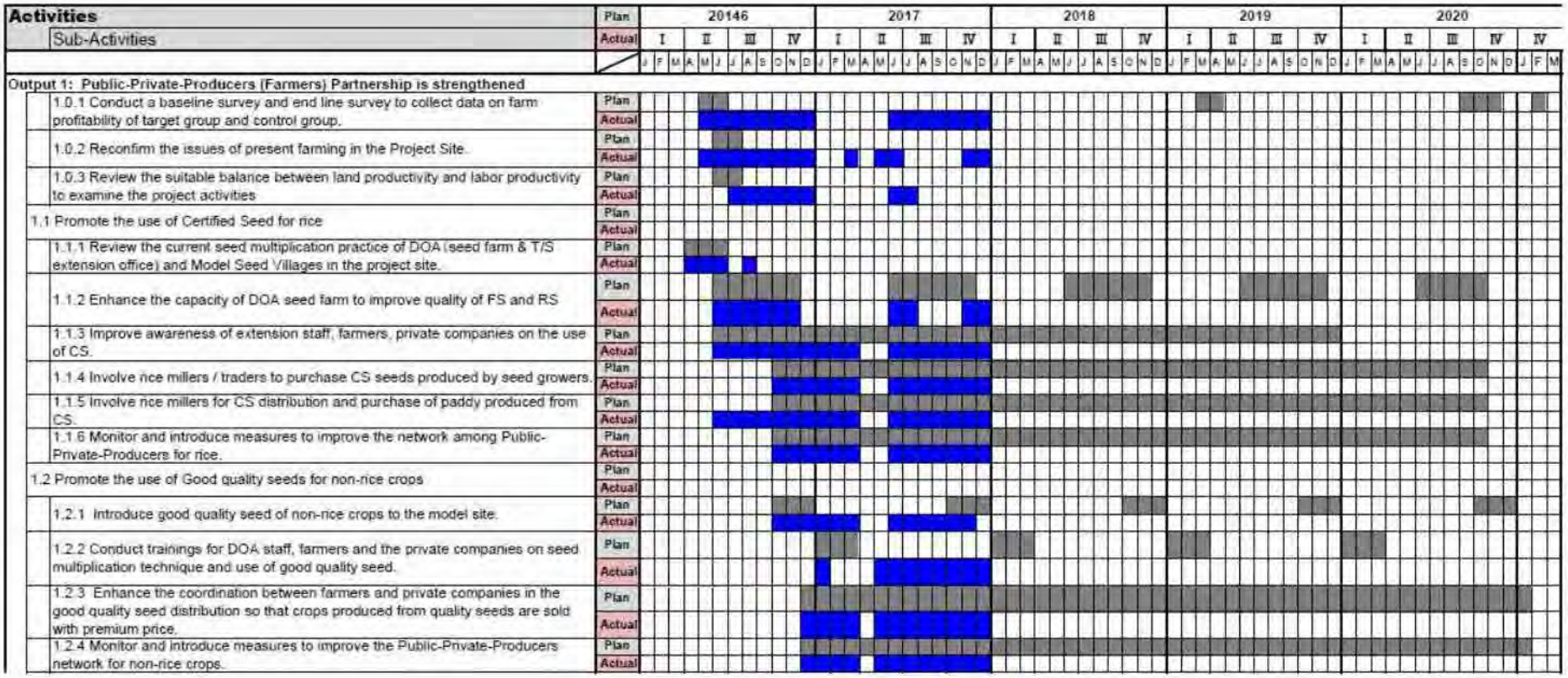
Activities	Inputs		Important Assumption
	The Japanese Side	The Myanmar Side	
1-0-1 Conduct a baseline survey and endline survey to collect data on farm profitability of the target group and the control group. 1-0-2 Reconfirm the issues of present farming in the Project Site. 1-0-3 Review the suitable balance between land productivity and labor productivity to examine the project activities <Output1> <u>1-1. Promote the use of Certified Seed for rice</u> 1-1-1 Review the current seed multiplication practice of DOA (seed farm & T/S extension office) and Model Seed Villages in the project site. 1-1-2 Enhance the capacity of DOA seed farm to improve quality of FS and RS. 1-1-3 Improve awareness of extension staff, farmers, private companies on the use of CS. 1-1-4 Encourage rice millers / traders to purchase CS seeds produced by seed growers. 1-1-5 Involve rice millers for CS distribution and purchase of paddy produced from CS. 1-1-6 Monitor and introduce measures to improve the network among Public-Private-Producers for rice. <u>1.2 Promote the use of Good quality seeds for non-rice crops</u> 1-2-1 Introduce good quality seed of non-rice crops to the model site. 1-2-2 Conduct trainings for DOA staff, farmers and the private companies on seed multiplication technique and use of good quality seed. 1-2-3 Enhance the coodination between farmers and private companies in the good quality seed distribution so that crops produced from quality seeds are sold with premium price. 1-2-4 Monitor and introduce measures to improve the Public-Private-Producers network for non-rice crops.	(1) Dispatch of Experts [a] Team Leader/ Marketing and Distribution Co-leader/ Marketing and Distribution Public Private Partnership Agriculture/ Gender Agricultural Machinery Training Material/ Coordinator/ Agriculture (2) Water Management/ Organization Coordinator/ Agricultural Machinery (2) / GIS Local Consultant (PPP) Local Consultant (B) Local Consultant (C) (2) Provision of equipment 3 Seed Cleaners Moisture Meters 6 Motorcycles for field inspectors 2 Vehicles for the Project 1 Adopter for ridge building 2 Pulses thresher / cleaner Harvesting machine for pulses (3) Third country / In country training (4) Local cost shared by Japanese side Project office refurbishment cost Travel allowance for the Project Other running cost	a) Office space in DOA West Bago division b) Office space for irrigation policy advisor in IWUMD in Nay Pyi Taw c) Fuel for field inspectors d) 9 designated staff for the Project assigned by DOA West Bago division throughout the project period (1 in division, 2 in districts, 6 in townships) e) Running cost such as electricity and water	The mechanism to facilitate land consolidation is introduced by the state or the union government of Myanmar. **Pre-Conditions** 10 baskets of Yezin 2, 3 and 5 (Black gram variety) is procured before the dry season cultivation in the 1st year. The AMD model land consolidation is completed before the start of the Project without lasting dispute. The AMD model land consolidation site is not destroyed through rainfall, flood or use of machineries. **<Issues and countermeasures>** Farmer's coordination mechanism may be introduced through the project activities.

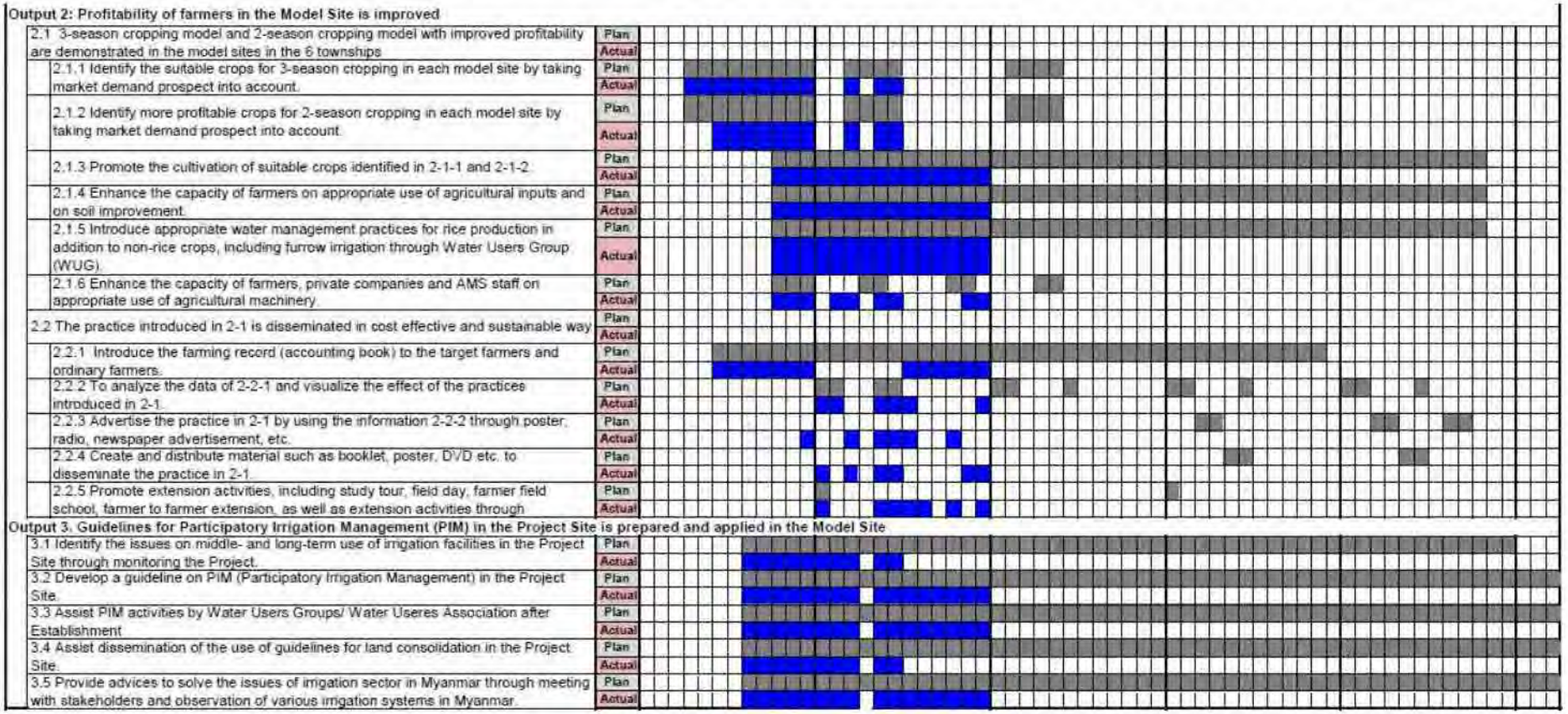
<Output2> 2-1 3-season cropping model and 2-season cropping model with improved profitability are demonstrated in the model sites in the 6 townships 2-1-1 Identify the suitable crops for 3-season cropping in each model site-by taking market demand prospect into account. 2-1-2 Identify more profitable crops for 2-season cropping in each model site-by taking market demand prospect into account. 2-1-3 Promote the cultivation of suitable crops identified in 2-1-1 and 2-1-2. 2-1-4 Enhance the capacity of farmers on appropriate use of agricultural inputs and on soil improvement. 2-1-5 Introduce appropriate water management practices for rice production in addition to non-rice crops, including furrow irrigation through Water Users Group (WUG). 2-1-6 Enhance the capacity of farmers, private companies and AMS staff on appropriate use of agricultural machinery. 2-2 The practice introduced in 2-1 is disseminated in cost effective and sustainable way 2-2-1 Introduce the farming-record (accounting book) to the target farmers [b] and ordinary farmers. [c] 2-2-2 Analyze the data of 2-2-1 and visualize the effect of the practices introduced in 2-1. 2-2-3 Advertise the practice in 2-1 by using the information of 2-2-2 through poster, radio, newspaper, advertisement, etc. 2-2-4 Create and distribute material such as booklet, poster, DVD etc. to disseminate the practice in 2-1. 2-2-5 Promote extension activities, including study tour, field day, farmer field school, farmer to farmer extension, as well as extension activities through knolwedge center.			
<Output3> 3-1. Identify the issues on middle- and long-term use of irrigation facilities in the Project Site through monitoring the Project. 3-2. Develop a guideline on PIM (Participatory Irrigation Management) in the Project Site. 3-3. Assist PIM activities by Water Users Groups / Water Users Association after establishment. 3-4. Assist dissemination of the use of guidelines for land consolidation in the Project Site. 3-5. Provide advices to solve the issues of irrigation sector in Myanmar through meeting with stakeholders and observation of various irrigation systems in Myanmar.			

Remarks: a/ "PROFIA Model Area": Farm plots irrigated under one designated turnout where target farmers' plots (demo-plots) are located
b/ "Target Farmers": farmers who directly receive technical support from the Project.
c/ "Ordinary Farmers": farmers who have farmland in surrounding area of the target farmers' land.
d/ Experts not mentioned in this PDM version 2 (excluded from PDM version 0) will be dispatched if necessary

Annex II Project Monitoring Sheet II (Plan of Operation ver.2)




Activities
Sub-Activities
Plan
Actual
20146
2017
2018
2019
2020
I
II
III
IV
J F M A M J J A S O N D
Output 1: Public-Private-Producers (Farmers) Partnership is strengthened
1.0.1 Conduct a baseline survey and end line survey to collect data on farm profitability of target group and control group.
1.0.2 Reconfirm the issues of present farming in the Project Site.
1.0.3 Review the suitable balance between land productivity and labor productivity to examine the project activities
1.1 Promote the use of Certified Seed for rice
1.1.1 Review the current seed multiplication practice of DOA (seed farm & T/S extension office) and Model Seed Villages in the project site.
1.1.2 Enhance the capacity of DOA seed farm to improve quality of FS and RS
1.1.3 Improve awareness of extension staff, farmers, private companies on the use of CS.
1.1.4 Involve rice millers / traders to purchase CS seeds produced by seed growers.
1.1.5 Involve rice millers for CS distribution and purchase of paddy produced from CS.
1.1.6 Monitor and introduce measures to improve the network among Public-Private-Producers for rice.
1.2 Promote the use of Good quality seeds for non-rice crops
1.2.1 Introduce good quality seed of non-rice crops to the model site.
1.2.2 Conduct trainings for DOA staff, farmers and the private companies on seed multiplication technique and use of good quality seed.
1.2.3 Enhance the coordination between farmers and private companies in the good quality seed distribution so that crops produced from quality seeds are sold with premium price.
1.2.4 Monitor and introduce measures to improve the Public-Private-Producers network for non-rice crops.


Output 2: Profitability of farmers in the Model Site is improved
2.1 3-season cropping model and 2-season cropping model with improved profitability are demonstrated in the model sites in the 6 townships
2.1.1 Identify the suitable crops for 3-season cropping in each model site by taking market demand prospect into account.
2.1.2 Identify more profitable crops for 2-season cropping in each model site by taking market demand prospect into account.
2.1.3 Promote the cultivation of suitable crops identified in 2-1-1 and 2-1-2.
2.1.4 Enhance the capacity of farmers on appropriate use of agricultural inputs and on soil improvement.
2.1.5 Introduce appropriate water management practices for rice production in addition to non-rice crops, including furrow irrigation through Water Users Group (WUG).
2.1.6 Enhance the capacity of farmers, private companies and AMS staff on appropriate use of agricultural machinery.
2.2 The practice introduced in 2-1 is disseminated in cost effective and sustainable way
2.2.1 Introduce the farming record (accounting book) to the target farmers and ordinary farmers.
2.2.2 To analyze the data of 2-2-1 and visualize the effect of the practices introduced in 2-1.
2.2.3 Advertise the practice in 2-1 by using the information 2-2-2 through poster, radio, newspaper advertisement, etc.
2.2.4 Create and distribute material such as booklet, poster, DVD etc. to disseminate the practice in 2-1.
2.2.5 Promote extension activities, including study tour, field day, farmer field school, farmer to farmer extension, as well as extension activities through
Plan
Actual
Output 3. Guidelines for Participatory Irrigation Management (PIM) in the Project Site is prepared and applied in the Model Site
3.1 Identify the issues on middle- and long-term use of irrigation facilities in the Project Site through monitoring the Project.
3.2 Develop a guideline on PIM (Participatory Irrigation Management) in the Project Site.
3.3 Assist PIM activities by Water Users Groups/ Water Useres Association after Establishment
3.4 Assist dissemination of the use of guidelines for land consolidation in the Project Site.
3.5 Provide advices to solve the issues of irrigation sector in Myanmar through meeting with stakeholders and observation of various irrigation systems in Myanmar.

Annex III List of Equipment Procured

Item	Unit purchased	Remark
Seed Cleaner	2	Installed to DOA Seed Farms
Threshing Machine for beans/pulses	2	Transported to Regional office
Cleaner for beans/pulses	4	Transported to Regional office
Pre-Cleaner for beans/pulses	2	Transported to Regional office
Ridge Builder (Attachment)	1	Different type of attachments which are suitable for currently used tractor in project site, are examined by JICA expert.
Test Paddy Husker	2	Transported to Regional office
Test Rice Mill	2	Transported to Regional office
Winnor	2	Transported to Regional office
Small Rice mill set	1	One installed to NyanZin Village
Moisture Meter for rice	5	Kept in Project Office
Moisture Meter for other cereals	4	Kept in Project Office
Portable Moisture Meter	6	Team asked TS CPs to utilize.
Copy Machine	1	Installed to Project office
Printer	1	Installed to Project office
Computer	6	Installed to Project office
Project Vehicle (SUV)	1	Import process is still under going
Project Vehicle (Pick-up)	1	Import process is still under going
Motor-bike	6	Handed over to TS CPs
Sieve sets for small beans/pulses	2	Kept in Project Office
Sieve sets for large beans/pulses	1	Kept in Project Office
Sieve sets for milled rice	4	Kept in Project Office
Sieve sets for Sesame	-	To be purchased as needed basis
Sample Divider	2	Kept in Project Office
Dry Heat Sterilizer	1	For Laboratory in regional office
Incubator	1	For Laboratory in regional office
Soil Tester	1	Kept in Project Office
Electrical Generator	2	One for Project office, another for Laboratory in regional office
Water Distiller	1	For Laboratory in regional office
Computer for Labo.	1	For Laboratory in regional office
Printer for Labo.	1	For Laboratory in regional office

Annex IV Equipment lists of Post-harvest technique and grain quality control laboratory

Sr.No	Equipment lists of Post-harvest technique and grain quality control laboratory	Quantity
1.	Distilled-water Maker	(1)
2.	Dry Heat Sterilizer	(1)
3.	Desicator (250mm/300mm)	(3)
4.	Test Husking Machine (Satake)	(2)
5.	Test Milling Machine (Satake)	(2)
6.	Test Milling Machine (Yamamoto)	(1)
7.	Sample Divider one set	(2)
8.	Scale (0.01 g- 1g)	(1)
9.	Scale (1 g- 3Kg)	(2)
10.	Seive for Bran (1.4 mm)	(1)
11.	Seives for Grain (1.5 mm-2.1 mm)	(1)
12.	Seives for Grain (1.5 mm-6.1 mm)	(1)
13.	Seives for Grain (2.6 mm-5.5 mm)	(1)
14.	Cartoons	(20)
15.	Digital Thermometer	(1)
16.	Lens	(1)
17.	Rice Moisture Tester	(3)
18.	Grain Moisture Tester	(1)
20.	Grain Scope	(1)
21.	Inspection Board	(1)
22.	Sealer	(1)
23.	Dial Thickness Guage (0.1 mm-20 mm)	(1)
24.	Stereo Microscope	(1)
25.	Petridish (10 cm)	(90)
26.	Petridish (15 cm)	(8)
27.	Beaker (1000 ml)	(1)
28.	Beaker (100 ml)	(1)
29.	Pippet (1ml)	(1)
30.	Pippet (5ml)	(5)
31.	Test tube (1000 ml)	(1)
32.	Test tube (500 ml)	(1)
33.	Test tube (100 ml)	(1)
34.	Test tube (25 ml)	(1)
35.	Test tube (10ml)	(5)
36.	Filter Paper (11 cm)	(5) package
37.	Filter Paper (15 cm)	(3) package
38.	Computer	(1)
39.	Epson Printer (L-360)	(1)
40.	Small Table	(15)
41.	Big Table	(2)
42.	Chair	(12)
43.	Basin	(1)
44.	Aircon	(3)
45.	Whiteboard	(1)
46.	Aluminium Cabinet	(5)
47.	Cabinet	(3)
48.	Generator (7.5 Hp)	(1)