APPENDIX 3

IMPLEMENTATION OF THE PILOT PROJECTS

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APPENDIX 3 IMPEMENTATION OF THE PILOT PROJECTS

1. Proposed Pilot Projects

1.1 Obejectives of the Pilot Projects

The Pilot Projects will be implemented with the objectives below:

1) To examine the relevance of the draft Master Plan by verifying the relevance of the implementation organization and the farmers' organizations and the characteristics of the village society through implementing small-scale projects
2) To obtain lessons towards the implementation of the future projects

The basic concept of this Master Plan is to formulate plans for rural development for small-scale farmers through the activities such as introducing agricultural produce and varieties, post-harvest preservation, value addition by processing based on the needs of markets. Along with the basic concept, the draft M/P has proposed the development programs and action plans by stage of input/production, post-harvest, and sales in order to improve the livelihood of small-scale farmers in the Project area.

Some of the activities proposed in the draft M/P are selected to implement as a pilot for the purpose of verifying the relevance of the implementation body and supporting arrangement, and obtaining lessons for the future implementation of the projects. The following are the basic policies for verification and for obtaining lessons:

Verification: To examine the role of administration (agriculture cooperative and extension services) and farmers' organizations for the extension of the development activities throughout the Governorate in the future.

The Pilot Project should not end only as a pilot, but provide the knowledge to plan toward extending the beneficial activities throughout the Project area in the future. In the Pilot Projects, we will examine the relevance on the form of group of farmers to implement the activities and the role of administration, namely the administration for agriculture cooperative and extension services from the viewpoint of future extension of the projects toward the Governorate.

Obtaining Lessons: try to learn from various aspects through the implementation of diverse activities

We will try out a variety of activities, which are assumed to contribute to rural development through improving marketing of agricultural produce in order to get lessons from aspects as wide as possible. The Pilot Projects will hence include the activities proposed in each stage of value-chain, namely the input procurement/production, post-harvest, and sales, so that lessons for formulating the plan to contribute to improving the livelihood of small-scale farmers will be obtained from each stage. Also similar components will be implemented not in a village but in a few so that we can evaluate the pilot activities by comparison.

1.2 Process of Pilot Selection and Selection Criteria

The following is the process of selecting Pilot Projects:

1) Identification of Constraints and Potentials based on outline survey and formulation of the draft M/P
2) Setting criteria of Pilot selection

3) Plan the contents of the Pilot basically on the focused crops and in the villages selected in the course of the outline survey and M/P formulation in line with the selection criteria

Selection criteria of Pilot Projects are set based on the objectives of the Project as follows:

- It corresponds to the issues identified in the survey and also the short term plan of the draft M/P
- It should include activities related to improving marketing of agricultural produce
- Target should be the small-scale farmers (basically farmers with less than 3 feddan of cultivated area in Old Land and 5 feddan in New Land)
- Activities possible to implement within the pilot period of 14 months (one summer crop and one winter crop)
- Activities to be expected to extend outside the Pilot site in the future
- Activities possible in the villages and focused crops selected in the course of the outline survey

1.3 Selection of Pilot Projects and Villages

1.3.1 Category of Pilot Projects

The Pilot Projects are selected in the following categories based on the selection criteria and the constraints and potential of the target area:

1) Strengthening of Agriculture Cooperative and Extension Services for supporting the improvement of marketing of agricultural produce
2) Reducing loss and adding value through post-harvest processing
3) Selling produce at a high price by quality improvement and off-season cultivation
4) Promoting horticulture crop and marketing for the small-scale farmers

The following are the basic concepts of each category:

1) Strengthening of Agriculture Cooperative and Extension Services

There have been a lot of small traders at village level. These traders have an important role to deliver the produce from the farm to the market. However, the multiple transactions between the traders make the share of producers low, or another case is that few traders control the trade of produce and small-scale farmers also rely on them so that their negotiation power becomes less. There is lack of information for small-scale farmers to seek for other channels of marketing and prices to make them feel fair. It is proposed to collect market information such as wholesale price and the list of traders and disseminate them to small-scale farmers to contribute to their negotiation with traders.

Also it is proposed to try an activity of collecting and shipping agricultural produce by village cooperative to expand the marketing channel of small-scale farmers. According to the law, agriculture cooperative can engage in marketing activities, but in the actual situation the cooperatives are only engaged in input procurement and distribution of traditional crops (wheat, maize) in a little part. Agriculture cooperative is a private entity according to the cooperative law but the government officers are attached to the cooperative to supervise their activities. Under the support of these officers, the collection and shipping of agricultural produce by cooperative will be tried. Also to implement the activities, extension engineers will be trained.

2) Reducing loss and adding value through post-harvest processing
3) Selling produce at a high price by quality improvement and off-season cultivation

There are regions in which some specialty crops have been cultivated. In such regions, small-scale farmers have also been engaged in cultivating specialty crops and the basis of marketing specialty crops have been established. However, there is still room for improving their income through quality improvement, reducing loss at post-harvest processing, processing low grade produce, empowering negotiation of farmers with traders, etc. The Pilot aims at increasing income of farmers through such improvement. In this Project, we have selected garlic, potato and onion in Minia and tomato, basil and pomegranate in Assiut as focused crops from villages of the more than 20 we have surveyed. In the villages of focused crops, it is proposed to implement some activities from the stage of production to sales based on the needs of markets to contribute to improving the livelihood of small-scale farmers.

4) Promoting horticulture crop and marketing for the small-scale farmers

When we look at the land holding of small-scale farmers in the Project area, the share of farmers with less than 1 feddan (0.42ha) of cultivated land is 60.7% in Minia and 76.9% in Assiut, while those with the land holding from 1 feddan to 3 feddan are 25.8% in Minia and 12.4% in Assiut. Among the farmers with less than 1 feddan, 60% to 70% of them hold less than a half feddan in villages. These small-scale or micro-scale farmers rather concentrate on cultivating traditional crops such as wheat, maize, and berseem and allocate their produce to their self-consumption, selling the surplus. Their farming is rather defined as subsistent farming. These farmers rely on livestock and off-farm income, but the animal production is at a self-sufficient level and off-farm job opportunities are not constant and stable. Therefore, to improve the profitability of their land is still an important measure for increasing their income.

A considerable number of the small-scale farmers in the Project area is actually relying on the traditional crops and is not engaged in production and sales of profitable crops such as vegetables as a mean of increasing their income. It is desirable that this Master Plan should include activities to bring benefit to such subsistent micro-scale farmers, who would share half of the small-scale farmers. This Pilot aims at facilitating an option for small-scale farmers to increase their income, which is to promote the transfer from subsistent farming to commercial farming even in a small-scale farmland by cultivating profitable horticulture crops.

Table 1.3.1 Master Plan and Pilot Project

Development Tactics	Project		Pilot	
Acquiring market information to utilize for farming and sales	1-1	Establishing a Market Information System Project	○	Activities for Public administration support in Governorate agricultural office
Expanding market channels	1-2	Supporting Small Scale Farmers to Expand Market Channels Project	○	Marketing, collection and shipping of Produce by Cooperatives
	1-3	Facilitating Collection Places in Villages Project	–	(1)
	1-4	Facilitating Community Markets Project	–	(1)
Adding value to produce	2-1	Promoting Primary Agricultural Processing (adding value to produce)	○	Cottage factory for processing in villages (onion, vegetables, etc.)
	2-2	Promoting Processing Products Project (Converting Useless Crops to Useful)	○	Improving the drying process to reduce post-harvest loss (Basil)
Improving quality of produce	2-3	Establishing Post-harvest Facilities Project	○	Cottage factory for processing in villages (tomato and pomegranate)
	3-1	Seed and Seedling Production and Distribution System Improvement Project	○	Demonstration for certified seeds (onion)
	3-2	Fertilizer and Agro-chemical Distribution System Improvement Project	○	Demonstration for bio-fertilizer
	3-3	Quality Improvement Project	○	Demonstration for new variety (Garlic)
Harvesting in off-season	3-4	Cropping Pattern Adjustment Project	○	Shipping adjustment through intercropping (potato and summer tomato) (demonstration farm)
Promoting profitable crops	3-5	Horticultural Crop Production Promotion Project	○	Promoting horticulture crops throug intercropping (demonstration farm)
Promoting above tactics, providing support for training for farmers' awareness, promoting cooperation, improvement of technical skills and access to financial resources.	*4-1*	*Supporting Capacity Development of Farmers' Organizations*	*O*	*Activities through above projects*
	4-2	*Strengthening of Extension Services based on needs of farmers and consumers*	*O*	*Activities through above projects*
	4-3	*Support for improvement of agricultural financial accessibility*	–	

(Remarks)
(0) The pilot project is planned by selection of villages and important crops.
(1) Development of processed products and quality enhancement is first priority for the pilot projects; thus, the pilot project does not include collection places and community market.

1.3.2 Selection of Pilot Villages

The villages to implement the Pilot Projects have been selected basically from the ones in which the field survey was conducted. In IMPA, the Team conducted a survey to understand the common issues of the usual (typical) villages in the Project area from the rural development point of view to position the improving marketing of agricultural produce for small-scale farmers. For this purpose, 3 usual (typical) villages in each Governorate (total 6 usual [typical] villages) were selected through the workshops with Governorate and District officers. In these 6 villages, workshops with villagers were carried out.

Also in the workshops of the Governorate and District officers, some potential villages for marketing were selected and around 15 villages in the two Governorates were surveyed. Based on the survey, focused crops were selected at the meeting with the Governorate and District officers. Garlic, potato and onion in Minia and tomato, basil and pomegranate in Assiut were selected as focused crops. Village workshops were held in the ones having such focused crops.

The Pilot Projects have been designed for the above-named villages as candidates considering the feasibility of the project in the candidate villages. In the villages of focused crops, the activities of improvement at the stage of input/production and post-harvest processing have been planned based on the characteristics of the crops and the needs of farmers in each village.

As for usual (typical) villages, most of the small-scale farmers are concentrating on traditional crops

such as wheat, and commercial farming is stagnant. Based on such a situation in the usual (typical) villages, the category of "4) Promoting horticulture crop and marketing for the small-scale farmers" will be applied. Among the usual (typical) villages, it has been found that one of them (El Ansar Village in Assiut) has a relatively large cultivated area of tomato. For this village, the category of "3) Selling produce at a high price by quality improvement and off-season cultivation" will be applied.

	Input / Production	Post-harvest	Sales (Marketing)
Activities assumed effective and can be extended to the other areas	Sell at high price by quality improvement Sell at high price by off-season cultivation Promoting horticulture crop and marketing	Reducing loss and value addition to excess produce Adding value to low grade produce by processing Reducing loss by improving post-harvest processing	Market Information Dissemination Marketing by Cooperative
Activity point	Demo-farm	Place to install processing equipment	① Governorate Directorate ② Village Cooperative
Direct Beneficiary	Demo-participants and farmers around	Farmer groups to use the equipment	① Farmers to receive information ② Farmers to ship to cooperative
Farmers' Organization	Small farmer group to join in demo	Farmer groups to use the equipment	Agriculture cooperative
Supporting Organization	Extension: technical training Agr. Administration: Market information	Agr. Administration: Supervision Extension: technical training	Agr. Administration Extension
What to verify	To verify the implementation set-up to collaborate with research, extension and cooperative in supporting small-scale farmers to sell their produce at good price.	To verify the role of administration to support establishing the small scale business of processing by the farmer group	To verify the role of administration to support improving the marketing and production of small-scale farmers

Pilot Activities by Stage and What to Verify

1.4 Outline of the Proposed Pilot Projects

1.4.1 Proposed Pilot Projects

	Project	No. of Village	
		Minia	Assiut
1	**Strengthening Agriculture Cooperative and Extension Services**		
1-1	Market Information Collection and Dissemination Service		
1-2	Marketing (Collection and Shipping) of Produce by Cooperative		
2	**Promoting Post-harvest Improvement and Processing**		
2-1	Processing and Marketing of Excessive and Low Grade Produce (Pomegranate, Winter Tomato and Vegetables: Cottage Factory for Processing)	(1) same village as 3-1	2
2-2	Reducing Post-harvest loss and Quality Improvement (Basil: Establishing Improved Drying Facility)	—	1
3	**Improving Profitability of Specialty Crops through Production Improvement**		
3-1	Increasing Profitability through Quality Improvement (Garlic, Onion: Introducing improved variety and advanced cultivation method)	2	—
3-2	Increasing Profitability through Selling Produce in Off- season (Potato: Introducing intercropping with maize) (Summer Tomato; Introducing intercropping with maize)	1	1
4	**Promoting Horticulture Crop and Marketing to the Small-scale Farmers (Introducing intercropping of vegetables with maize)**	3	2
	Total No. of Village	6	6

1.4.2 Proposed Pilot Projects: Outline

	Project	Outline
1	**Strengthening Agriculture Cooperative and Extension Services**	
1-1	Market Information Collection and Dissemination Service	To help farmers negotiate with traders, Project is to facilitate the extension/cooperative marketing section to provide market information to farmers, e.g. prepare list of traders, market price information and provide them to farmers, utilizing the mobile SMS system or a billboard put in the cooperative office.
1-2	Marketing (Collection and Shipping) of Produce by Cooperative	In order to revitalize the cooperative and expand marketing channel of farmers, collecting the produce from small-scale farmers and selling them to market by agriculture cooperative is tried or in the pilot project sites of the agro-processing below, assist the concerned cooperatives to selling the products (provide scale, and plastic containers).
2	**Promoting Post-harvest Improvement and Processing**	To increase profit by reducing post-harvest loss
2-1	Processing and Marketing of Excessive and Low Grade Produce (Pomegranate, Winter Tomato and Vegetables: Cottage Factory for Processing)	To process excess winter tomato to pure or sauce when the supply of tomato is much and the market price goes low, otherwise such excess would be left on the field. Also to process vegetables in the village and sell the products in the village or vicinity. Introducing processing equipment to be managed by farmer group.
2-2	Reducing Post-harvest loss and Quality Improvement (Basil: Establishing Improved Drying Facility)	Basil (aromatic plant) has an issue of post-harvest loss during drying process and also degradation quality. Project is to introduce to improved drying system to reduce the loss and improve the quality of products to sell at high price.
3	**Improving Profitability of Specialty Crops through Production Improvement**	Project supports to improve cultivation methods to increase income of small-scale farmers in the area some specialty crops have been widely grown, hence there is a basis for marketing.
3-1	Increasing Profitability through Quality Improvement (Garlic: Introducing new variety and advanced cultivation method)	To sell produce at high price by quality improvement of crops through introducing new variety, and advanced cultivation method. Demo-farm activities are implemented.
3-2	Increasing Profitability through Selling Produce in Off- season (Potato: Introducing intercropping with maize) (Summer Tomato; Introducing intercropping with maize)	To sell produce at high price in off-season by early harvesting or extending harvesting period. Intercropping of potato with maize and tomato with maize are introduced to realize this. Demo-farm activities are implemented.
4	**Promoting Horticulture Crop and Marketing to the Small-scale Farmers (Introducing intercropping of vegetables with maize)**	Majority of farmers are small-scale and cultivate mostly traditional crops and very little profitable horticultural crops. Project promotes intercropping of vegetables with maize so that farmers can cultivate vegetables in a small land without giving in all of maze crop. Demo-farm activities are implemented.

1.4.3 Outline of the Pilot Projects

Project 1	Strenthening Extension Services and Agricultural Cooperatives for Marketing Improvement

(1) Project Sites

This project is based in the Governorate Agriculture Directorate in cooperation with the District Agriculture Offices and Village Cooperatives in the Pilot Sites.

(2) Background

The issues of sales/marketing of agricultural produce are summarized into a voice of small scale farmers saying that "they cannot sell their produce at good price". Based on the workshops at villages and the field survey of the Study Team, the following constraints relative to the selling system have been identified as: multiplicity of traders without value addition, deficiency of marketing information system, weakness of marketing organization of farmers, physical condition, organization, facilities and marketing services of markets.

After the liberalization of the agriculture sector in the 1980's, the business of trading agricultural produce has been developing and there have been a lot of small traders at the village level, too. These traders have an important role to deliver the produce from the farm to the market. However, the multiple transactions between the traders make the share of producers low, or another case is that few traders control the trade of produce and small scale farmers also rely on them so that their negotiation power becomes less.

There is lack of information for small scale farmers to seek for other channel of marketing and prices to make them feel fair. Collective activities of small scale farmers are rare at the present situation. Role of agriculture cooperative for marketing has been declining since the liberalization, though the cooperative can engage in marketing activities according to the law.

On the other hand, we also see the potential of improving the system of sales by small scale farmers. Existing cooperative and extension network throughout the rural area is still important as an agent of the supporting activities of the Government to the villages.

(3) Concepts to Verify by the Project

<u>Market Information Collection and Dissemination:</u>

Supporting livelihood improvement of small scale farmers, administration capacities for agricultural marketing at the Governorate, Districts, and Cooperatives levels are reinforced. Market price and buyers' information will be collected and distributed to farmers to create their bargaining power. Increasing sales channel of small scale farmers, the project will support village cooperatives to conduct collective shipment. Also, technical training for extension engineers is implemented in order to promote activities effectively

The project supports farmers in being able to deal with buyers based on the market information. Market information and a list of traders are provided to farmers through the Governorate, District, and Agricultural Cooperatives. At the village level, governmental information is basically distributed from person to person via agricultural cooperatives. Using mobile SMS and installing bulletin boards in Agricultural Cooperatives are considered to distribute information effectively and efficiently.

Distribution flow will be considered from the Governorate level to farmers and other relevant people.

Collection and Shipping by Cooperative:

The Project is to assist agriculture cooperative to try to collect produce from small scale farmers and sell them to the market or to assist the cooperatives of the project to implement the agro-processing in this Pilot Projects to sell the processed products. This activity is to revitalize the cooperative and also expand the market channel of the farmers. The governmental staffs in agricultural cooperatives support these cooperatives activities.

For the cooperatives of the pilot sites for agro-processing, the cooperatives are to sell the products through the network of the cooperatives etc. In Minia, among the pilot sites of the production improvement, one cooperative would be selected and assist it to make agreement between farmers and cooperative that the cooperative will rent a truck to collect and sell the produce to the market.

Means and structure of administrative support for agricultural marketing improvement are verified through the project.

(4) Outline of the Project: Strengthening Agriculture Cooperative and Extension Services

Project Purpose	Livelihood improvement for small-scale farmers through improving marketing of agricultural produce		
Output	Activities of Governorate Agricultural Department, Cooperatives, and Extension Department contribute to agricultural marketing improvement of small scale farmers.		
Activity		Time	Role of Stakeholders
1.Market Information			
1-1Identifying useful information		2011.4	Discussion and decision with C/P and Study Team
1-2Designing data collection method		2011.4	Discussion and decision with C/P and Study Team. Assign in charge
1-3 Procuring equipment		2011.5	Procurement of equipment by Study Team
1-4Making information database		2011.5 ～ 2011.4	Data collection. C/P in charge will make database. Assistant for data collection will be allocated by the Study Team
1-5Disseminating information			C/P disseminates information to villages through existing line (Governorate →District→Village cooperative) or trial of sending SMS. Billboard will be tried to put in cooperative.
1-6Monitoring and evaluation of information dissemination			C/P and Study Team will follow up the effects of the activities: collect opinions of farmers periodically and improve the contents of information.
2.Marketing by Cooperative			
2-1 Selection of cooperative		2011.5	Selecting the cooperative to try the collection and shipping of the produce among the Governorate, District and village cooperatives (Minia)
2-2 Cooperative is to make agreement with farmers for selling produce		2011.5-8	Governorate and District assista the cooperative to make agreement with farmers for selling produce.
2-3 Collection of produce and shipping by cooperative		2011.9 -	The cooperative will collect and ship the roduce based on market information (commission for the cooperative is subtracted from the sold amount). Study Team will provide plastic containers and weighing machine.
2-4 Cooperative is to sell processed products		2011.9 -	The cooperatives concerned with the agro-processing in this Pilot Projects will sell the products using the network of cooperatives etc.
Inputs	Equipment for data collection and distribution (Personal computers and cell phones), materials for marketing activities (boxes and scale), training		
Risks and how to avoid	Relevance and effectiveness of collected information. Obtaining feedback from farmers in short cycle and improve the contents of information.		
Monitoring and evaluation	To evaluate the relevance and efficiency of information collection and dissemination by the government administration. Also to monitor and evaluate whether farmers are able to improve their transaction situation using the information or to sell their produce to the new marketing channel. Lessons will be recorded through the activities.		
Benefits and how to extend	The benefit of the Project is improvement of selling capacity of farmers. If it is successful, expansion of the activities to increase cooperatives and farmers to receive information will be expected. Cooperation with the Central administration to increase ability of information collection by the Governorate Agriculture Directorate would be required.		

Project 2-1	Post-harvest Improvement and Processing Promotion (Value add processing to surplus and low grade agricultural produce: Pomegranate, Tomato, and other Crops)

(1) Project Sites

Pomegranate: Assiut Governorate, El BadaryDistrict, El Egal El Bahry Village

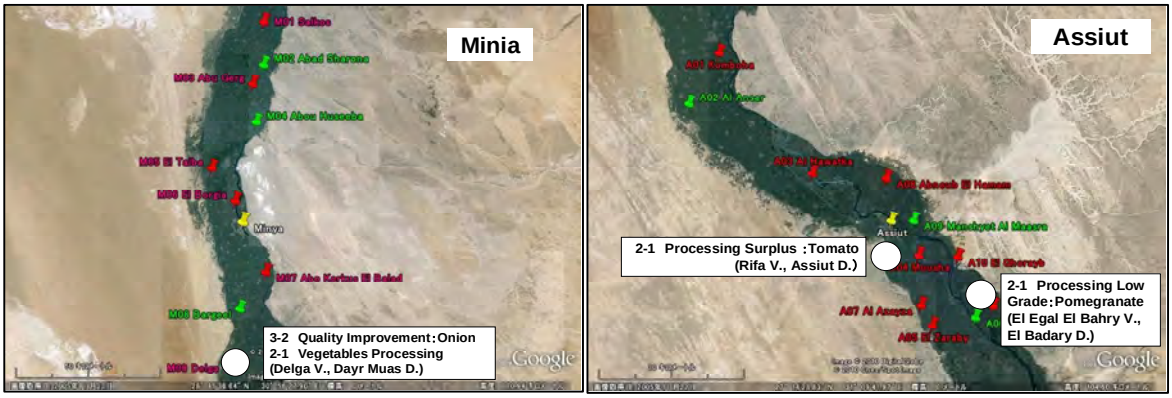
Population	Total 23,733 (4,000 households)
Farmland	Total 1,810 fed, (1,616 fed in old land, 194fed in new land)
Main crops	Pomegranate 700 fed, Citrus 155 fed, Wheat 500 fed, Maize 500 fed, Sorghum 260 fed, Berseem 260 fed
Remarks	No. of Pomegranate farmers: 283 (recorded number) (70% of them is less than 1 fed). It is said the number is increasing to reach 600.

Tomato: Assiut Governorate, Assiut District, Rifa Village

Population	Total 15,355 (3,000 households)
Farmland	Total 4,602 fed (4,587 fed in old land, 15 fed in new land)
Main crops	Maize 2.450 fed, Wheat 2,300 fed, Sorghum 1030 fed, Berseem 930 fed, Tomato 750 fed, Onion 600 fed, Vegetables 500 fed
Remarks	

Onion and Other Vegetables: Minia Governorate, Dayr Muas District, Delga Village

Population	Total 120,000 (24,000 households)
Farmland	Total 10,000 fed (7,000 fed in old land, 3,000 fed in new land)
Main crops	Wheat 3,500 fed, Beans 3,000 fed, Maize 2,000 fed, Onion 1,500 fed, Medical & Aromatic Plants 1,200 fed, Summer Vegetables 1,200 fed, Winter Vegetables 700 fed
Remarks	



(2) Background

Pomegranate:

South east region of Assiut Governorate is well known for pomegranate. The harvested area has increased from 2,495feddan in 2005 to 3,917feddan in 2008. The cultivated area of pomegranate including immature trees in 2008 reaches 5,923feddan, which occupies 74% of total cultivated area of the country, while the harvested area and cultivated area in Minia in 2008 are 67feddan and 115feddan respectively. The unit yield in Assiut is as high as 10.6t/feddan compared to the national average of 8.7t/fed and the share of production in Assiut becomes 87% of the country in 2008.

El Egal El Bahry village in El –Badary District is located in the middles of the pomegranate region. Pomegranate has been produced in 700feddan out of the total cultivated area of 1,800feddan in the

village. It is also said that around 400feddan are under the cultivation of pomegranate. Farmers grow maize between pomegranate trees until the tree grows up to close the sky. Harvesting period of pomegranate is from September to the beginning of November.

Crop	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Pomegranate									Harvesting			
Crop	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Pomegranate is graded into five classes. About 20% to 25% are graded into Class 1 and Class 2 and they are exported to Europe. On the other hand, around 30% is graded into Class4 and Class 5. These low grade produce are sold at local markets with cheap price or thrown away. The grade of pomegranate is judged by the color, spots, or size, though the taste does not differ by grade. This pilot project aims at adding value to such low grade produce by processing.

Tomato:

Tomato is the most important vegetable in the governorates in terms of volume of production and consumption. Planted area of tomato is the largest among the areas of vegetables. In case of Assiut governorate, Tomato planted area was 9,549 feddan in the winter of 2008/09 and 4,688 feddan in the summer of 2009.

There are 4 major cropping types of Tomato in the area, as shown below.

1) Early Summer Tomato: Planting in February, Harvesting in May to June (max. to Sept.)
2) Summer Tomato: Planting in April, Harvesting in July to August (max. to November)
3) Nile Tomato: Planting in August, Harvesting in November to December (max. to March)
4) Winter Tomato: Planting in September, Harvesting in December to January (max. to April)

Crop	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Tomato-1 (Early Summer)		Sowing	(Transplanting)		Harvesting							
Tomato-2 (Summer)												
Tomato-3 (Nile)												
Tomato-4 (Winter)												
Crop	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Onion and Other Vegetables:

Egypt produced about 1 million tons of Onion as a basic vegetable, and total cultivated area of onion was 108,718 feddan in the country in 2005. In Minia and Assiut governorates, cultivated areas of onion were 5,152 feddan and 5,669 feddan, respectively. In Delga Village, Dyre Muas District, Minia Governorate, there are various vegetables grown such as tomato, pepper, eggplants etc. as well as onion. Onion is harvested twice per year and stored after the peak harvest season, but there is loss during the storage. There are pickles factories in and around the village. To promote local production and local consumption, primary processing of vegetables and other crops as well as onion could be promoted.

(3) Concepts to Verify by the Project

The project is to process tomato and other vegetables cultivated broadly in the target areas. A large quantity of winter tomato is not harvested in the field because supply is much higher than demand. Therefore, the project tries to process tomato which will be a loss to produce tomato paste. Also, other vegetables which will be a loss are processed, such as dried.

Although the inside of fruits such as low grade pomegranate are the same as high grade pomegranates, it is difficult for farmers to sell low grade pomegranates. This is because pomegranate is categorized by the appearance. Low grade pomegranate is about 20% to 30% of the total production. Therefore, opening low grade pomegranate to extract inside fruits, and sell pomegranate arils with vacuum packing is preferred.

Processing machines are introduced to agricultural cooperatives, and they manage these machines. It is expected that small farmers' groups use these machines to process unmarketable production and sell processed products to the local market. The rate of operation and the number of benefits to farmers will be increased by increasing the items to be processed, increasing the number of small groups or enlarging groups.

The role of governmental administration for managing processing machines, organizing farmers, and supporting small scale processing business will be verified.

(4) Outline of the Project: Value add Processing to Surplus and Low Grade Agricultural Produce

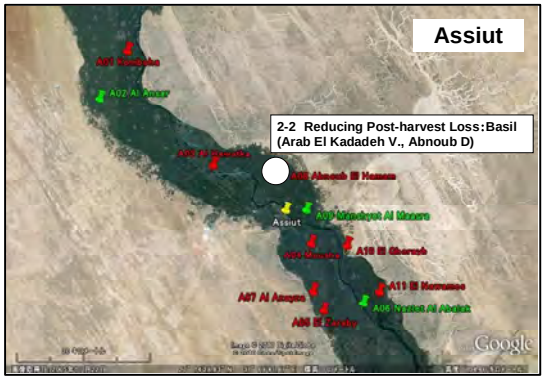
Project Purpose	Livelihood improvement for small-scale farmers through improving marketing of processing agricultural produce		
Output	Unmarketable agricultural produce has added value by processing.		
Activities		Time	Role of Stakeholders
1-1 Assessment of present situation		2011.3	Planning production area, volume to collect, where to sell, price etc. by the stakeholders
1-2 Establishment of farmer group		2011.3	Establishing farmer group through village cooperative by the supervision of Governorate and District
1-3 Selection of place to install unit		2011.3	Confirmation of the place to install processing unit
1-4 Furnishing the unit and equipment procurement		2011.4 – 6	Furnishing the unit and equipment provision by the Study Team
1-5 Preparing operation methods and rules		2011. 4 – 6	Decide the operation rules by the group assisted by Governorate, District and Village cooperative
1-6 Training to farmer group		2011.6	Study Team facilitate training to farmer group (inviting trainers)
1-7 Operation		2011.7-	Operation by the farmer group supervised by Governorate, District.
1-8Monitoring and evaluation		2011.7-	Periodical monitoring and evaluation by Governorate, Disrict
Inputs	Processing machines, place for machine installation, plastic bags, and training materials		
Risks and how to avoid	There are business risks such as production cost and sales amount of processed products. Increasing participants will be concerned to enhance operating ratio and increase sales channel.		
Monitoring and evaluation	The process from establishing group, processing unit and operation and management of the unit will be monitored and evaluated. Lessons through the process will also be summarized. The profitability of the business as small-scale unit in village will also be examined.		
Benefits and how to extend	Benefit of the project is income enhancement of small-scale farmers. Rural entrepreneur support will be established at the Governorate and District Agricultural Offices based on this project.		

Project 2-2	**Post-harvest Improvement and Processing Promotion (Increasing profitability through reducing post-harvest loss and quality improvement: Basil)**

(1) Project Site

Basil: Assiut Governorte, Abnoub District, Arab El Kadadeh Village

Population	Total 14,433 (2,500 households)
Farmland	Total 845 fed (570 fed in old land, 275 fed in new land)
Main crops	Wheat 400 fed, Maize 400 fed, Sorghum 218 fed, Basil 156 fed, Berseem 10 fed, Vegetables 48 fed
Remarks	No. of Basil producer is around 70 households (ave. crop area = 2.2 fed)



(2) Background

Upper Egypt is well known for medical and aromatic plants. Basil is intensively produced in Assiut Governorate. The cultivated area of basil in Assiut in 2008 is 2,550feddan, which occupies 54% of the total cultivated area of 4,709feddan in the country. Basil is especially grown in Abnoub District situated in the south east region of Assiut, where the soil conditions suit basil. Basil seeds are sown in April and transplanted in May and the harvest starts from June. Basil can cut five times from June to November. Farmers use self-fertilized seeds less regards to variety, but the pests and disease are not occurred much and therefore grown without pesticides.

Crop	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Basil				Sowing	Transplanting			Growing / Harvesting				
Crop	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Farmers dry basil and sell them to the primary processing factory in the village since there is very limited market for fresh basil. Farmers practice sun drying on their farmland or public land in the nearby desert land. As they dry basil directly on the land, loss during drying process reaches 25% and quality is also lowered. Hence the farmers have to sell the produce at low price. The Pilot aims at reducing post-harvest loss and improving quality by improving drying process and farmers' cooperative work.

(3) Concepts to Verify by the Project

According to farmers, loss of basil during drying process seems to reach around 25%. Improving this situation, the project tries to increase profitability and quality of basil by improving drying process. Currently, farmers dry basil on the ground directly such as farm filed and public places (desert). The problem of loss will be tacked by laying dry yard and using kafas. Also equipment to remove leaves from stem will be introduced to operate by farmers so that they can sell basil at value added price.

Concrete will be laid on the public dry yard (desert), and this concrete dry yard will be a common

drying place for bail farmers. Farmers will be able to produce same quality dried basil through collective drying process, and sell it to first processors collectively.

Possibility of organizing farmers and collective shipment activities is examined through the project. In addition, adequacy for introducing common concrete dry yard is verified as a public investment. Output of this project is also expected to refer to other medical and aromatic plants.

(4) Outline of Project

Project purpose	Livelihood improvement for small-scale farmers through improving marketing of agricultural produce (Post-harvest improvement)		
Output	Profitability of basil will increase by improving drying process, enhancing production quality and shipping collectively.		
Activity		Time	Role of Stakeholders
1-1 Establish farmer group		2011.3	Forming farmer group based on the village cooperative supervised by Governorate and District Agriculture Offices.
1-2 Identification of the site to lay drying yard		2011.3	Confirmation of the site. Governorate Agriculture Office will get permission from the Governor.
1-3Construction of drying yard		2011.4 – 6	Construction of the drying yard and provision of equipment by the Study Team
1-4 Preparing operation rules		2011. 4 – 6	Preparing the operation rules by farmer group (cooperative), District and Governorate Agriculture Offices.
1-5 Trial by farmer group		2011.6	Trial use of the facility by the farmers supervised by Governorate and District Agriculture Offices
1-6 Operation of the facility		2011.7-	Operation by the farmer group and supervision by the Governorate and District Agriculture Offices.
1-7Monitroing and evaluation		2011.7-	Periodical monitoring and evaluation
Inputs	Concrete dry yard, materials (kafas, separators and others)		
Risks and how to avoid	Adequate management of the shared dry yard. Leadership of districts and agricultural cooperatives is necessary to manage the shared dry yard.		
Monitoring and evaluation	Benefit of farmers by reducing loss and quality improvement through drying improvement will be evaluated. Also the way of operating public drying yard in order to bring benefit to as many as farmers will be monitored and evaluated.		
Benefits and how to extend	Benefit of the project is income enhancement of small-scale farmers. Economic efficiency is verified through this project, and facility management by potential beneficiaries will be examined.		

Project 3-1	Increasing Profitability Project through Cultivation Improvement: Quality Improvement for Selling Higher Price (Introducing Improved Variety and Cultivation Method: Garlic and Onion)

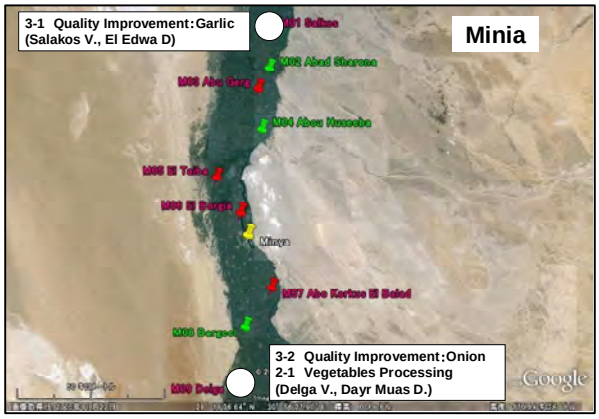
(1) Project Site

Garlic: Minia Governorate, El-Edwa Disrict, Salakos Village

Population	Total 20,000 (6,000 households)
Farmland	Total 1,542 fed, all in old land
Main crops	Wheat 1,060 fed, Maize 900 fed, Soybean 375 fed, Garlic 300 fed, Berseem 200 fed, Cucumber 200 fed
Remarks	

Onion: Minia Governorate, Dayr Muas District, Delga Village

Population	Total 120,000 (24,000 households)
Farmland	Total 10,000 fed (7,000 fed in old land, 3,000 fed in new land)
Main crops	Wheat 3,500 fed, Beans 3,000 fed, Maize 2,000 fed, Onion 1,500 fed, Medical & Aromatic Plants 1,200 fed, Summer Vegetables 1,200 fed, Winter Vegetables 700 fed
Remarks	



(2) Background

Garlic:

Garlic is a specialty crop in the northern part of Minia governorate. According to 2005 statistics, the cropped area of garlic in Minia was 8,431 feddan, which was 32 % of the 26,028 feddan in the whole country. Beni Suef and Minia governorates are the garlic production area. The garlic cropped area in Assiut was only 322 feddan.

The cropped area of garlic in 2009/10 was 10,883 feddan in Minia governorate. Major producing districts were Beni Mazar (3,661 feddan), Samallout (1,823 feddan), Maghagha (1,745 feddan) and El-Edwa (1,435 feddan). They are located in the northern part of Minia governorate.

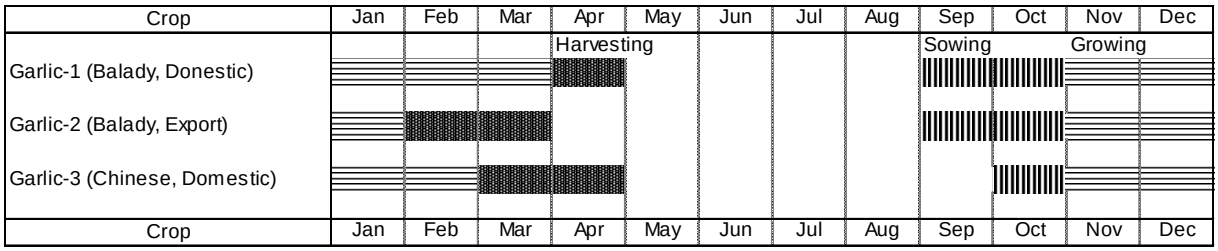
Salakos village in El-Edwa district is famous in garlic production. Garlic was introduced in this village in 50 years ago. The garlic production area is about 300 feddan, which is equivalent to 20 % of the total farmland area of the village. The number of garlic producers is 200 to 400 among about 3,000 village farmers. There are also 25 garlic traders in the village.

The main varieties of garlic in the area are Balady (Arabic word meaning "local") and Chinese. In Salakos, the share of Balady and Chinese was 60 % and 40 %, and no other varieties are cultivated.

There are 3 cropping types of garlic in the area, as shown below.

1) Balady (mature): Sown in September to October, Harvest in April, mature garlic mainly for domestic market

2) Balady (immature): Sown in September to October, Harvest in February to March, immature garlic (baby garlic) mainly for European market
3) Chinese (mature): Sown in October, Harvest in March to April, Mature garlic mainly for domestic market



In 1990s, a new variety of garlic, Sids-40 was developed at Sids Agricultural Research Center in Beni Suef governorate. Its characteristics are quite advantageous compared with Balady variety.

	Sids-40	Balady
Market (Mature)	Export (Europe), Local	Export (Arabian countries), Local
Market (Immature)		Export (Europe)
Yield	10 - 12 ton/fed (fresh) 5 – 7 ton/fed (cured)	12 - 14 ton/fed (fresh) 5 - 7 ton/fed (cured)
Vegetative growth	70 cm	100 - 110 cm
Price	5 LE/kg (fresh) 15 LE/kg (cured)	3 LE/kg (fresh) 8 LE/kg (cured)
Clove	10 - 15 clove/bulb 5 – 7 g/clove	40 - 60 clove/bulb 0.8 - 1.2 g/clove
Clove seed	400 kg/fed	250 kg/fed
Disease control	More	Less

Note: Characteristics of Chinese garlic are intermediate of them.

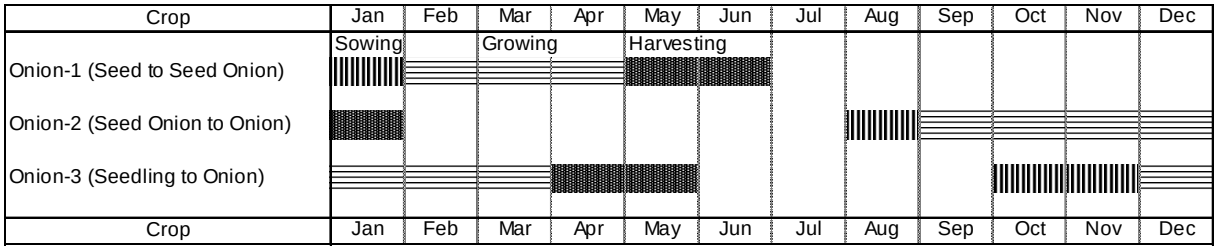
This project aims at promotion of new garlic variety Sids-40, which has higher performance and better marketing condition.

Onions:

Egypt produced about 1 million tons of Onion as a basic vegetable, and total planted area of Onion was 108,718 feddan in the country in 2005. In Minia and Assiut governorate, planted area of Onion was 5,152 feddan and 5,669 feddan, respectively.

There are 3 major cropping types of onion in the area, as shown below.

1) Seed to Seed Onion: Sown in January, Harvest in May to June, seed onion can be used for pickles
2) Seed Onion to Onion: Sown in August, Harvest in January
3) Seedling to Onion: Sown in October to November, Harvest in April to May



The Field Crops Research Institute (FCRI) in Giza has developed fine varieties of Onion. As a result, yield of Onion has increased from 5 ton/fed in 1982 to 13.6 ton/fed in 2010 in Egypt. The major

varieties are Giza-6 (white), Giza-20 (yellow), Giza-White (white) and Giza-Red (red). Those seeds are produced by the FCRI and distributed by private companies after official certification. The prices of the onion seeds are about LE 150 per kg at the Institute and LE 300 at private retailers.

However, common onion producers seldom use such certified onion seeds due to high price and inconvenience of access. They have uses self-fertilized seeds by themselves or neighbors for long time. In such production manner, unfavorable crossing has made quality of onion lower. Local production of onion seeds is very difficult in terms of isolation of onion seed farm from other onion farms.

The aim of the project is promotion of certified onion seeds to existing onion producers, who use local seeds prepared by themselves. Onion from certified seeds might be higher income due to higher quality and high productivity.

(3) Concepts to Verify by the Project

Although some of the regional important corps is already formulated specialty areas, share of high quality production is decreasing. This is because adopting traditional varieties and technologies, and using self seed for a long time are main causes to devalue the production quality. Thus, the project is to introduce new varieties, seeds, and technologies to sell agricultural produce with higher price.

Regarding garlic, new variety (Sids-40) which can produce large and high quality garlic will be introduced. Also, appropriate technical training will be conducted such as using organic fertilizers and fertilization methods, and the result of quality improvement activities will be shared with other farmers. Certified seeds (Giza-6 and Giza-20, etc.) will be introduced to improve quality in of Onion. Advantages of certified seeds are shown to other farmers.

These activities are collaborated with regional research institutions to obtain new variety of seeds, conduct technical training for extension engineers, and establish demonstration farm. Technical training will be implemented to farmers who already produce these crops, and certified seeds for garlic and onion will be distributed.

This project is to verify the new technical adaptation process implemented by research institutions, extension service, and farmers' participation with examining effectiveness of the project.

(4) Outline of the Project

Project Purpose	Livelihood improvement for small-scale farmers through improving marketing of agricultural produce (Quality improvement)		
Output	Small scale farmers can sell agricultural produce with higher price by introducing new variety and improving cultivation method in specialty crop areas.		
Activity		Time	Role of Stakeholders
1-1 Selection of farmers and farmland for FFS		2011.3 ～ 2011.4	C/P, Study Team, District and village cooperative will prepare the schedule and village cooperative will select participating farmers and demo-farm.
1-2 Training for field extension workers (FEW)		2011.3 ～ 2011.4	Study Team facilitates trainings for the selected field extension workers and a few advanced farmers will be administered. Experts of Sids ARC, FCRI and Minia University will be trainers.
1-3 Procurement and supply of necessary materials		2011.8	Study Team will rent the farm for the demonstration and provide required inputs and equipment.
1-4 Preparation of demonstration farm		2011.9	Preparatory work for planting on demo-farm by village cooperative and participating farmers.
1-5 Training for farmers by FEW (cultivation, bio-fertilizer)		2011.10	Field extension workers who are trained will train farmers at the demo-farm. At the demo-farm, bio-fertilizer application will also be instructed by the expert of Minia university.
1-6 Monitoring and evaluation		2011.10 ～ 2012.4	Periodical monitoring by the farmers and field extension workers. At the harvesting time, evaluation together with the farmers in the village will be conducted and checked whether they could sell the produce at higher price.
Inputs	Technical training, support for establishing demonstration farm, and operation materials for demonstration farm (measuring devices, etc.)		
Risks and how to avoid	There is only one summer season and one winter season during the pilot project. The number of participants in demonstration farm will be increased as many as possible to avoid the risks.		
Monitoring and evaluation	Evaluate whether the produce was sold at higher price by improving the quality of the produce. Also the relevance of the implementation set-up will be evaluated through the activities.		
Benefits and how to extend	Benefit of the project is income increase of small-scale farmers. Activities on the demonstration field are expected to prevail farmer to farmer. Also, the Governorate and District agricultural offices promote the activities to other villages.		

Project 3-2	Increasing Profitability through Cultivation Improvement: Selling Higher Price with Shipping Control (Intercropping/Adjustment for Harvest Season: Potato and Summer Tomato)

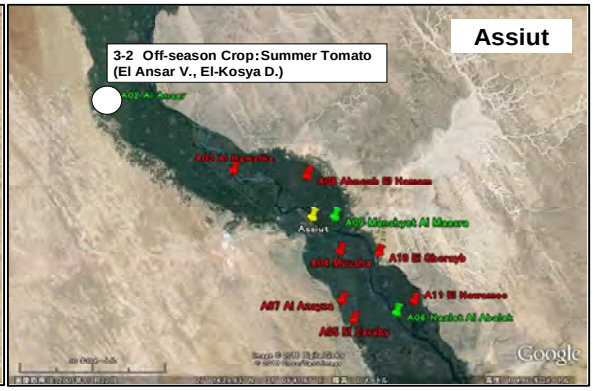
(1) Pilot Site

Potato: Minia Governorate, El-Minia District, El Borgaya Village

Population	Total 18,000 (3,500 households)
Farmland	Total 2,664 fed, all in old land
Main crops	Nile Potato 2,100 fed, Winter Potato 564 fed, Wheat 1,500 fed, Maize 1,200 fed, Berseem 600 fed
Remarks	

Tomato: Assiut Governorate, El-Kosya District, El Ansar Village

Population	Total 14,000 (4,500)
Farmland	Total 3,560 fed (2,130 fed in old land, 1,430 fed in new land)
Main crops	Maize 1,400 fed, Wheat 1250 fed, Berseem 750 fed, Winter Tomato 500 fed, Summer Tomato 250 fed
Remarks	



(2) Background

Potato:

Potato production area in Minia governorate was 26,703 feddan in 2005, sharing 9 % of the country. On the other hand, the area in Assiut was 794 feddan only. The main cropping season is autumn, so called as the Nile season.

There are 2 major cropping types of Potato in the area, as shown below.

1) Winter Potato (Imported seed potato to Potato or seed potato):
   Planting in January, Harvesting in April
2) Nile Potato (Local seed potato to Potato):
   Planting in August to September, Harvesting in November to December

Crop	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Potato-1 (Potato / Seed Potato)	Sowing			Harvesting								
Potato-2 (Potato)								Sowing			Harvesting	
Crop	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

El-Minia district is the main production area of Potato. The cropped area in 2009 to 2010 was 1,130 feddan for Winter Potato (type 1) and 6,472 feddan for Nile Potato (type 2).

El-Borgaya in El-Minia district has produced potato for more than 50 years, and became a famous village of potato production. Most of 2,000 farmers in the village plant Potato in rotation system with other traditional crops. The area of the Nile Potato is 2,100 feddan, which is equivalent to 80 % of the total farmland area. The area of Winter Potato is 564 feddan.

Producers commonly purchase imported seed potato for Winter Potato, and preserve a part of the harvested potato as seed potato for the Nile season. Rate of seed potato is 750 kg/feddan for the winter season, and 1,500 kg/feddan for the Nile season.

The farm-gate price of Potato significantly fluctuates by time, for example, LE 2,400 /kg at the end of October and LE 600 /kg at the end of November. Thus, early harvest of Potato is very profitable for producers.

This project aims at early harvest of Nile Potato by means of the intercropping technique or early-mature varieties.

Summer Tomato:

Tomato is the most important vegetable in the governorates in terms of volume of production and consumption as mentioned above Project 2-1. Yield of local varieties is 5 to 10 ton/feddan in 4 to 5 months of growing period. While, yield of hybrid varieties is 20 to 40 ton/feddan in 6 to 8 months of growing period. Thus, hybrid varieties show much higher productivity, although cost of seedlings is high (unit price of seedlings is LE 250 to 300 per 1,000 seedlings, rate of seedlings is 6,000 to 8,000 per feddan, thus seedling cost is LE 1,500 to 2,400 per feddan) (Cropping pattern of tomato is shown above Project 2-1).

The aim of the project is elongating of harvest period of Early Summer Tomato and Summer Tomato by using intercropping technique.

(3) Concept to Verify by the Project

Some large scale productions are already formulated distribution channel; however, prices dropped severely during their shipping peak. This means that controlling harvest and shipment is important for farmers to sell their produce at higher prices. Hence, this project is to introduce an intercropping method for adjusting cultivation and the harvest period.

Potato price will be more than double if farmers ship the produce before December. Farmers usually start to cultivate potato during August and September. Introducing the intercropping method, they can start potato cultivation early in August since maize protects potato from the sunshine. As a result, farmers can harvest and ship the potato earlier than usual. Farmers also can save their cost for cold storage for seeding potato because they do not need a stock seedling potato for a long time.

Price of tomato is increasing during summer. Introducing intercropping maize and tomato make the tomato harvest period longer so farmers are able to ship more tomato at high price season. This is because maize becomes a shade for tomato and prevents wilt.

The project collaborates with research institutions to train intercropping technique for extension engineers. Also, demonstration farm will be established and trained extension engineers to expand intercropping to farmers. On the demonstration field, a few farmers are organized as a group, and

they involve in activities from cultivation to sales.

The project is to verify the adaptation process of harvest adjustment implemented by research institutions, extension services, and farmers' participation with examining the effectiveness of the pilot project.

(4) Outline of the Project

Project Purpose	Livelihood improvement for small-scale farmers through improving marketing of agricultural produce (shipping control)		
Output	Small scale farmers can sell agricultural produce with higher price by controlling harvest season.		
Activity		Time	Role of Stakeholders
1-1 Selection of farmers and farmland for FFS		2011.3 ～ 2011.4	C/P, Study Team, District and village cooperative will prepare the schedule and village cooperative will select participating farmers and demo-farm.
1-2 Training for field extension workers (FEW)		2011.3 ～ 2011.4	Study Team facilitates trainings for the selected field extension workers and a few advanced farmers will be administered. Experts of Sids ARC and Assiut ARC will be trainers.
1-3 Procurement and supply of necessary materials		2011.5 2011.6	Study Team will rent the farm for the demonstration and provide required inputs and equipment.
1-4 Preparation of demonstration farm		2011.5 2011.6	Preparatory work for planting on demo-farm by village cooperative and participating farmers.
1-5 Training for farmers by FEW (cultivation, bio-fertilizer)		2011.5 2011.6	Field extension workers who are trained will train farmers at the demo-farm. At the demo-farm, bio-fertilizer application will also be instructed by the expert of Minia university.
1-6 Monitoring and evaluation		2011.6 ～ 2011.11	Periodical monitoring by the farmers and field extension workers. At the harvesting time, evaluation together with the farmers in the village will be conducted and checked whether they could sell the produce at higher price.
Inputs	Technical training, establishing demonstration farm, (materials for farming, land cost), materials for establishing demonstration farm (measuring devices, etc.)		
Risks and how to avoid	There is only one summer season and one winter season during the pilot project. Establishing several demonstration farms is considered to mitigate risks.		
Monitoring and evaluation	Evaluate whether the produce was sold at higher price by off-season harvest and sales of the produce. Also the relevance of the implementation set-up will be evaluated through the activities.		
Benefits and how to extend	Benefit of the project is income increase of small-scale farmers. Activities on the demonstration field are expected to prevail farmer to farmer. Also, Governorate and District agricultural offices promote the activities to other villages.		

Project 4	Promotion of Horticulture Crops and Marketing for Small Scale Farmers

(1) Pilot Site

(a) Minia Governorate, **Maghagha District, Abad Sharona Village**

Population	Total 13,000
Farmland	Total 1,089 fed, all in old land
Main crops	Wheat 450 fed, Maize 450 fed, Marjoram 400 fed, Berseem 119 fed
Remarks	

(b) Minia Governorate, **Matai District, Abo Haseeba Village**

Population	Total 4,968 (542 households)
Farmland	Total 470 fed, all in old land
Main crops	Wheat 250 fed, Maize 250 fed, Berseem 140 fed, Soybean 140 fed
Remarks	Monday market is held in the village, mainly dealt with vegetables)

(c) Minia Governorate, **Mallawe District, El Baragel Village**

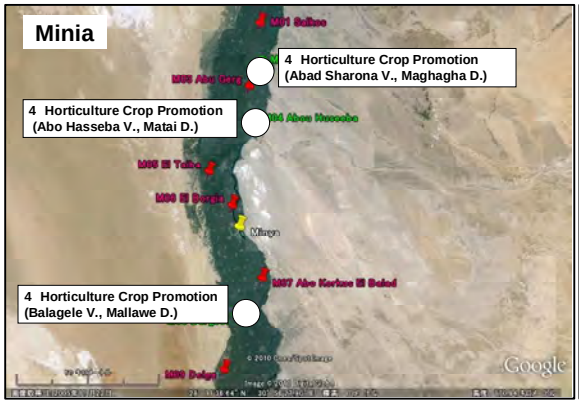
Population	Total 5,952 1,335 households)
Farmland	Total 588 fed (545 fed in old land, 43 fed in new land)
Main crops	Sugarcane 325 fed, Maize 125 fed, Berseem 72 fed, Wheat 65 fed, Sugar Beet 61 fed
Remarks	

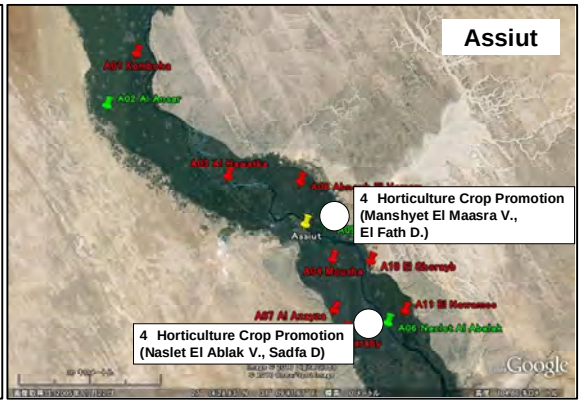
(d) Assiut Governorate, El **Sadfa District, Nazlet El Ablak Village**

Population	Total 3,000 (500 households)
Farmland	Total 224 fed, all in old land
Main crops	Wheat 104 fed, Maize 100 fed, Sorghum 35 fed, Berseem 25 fed, Pomegranate 40 fed, Citrus 30 fed
Remarks	

(e) Assiut Governorate, E**l-Fath District, Manshyet El Maasra Village**

Population	Total 3,800 (350 households)
Farmland	Total 430 fed, all in old land
Main crops	Wheat 250 fed, Maize 250 fed, Berseem 117 fed, Grape and Citrus 82 fed
Remarks	





Target Crops

Crops	Abad Sharona	Abo Haseeba	El Baragel	Nazlet El Ablak	Manshyet El Maasra
Tomato/Maize	++	++	++	++	++
Tomato/Okra	+	+	+	++	+
Potato/Maize	+	+	+	+	+
Tomato/Wheat	+	+	+	++	++

(2) Background

The Agricultural Production Intensification Project (APIP), which has been implemented in Fayoum, Beni Suef and Minia governorates during 1995 to 2005 under assistance of the IFAD, has promoted intensive land use to increase farm income to producers. Many types of the intercropping systems have been verified from technical, economical and social aspects. The know-how of the intercropping systems was accumulated in the Sids Agricultural Research Center in Beni Suef governorate, which was a key player of the APIP. Principal advantage of the intercropping systems is higher land productivity caused by highly intensive land use. Secondary advantage is shifting of harvest time in some cases.

The intercropping systems of cash crops with traditional crops could be a possible solution to increase cash income of small-scale and non-commercial farmers. Most of small-scale farmers in the area take a crop rotation system with wheat, berseem, maize and sorghum, mainly for home consumption. Such farmers have only small income from surplus of those traditional crops. High cost and high risk of cash crop production makes them hesitative.

The project aims at introducing cash crops to such non-commercial farmers by using intercropping system.

(3) Concept to Verify by the Project

Most of the farmers cultivate traditional subsistence crops such as maize, wheat, and berseem, and only a few surplus are sold in the market. The project is to give an option for livelihood improvement through transforming subsistence agriculture to commercial agriculture. Also, it encourages small scale farmers to produce profitable horticulture crops.

There are small amount of horticulture production in the target villages, and most farmers depend on staple agriculture, livestock, and unstable off farm income. It seems that many farmers are not used to growing vegetables; therefore, demonstration farm will be established to provide technical training for farmers (organic fertilizers, irrigation, and cultivation techniques). Intercropping with maize and vegetables (tomato and other vegetables) will be introduced to mitigate cultivation risks of small scale farmers.

The project collaborates with research institute to expand intercropping technique for extension engineers, and trained extension engineers provide training to farmers. On the demonstration field, a few farmers are organized as a group, and they involve in activities from cultivation to marketing. It is expected for women to produce vegetables and sell them in villages. In fact, some women get vegetables from local markets and sell them in villages.

The project is to verify the ways of promoting profitable horticulture corps by the Governorates, Districts, and agricultural cooperatives, and Extension Department.

(4) Outline of the Project

Project Purpose	Livelihood of small scale farmers is improved by agricultural marketing improvement (introducing profitable horticulture corps)		
Output	Income of small scale farmers increases through introducing profitable horticulture crops		
Activity		Time	Role of Stakeholders
1-1 Selection of farmers and farmland for FFS		2011.3 ～ 2011.4	C/P, Study Team, District and village cooperative will prepare the schedule and village cooperative will select participating farmers and demo-farm.
1-2 Training for field extension workers (FEW)		2011.3 ～ 2011.4	Study Team facilitates trainings for the selected field extension workers and a few advanced farmers will be administered. Experts of Sids ARC and Assiut ARC will be trainers.
1-3 Procurement and supply of necessary materials		2011.4	Study Team will rent the farm for the demonstration and provide required inputs and equipment.
1-4 Preparation of demonstration farm		2011.5	Preparatory work for planting on demo-farm by village cooperative and participating farmers.
1-5 Training for farmers by FEW (cultivation, bio-fertilizer)		2011.5	Field extension workers who are trained will train farmers at the demo-farm. At the demo-farm, bio-fertilizer application will also be instructed by the expert of Minia university.
1-6 Monitoring and evaluation		2011.5 ～ 2011.9	Periodical monitoring by the farmers and field extension workers. At the harvesting time, evaluation together with the farmers in the village will be conducted and checked whether they could sell the produce at higher price.
Inputs	Technical training and establishing demonstration farm (materials and land cost)		
Risks and Means of Avoidance	There is only one summer season and one winter season during the pilot project. Several items of the target crops will be tried in one village to avoid risks.		
Monitoring and evaluation	Evaluate whether the profitability of land is increase by promoting horticulture crop. Also the relevance of the implementation set-up will be evaluated through the activities.		
Benefits and Spillover Effects	Benefit of the project is income enhancement of small-scale farmers. Activities on the demonstration field are expected to prevail farmer to farmer. Also, Governorate and District agricultural office promote the activities to other villages.		

On Bio-fertilizer Application:

Central Laboratory of Organic Agriculture, Agricultural Research Center (ARC), is recommending using bio-fertilizing due to securing safe agricultural products and health of farmers and consumers. In Minia University, microorganisms originally developed by ARC are isolated and multiplied locally.

The advantages to use natural oriented micro-organism compering to conventional farming are i) reduction of the production costs instead of usage of chemical fertilizers, ii) longer shelf life of vegetables and fruits, iii) promotion of disease resistance, iv) physical and biological improvement of soil conditions and development of root system of plants, v) correspondence to consciousness on safe food products by the consumers in markets of EU, USA, Gulf countries and processing companies in Cairo.

However, use of fermented compost had rarely been prevailed in the target areas. The farmers would change current minds for agricultural production with cultivation skills through activities at the pilot demonstration farms. If farmers wish to use chemical fertilizer, they can reduce applying volume.

The applicable micro-organisms and their functions can be summarized as below:

Bland Name	Micro-organisms	Origin	Major Function
Nitrogena	Azotobacter, Rhizosphere	In El-Minia	Fixation of nitrogen gas
Phosphorina	Bacillus megatherium var. phosphaticum	In El-Minia	Increase of phosphate compound, production of enzyme, amino acid and dehydrogenase
Potasina	Actinomycetales	In El-Minia	Increase of potassium compound and resistance to diseases
Effective Microorganism (EM)	Lactobacillus, Pseudomonas fluorescent, Saccharomyces cerevisiae	In Delta Areas, Cairo	Acceleration of compost making, activation of other natural micro-organisms in soil

During the pilot projects, the following activities shall be combined with intercropping and cultivation technique:

1) Soil analysis before and after the projects
2) Training to extension officers in agricultural cooperatives
3) Application of bio-fertilizer
4) Monitoring
5) Supports on sales and evaluation of quality and prices

1.4.4 Summary of Inputs

(1) Summary of Inputs

	Project	Inputs	
		Egyptian Side	JICA Study Team
1	**Strengthening Agriculture Cooperative and Extension Services**		
1-1	Market Information Collection and Dissemination Service	Assign responsible person (Governorate)	PC＋Mobile 1 set (Governorate Agriculture Office), Billboard at village cooperatives
1-2	Marketing (Collection and Shipping) of Produce by Cooperative	Car rental (cooperative)	Plastic containers, scale
2	**Promoting Post-harvest Improvement and Processing**		
2-1	Processing and Marketing of Excessive and Low Grade Produce (Pomegranate, Winter Tomato and Vegetables: Cottage Factory for Processing)	Agr. Coop. (Farmer group): Room for the unit O&M (electricity, water,, etc.)	Renovation of the room (about 36m2, floor tiling etc.) Equipment (gas canister, mixer, tomato paste maker, vegetable dryer, refrigerator, sealer, cooking devices etc.) Technical training (Processing)
2-2	Reducing Post-harvest loss and Quality Improvement (Basil: Establishing Improved Drying Facility)	Governorate: land Agr. Coop. (Farmer group): O&M (electricity, water, etc.)	Concrete yard construction (4200m2) Equipment (kafas for drying, thresher, crusher)
3	**Improving Profitability of Specialty Crops through Production Improvement**		
3-1	Increasing Profitability through Quality Improvement (Garlic, Onion: Introducing improved variety and advanced cultivation method)	Assign field extension workers in charge Selection of participating farmers	Technical training Renting demo-farm Inputs for demo-farm (seeds of improved varieties) Monitoring equipment (measuring tape, scale, signboard, stationery etc.)
3-2	Increasing Profitability through Selling Produce in Off- season (Potato: Introducing intercropping with maize) (Summer Tomato; Introducing intercropping with maize)	Assign field extension workers in charge Selection of participating farmers	Technical training Renting demo-farm Inputs for demo-farm (seeds of improved varieties) Monitoring equipment (measuring tape, scale, signboard, stationery etc.)
4	**Promoting Horticulture Crop and Marketing to the Small-scale Farmers**	Assign field extension workers in charge Selection of participating farmers	Technical training Renting demo-farm Inputs for demo-farm (seeds of improved varieties) Monitoring equipment (measuring tape, scale, signboard, stationery etc.)

(2) Outline and Inputs for Post-harvest and Processing

Project	Processing of Surplus and Low Grade Produce			Post-harvest (Drying) Improvement
Crops	Pomegranate (Combine other vegetables, fruits to increase operation efficiency)	Tomato (Combine other vegetables, fruits to increase operation efficiency)	Onion and other vegetables (Combine other vegetables etc. to increase operation efficiency)	Basil
Site in Minia Village (District)			Delga (Dyre Muas)	
Site in Assiut Village (District)	El Egal El Bahry (El Badary)	Rifa (Assiut)		Arab El Kadadeh (Abnoub)
Capacity	Space: about 36m2, Input Max. 200kg/day	Space: about 36m2, Input Max. 200kg/day	Space: about 36m2, Input Max. 200kg/day	Drying yard: 4,200m2, house for equipment
Inputs				
Land and House O&M (electricity, water etc.)	Farmer group based on cooperative will be responsible	Farmer group based on cooperative will be responsible	Farmer group based on cooperative will be responsible	land is arranged the Governorate and farmer group based on cooperative will be responsible for O&M
Facility	Study Team finances renovation of the house (processing unit) floor tile, etc.	Study Team finances renovation of the house (processing unit) floor tile, etc.	Study Team finances renovation of the house (processing unit) floor tile, etc.	Study Team finances the construction
Equipment	Study Team procures: (gas canister, mixer, tomato paste maker, vegetable dryer, refrigerator, sealer, cooking devices etc.)	Study Team procures: (gas canister, mixer, tomato paste maker, vegetable dryer, refrigerator, sealer, cooking devices etc.)	Study Team procures: (gas canister, mixer, tomato paste maker, vegetable dryer, refrigerator, sealer, cooking devices etc.)	Study Team procures: kafas for drying, thresher, crusher
Trainings	Day: 7days (include M&E) Place: site Trainer: Minia Rural Women Center or experts in Assiut Trainee: 15 farmers	Day: 7days (include M&E) Place: site Trainer: Minia Rural Women Center or experts in Assiut Trainee: 15 farmers	Day: 7days (include M&E) Place: site Trainer: Minia Rural Women Center or experts in Assiut Trainee: 15 farmers	Prcaticcal at the site by Governorate and District Agriculture Offices

(3) Outline and Inputs for Demo-farm

Project	Quality Improvement		Off-season Selling		Horticulture Promotion for Small Scale Farmers	
Crop	Garlic	Onion	Potato	Summer Tomato	Tomato and Other Vegetables	Total
Site in Minia Village (District)	Salakos (El-Edwa)	Delga (Dayr Muas)	El Borgaya (El-Minia)		Abad Sharona (Maghagha) Abo Haseeba (Matai) El Baragel (Mallawe)	
Site in Assiut Village (District)				El Ansar (El-Kosya)	Nazlet El Ablak (Sadfa) Manshyet El Maasra (El-Fath)	
Total No. of Site	1	1	1	1	5	9
Demo-farm Area (1fed = 0.42ha)	10 farms × 0,5 fed = 5 fed	10 farms × 0,5 fed = 5 fed	(Intercropping) 2 farms × 1 fed = 2 fed (Early matured variety) 2 farms × 1 fed = 2 fed	2 farms × 1 fed = 2 fed	2 farms × 1 fed = 2 fed 2fed × 5villages = 10fed	
Total Area (fed)	**5**	**5**	**4**	**2**	**10**	**26**
No. of farmers	1 farmers × 10 farms = 10	1 farmers × 10 farms = 10	5 farmers × 4fed = 20	5 farmers × 2fed = 10	5farmers×2fed×5Villages=50	
Training to Field Extension Workers	Day: 2 days Place: Sids ARC No. of trainee: 8 Trainer: Experts of Sids ARC	Day: 2 days Place: Dyre Muas Agriculture Office No. of trainee: 8 Trainer: Experts from FCRI in Giza, Minia University	Day: 3 days Place: Sids ARC No. of trainee: 8 Trainer: Experts of Sids ARC	Day: 4 days Place: Assiut ARC No. of trainee: 6 Trainer: Experts from Sids ARC, Assiut ARC	Day: 2 days Place: Minia and Assiut ARC No. of trainee: 30 Trainer: Experts from Sids ARC, Minia and Assiut ARC etc.	
Bio-fertilizer Introduction (Field Extension Worker +Farmer)	Guidance 1 time at demo-farm and moniroting by the expert from Minia University	Guidance 1 time at demo-farm and moniroting by the expert from Minia University	Guidance 1 time at demo-farm and moniroting by the expert from Minia University	Guidance 1 time at demo-farm and moniroting by the expert from Minia University	Guidance 1 time×5 sites at demo-farm and moniroting by the expert from Minia University	
Activities at Demo-farm						
Major Introduction	Improved variety (Sids-40) Renting farmland Measuring equipment	Certified seeds (Giza-6, 20, white) Rening farmland Measuring equipment	Intercropping for adjusting cropping season, early matured variety seed potato and inputs, measuring equipment	Intercropping (maize and tomato) Tomato seedlings, maize seeds and inpts, measuring equipment	Intercropping with maize and vegetables: Tomato seedlings, vegetable seeds, maize seeds and inputs, measuring equipment	
Implementation Method	The village is well known for garlic and as the farmers are used to grow garlic, the Project gives a guidance and improved variety to the farmers and ask them to try by themselves.	The village is well known for onion and the farmers are used to grow onion. The Project introduces certified seeds to the farmers who use self-fertilized seeds and gives technical guidance to them.	Maize makes shade for potato in intercropping so that potato can be grown in hot weather making early planting of potato. Form a grpup of farmers who will cultivate the demo-farm and sell the prodcue by the instruction of the field extension workers.	Maize makes shade for tomato in intercropping so that tomato can last longer harvesting in hot weather. Form a grpup of farmers who will cultivate the demo-farm and sell the prodcue by the instruction of the field extension workers.	In the village with little horticulture, intercropping enables to grow vegetables at the same time of growing maize.Form a grpup of farmers who will cultivate the demo-farm and sell the prodcue by the instruction of the field extension workers.	
Remarks			Farmers Filed School (FFS) type activities	Farmers Filed School (FFS) type activities	Farmers Filed School (FFS) type activities	

1.5 Issues Raised at the Third Steering Committee Meeting

The Third Steering Committee meeting was held on December 8, 2010 to present the contents of the Draft M/P and proposed Pilot Projects. At the meeting the committee members agreed to study the proposed Pilot Projects more and give further comments to them. Hence the meeting was again held on December 13, 2010. Prior to the meeting, the committee members provided the comments with four topics and the Study Team prepared for the answers and presented on the meeting. Following are the comments and agreement.

Comments from Committee	Agreement
1. Information Collection and Dissemination	Agreed that there was no conflict between the comments of the Committee and the proposed Pilot.
2. Post-harvest Improvement (drying process)	Improvement method for drying basil was discussed whether to apply sun drying or electrical drying system. The Study Team explained that the electric drying is not feasible due to high investment and O&M costs and the C/P in Assiut supported the sun drying system. As a result, applying sun drying system was agreed. Also C/P in Minia requested further study for the onion drying system and it was agreed that the Study Team will study again about the drying onion.
3. Post-harvest Processing (Tomato, Pomegranate)	On the capacity of tomato processing unit, the Study Team proposed 100kg of input per day, while the Committee suggested to make the capacity of 5 tons of input per day. It was agreed that the Study Team will study the alternatives again.
4. Off-season crop, Quality Improvement, and Horticulture Promotion	The Committee confirmed the necessity of applying existing farming technologies in this Pilot. The Study Team explained that the Pilot will organize to utilize the existing technologies, i.e. local resources, from the viewpoint of agriculture marketing e.g. off-season crop and quality improvement to sell produce at higher price and promotion of horticulture to the subsistent farmers and the C/P in Minia supported the idea. Then the Committee agreed with the proposed component.

The Study Team explained that the proposed Pilot has been planned based on the situation of the small scale farmers, capacity of the agriculture cooperative and the markets of processed products. However, the capacity of tomato processing unit and possibility of onion drying was reviewed. Following are the results of the review and these were accepted by the Committee chairman.

Onion drying: in Minia processing unit has been proposed at Delga village, Dyre Muas District. In this area, many varieties of vegetables have been cultivated as well as onion and the proposed Pilot is to process these vegetables for making processed products, such as pickles and also dried vegetables. The unit will be designed with suitable capacity of the processing including drying onion.

Capacity of tomato processing: it would be possible to increase the capacity to 200kg – 300kg/day but the capacity of tons differs in concept from the village level cottage processing unit. It needs detail survey on where to sell, how to collect raw inputs and to distribute products, securing land (for collection and shipping, for equipment, and for waste deposit), establishment of operation and management, detaikl design for construction, etc. It is therefore impossible to implement such large-scale processing facility from periodical, financial, and technical points of view.

1.6 Scale of the Pilot Projects and their Relevance

1.6.1 Pilot Project Cost

Table below shows the Pilot Project cost. The cost includes procurement of materials and equipments (equipments, materials and transportation cost), cost for trainings (lecturers, materials, transportation), cost for installing facilities (cost for construction, supervision) etc.

Table 2.6.1 Pilot Project Cost

	Project	Scale	Cost LE	Remark
1	**Strengthening Agriculture Cooperative and Extension Services**			
1-1	Market Information Collection and Dissemination Service	1set per gov.	120,000	
1-2	Marketing (Collection and Shipping) of Produce by Cooperative	containers, etc.	60,000	
2	**Promoting Post-harvest Improvement and Processing**			
2-1	Processing and Marketing Excessive and Low Grade Produce (vegetables: Minia)	200kg/day	380,000	
2-1	Processing and Marketing Excessive and Low Grade Produce (tomato: Assiut)	200kg/day	100,000	
2-1	Processing and marketing Low Grade Produce (pomegrnate: Assiut)	200kg/day	70,000	
2-2	Reducing Post-harvest Loss and Quality Improvement (Basil: Assiut)	1 fed yard (100t)	560,000	
3	**Improving Profitability of Specialty Crops through Production Improvement**			
3-1	Increasing Profitability through Quality Improvement (garlic: Minia)	demo-farm 5fed	70,000	
3-1	Increasing Profitability through Quality Improvement (onion: Minia)	demo-farm 5fed	50,000	
3-2	Increasing Profitability through Selling Produce in Off- season (potato: Minia)	demo-farm 4fed	80,000	
3-2	Increasing Profitability through Selling Produce in Off- season (summer tomato: Assiut)	demo-farm 2fed	40,000	
4	**Promoting Horticulture Crop and Marketing to the Small-scale Farmers**	demo-farm 2fed × 5villages	210,000	3villages in Minia、2villages in Assiut
3～4	**Introducing bio-fertilizers (9 villages of 3-1, 3-2 and 4)**	9村	130,000	14,000LE/village
			1,870,000	

1.6.2 Relevance of the Scale of the Pilot Projects

The scale of each pilot project has been examined and planned from the following aspects. Also the preliminary economic analysis of the projects has been carried out as shown in the tables below.

- Processing of agricultural produce: planned to start with small-scale considering the fact that the project is a first trial of the village cooperatives and the farmer groups and also the market (population) around the project area. It would be necessary to sell the products through the network of the cooperatives. An economic analysis was conducted as shown in the table below and how they can sell the products is the key for the success.
- Basil drying improvement: economically feasible with reduction of loss and quality improvement of the produce if the facility is properly used. The scale was planned to make demonstration effects to the area.
- Demonstration farms: planned based on the actual practice of demonstration farm by the Ministry (1 to 2 feddan) considering the capacity of the field extension workers. 2 feddan is the base and for garlic and onion demonstration to introduce improved varieties, 5 feddan of demo-farm each is planned as the target farmers are already used to cultivate these crops.
- Market information dissemination: the activities are carried out at the governorate agriculture office. It is to start with minimum unit.

(1) Promoting Post-harvest Improvement and Processing

Tomato and other vegetables	(1): fixed costs 12,038LE/year＋variable cost (except labor) 4,668LE/year＝16,707LE/year With the price of product at 10LE/kg, it requires 1,671kg/year or 139kg/month to sell to cover the cost of (1). In addition to (1), targeting labor earnings of 50,400LE/year (monthly average of 10 persons ×LE420/month), it requires to sell 6,711kg/year or 559kg/month of tomato paste (10LE/kg). Demand： Annual per capita consumptions of fruits and vegetables are 100kg and 180kg respectively. Suppose the consumption of processing products at 3–5% of fresh fruits and vegetables, annual per capita consumption was estimated at 5kg and the supply of the above production would be for 1,342 people per year. Average size of a village is about 10,000 people. It should also be planned to sell the products outside the village.
Pomegranate	(1): fixed costs 5,855LE/year＋variable cost (except labor) 2,816LE/year＝8,671LE/year With the price of product at 10LE/kg, it requires 723kg/year or 60kg/month to sell to cover the cost of (1). In addition to (1), targeting labor earnings of 36,000LE/year (monthly average of 8 persons ×LE375/month), it requires to sell 2,500kg of pomegranate fruits (10LE/kg), 3,000kg of pomegranate juice (LE10/kg) and 4,500kg of dry vegetables (2LE/kg). Demand： Annual per capita consumptions of fruits and vegetables are 100kg and 180kg respectively. Suppose the consumption of processing products at 3–5% of fresh fruits and vegetables, annual per capita consumption was estimated at 5kg and the supply of the above production would be for 2,000 people per year. Average size of a village is about 10,000 people. It should also be planned to sell the products outside the village.
Onion drying （Minia Delga）	Raw onion (10kg) → dried onion (1kg), Capacity: 200kg/day Selling price: 15LE/kg; Cost: raw materials 7LE, labor 1.2LE, electricity 2LE, total 10.2LE.Difference is 4.8LE/kg. Fixed cost (equipment) LE281,000; to make the fixed cost per kg lower than 4.8LE/kg (break-even point) it needs to produce 58,542kg, which is equivalent to 293 days of full operation. Provided that the duration of the equipment is 20 years, 15 days of full operation per year would cover the fixed cost. (data source is from an engineering office of the equipment)
Basil drying improvement	Improving dry yard (for the cultivated area of 20feddan）(concrete yard 4200m^2) Additional annual cost: 96,660LE/year Basil gross income（reducing loss with project 110t to without project 100t and quality improvement） Without project：135.257LE/year With project：302,034LE/year Increment：166,777LE/year（B/C＝1.73）

(2) Improving Profitability of Specialty Crops through Production Improvement

Quality improvement (Garlic, Onion, Pomegranate)	Garlic Net Income： Without project: 8,724LE/fed, With project: 14,480LE/fed (+5,756LE/fed (+66%)) Onion Net Income: Without project: 4,626LE/fed, With project: 7,538LE/fed (+2,912LE/fed (+63%))
Off-season sales (Potato, Summer tomato)	1) Without project: Maize → Potato → Wheat：8,763LE/fed With project：Maize + Potato (intercropping) → Wheat：11,187LE/fed Increment：2,424LE/fed(＋28%) 2) Without project：Maize → Wheat：6,627LE/fed With project：Maize + Tomato (intercropping) → Wheat：14,285LE/fed Increment：7,658LE/fed (+115%)

(3) Promoting Horticulture Crop and Marketing to the Small-scale Farmers

Tomato and other vegetables	Tomato intercropping (refer to above) Without project：Okra → Wheat：10,034LE/fed With project：Okra + Tomato (intercropping) → Wheat：14,748LE/fed Increment：4,714LE/fed (+47%)

1.7 Implementation Schedule of the Pilot Projects

The Pilot period is scheduled from March 2011 to April 2012. Crop season in the Project area is generally categorized into three seasons. Activities of the Pilot will be planned along with the crop seasons.

Summer Crop: March/April to September
Nile Crop: May to October
Winter Crop: November to May

The Pilot starts with the technical trainings to the extension engineers and from late April to beginning of May moves into the activities at demo-farms. The latest harvest season (winter crop) will be in April 2012. Post-harvest processing components start with farmer group organization at the same time of preparation for equipment procurement and facility arrangement. Strengthening of agriculture cooperative and extension services will be implemented constantly from the beginning of the Pilot. The following figure shows the implementation schedule:

Figure 2.7.1 Implementation Schedule of Pilot Project

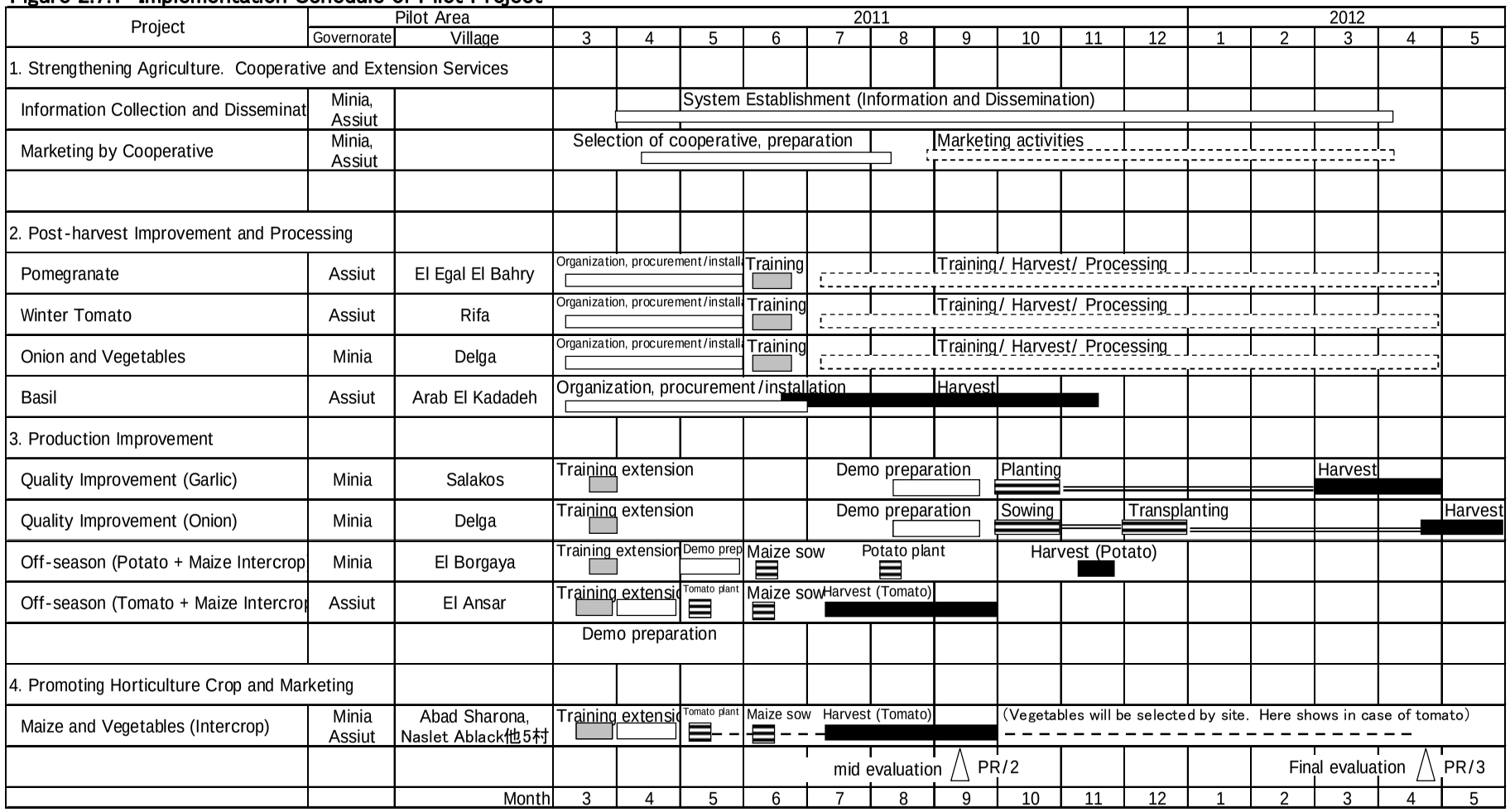
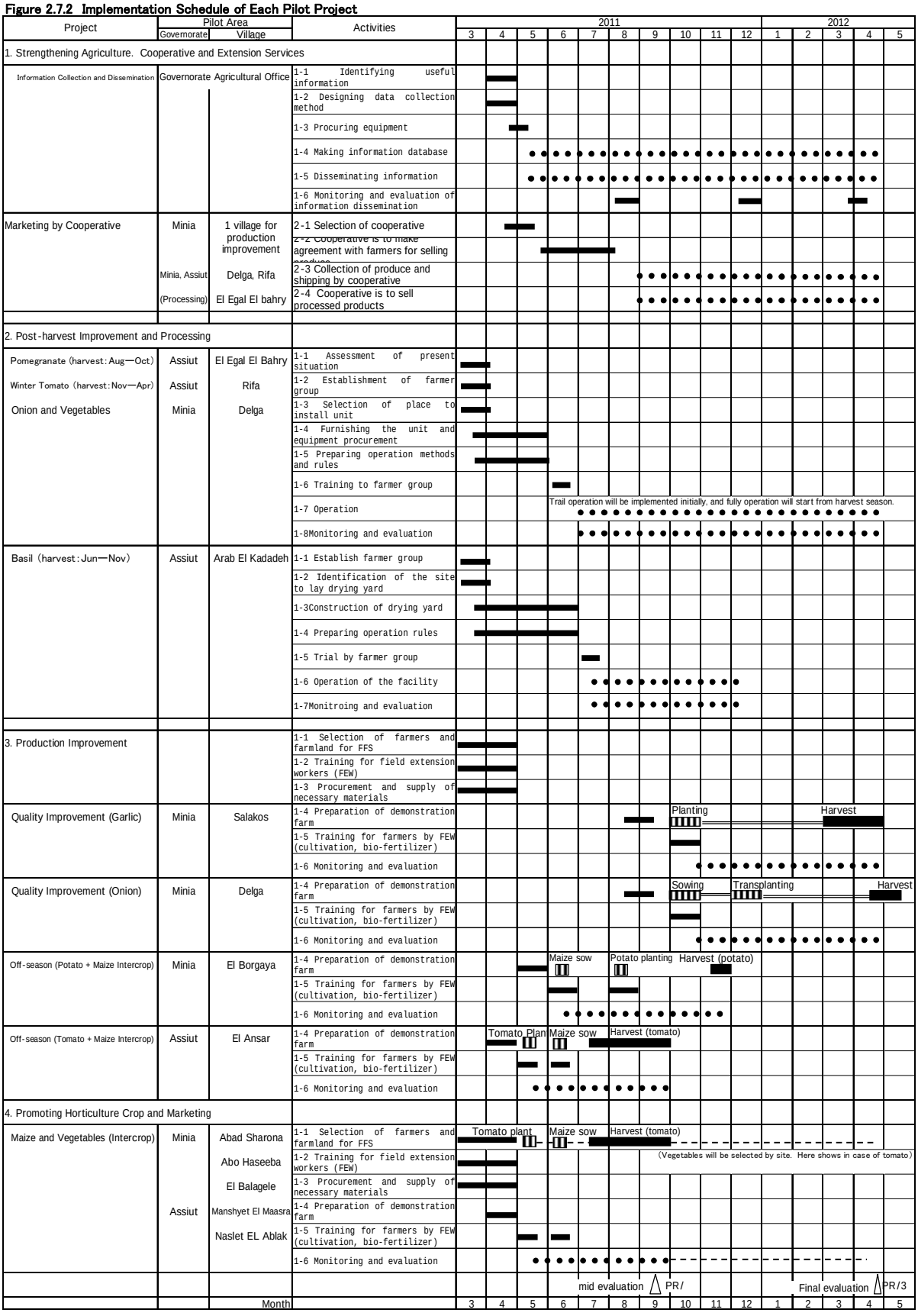


Figure 2.7.2 Implementation Schedule of Each Pilot Project



2. Changes from the Initial Plan

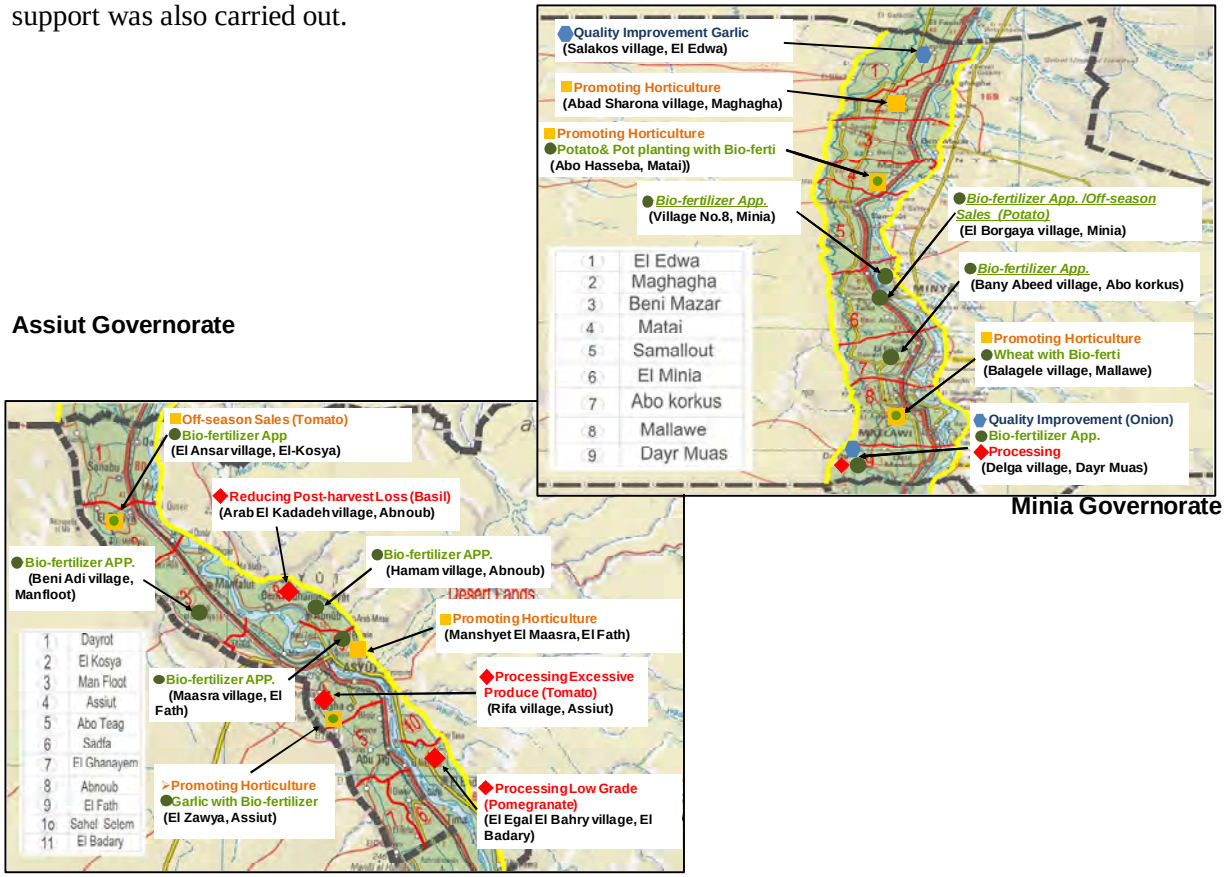
The Study Team with the Counterparts (C/P) implemented the Pilot Projects with detail designing and changes according to the circumstances. Following are the major changes from the initial plan:

Issue	Detail
Change of the target village	One of the target villages for demonstrating intercropping technology (maize and tomato) was Naslet El Ablac village in Sadfa District, in the southern part of Assiut Governorate. However, conflicts between two big families in the village had occurred and then the village side told the Team the risks to proceed the activities with outsiders. The Team and C/P discussed with the stakeholders and decided to change the site and Zawya village in the south side of Assiut was selected as the alternative.
Change of demonstration content	In Borgaya village in Minia District, Minia Governorate, it was planned to establish a demonstration farm for intercropping (maize and potato), but the farmers in the village did not have much interest in intercropping. As the farmers in the village showed interest in organic materials (bio-fertilizer) application to reduce the cost of production, it was decided to conduct demonstration for applying bio-fertilizers.

Application of organic materials has been planned as a part of the Pilot Projects. The detail planning for this demonstration activity was carried out for winter crops including potato in Borgaya village. The targets sites were added from the original target sites after the discussion with the C/P.

2.1 Pilot Sites

The maps show the final sites of the Pilot Project implementation after some changes and detail planning of the Pilot. The sites were 4 sited for post-harvest improvement and processing (1 in Minia, 3 in Assiut), 6 sites for horticulture promotion for summer crop (3 each in Minia and Asssiut), 2 sites for production improvement by improving varieties and certified seeds (Minia) and 15 sites for production improvement by bio-materials application (8 in Minia and 7 in Assiut). In each marketing support was also carried out.



3. Results of the Pilot Projects

3.1 Summary of the Results of the Pilot Projects

For implementing the Pilot Projects, the C/P team were divided into three groups, namely Supporting marketing, Agro-processing, and Crop production improvement. Following table summarizes the results of each project.

Table 3.1.1 Summary of the Results of the Pilot Projects

Project	Results
1. Supporting Marketing	
1-1Market Information Collection	The Project was effective for the farmers in a way that they can know the going rate of the market price prior to choose which market to sell or negotiate with the traders. There is necessary to consider how to reduce the operation cost for the future.
1-2Marketing by Cooperative	The Project indicates an example of activity, namely not focusing on the agriculture cooperative only but establishing a committee by the stakeholders to support the farmers for marketing.
2. Post-harvest Improvement & Processing	
2-1Agro-processing	Processing facilities are operated actively by village cooperatives. This is because they have educated staff, experiences cooperative management; thus, village cooperatives are suitable for processing facilities. It is important to diversify the products by seasons to increase the operation ratio of the processing facilities.
2-2Reducing Post-harvest Loss and Quality Improvement	As for small scale farmers, the facility by the Project created new marketing channel for them to get benefit and for the cooperative, they could compartmentalize the market from the local traders rather than competing with them. The cooperative considered not only the price but also the credibility of the traders and eventually they decided to sell the product to the exporter in Alexandria
3. Production Improvement	
3-1Quality Improvement	The demo farm operated by the head of village cooperative produced 12 ton/feddan of Sids-40, which was higher than common Chinese garlic at 8 - 10 ton/feddan. Also, the bulb size of Sids-40 was larger than the common ones. As the price of garlic is extremely low in this year, the economic evaluation of this demonstration might be very difficult.
3-2Off-season Production	A farm had produced tomatoes until February. During this harvest period, the price of tomato was relatively high in mid to late September and early November to early December. The farmers who could harvest tomato in those times got some high return.
4. Promoting Horticulture Crop	Although some of the demo farms did not achieve target tomato production amount, some farmers without any experience of tomato cultivation achieved target production amount. As some surrounding tomato producers inquired the intercropping techniques as well as bio-control techniques, the demonstration was effectively worked in these villages.
5. Promoting Organic Materials Utilization	
5-1 Organic Material Utilization	Advantages of organic materials were confirmed in the demo farms such as reducing production cost and improving quality.
5.2 Pot Cultivation System	Vegetable production of pot cultivation system was not enough to sell, but it contributed to saving food expenses.
5.3 Introducing Vegetables with Organic materials	Farmers' cash flow was improved by selling different kinds of vegetables at different timing. As such, farmers earned cash income continuously

3.2 Supporting Agricultural Marketing

3.2.1 Pilot Activities

(1) Outline

For the component of supporting agricultural marketing have two categories: 1) C/P in the Agricultural Directorates in Minia and Assiut collect market information and disseminate the information to farmers, and 2) to promote collective shipping through agricultural cooperative. Following are the activities:

Market information collection and dissemination

1) Indentifying useful information
2) Designing data collection method
3) Procuring Equipment
4) Making information database
5) Disseminating information
6) Monitoring and evaluation

Supporting marketing by agricultural cooperative

1) Selection of cooperative
2) Agreement between cooperative and farmers for conditions to sell produce
3) Collection of produce and shipping by cooperative

(2) Summary of Activities by Mid September 2011: Market Information

On this activity, the Study Team and the counterparts (C/P) (the Team) discussed what kind of information would be useful for farmers and how to collect such information. The team defined the basic information to collect as market price in and outside the Governorate and list of traders. The methods to collect these information are presumed to use internet, and hearing from the markets. The target beneficiary for the pilot activity was decided to focus on supporting the marketing of tomato grown in the intercropping demonstration farms and processed products in the Pilot Projects.

On the market price information, the Team decided to collect mainly the wholesale price of tomato at Obour wholesale market in Cairo, Hadra wholesale market in Alexandria through web sites[1]. The wholesale price at the wholesale market of Minia City and Assiut City was also considered useful but as these wholesale markets are run without institution, there is no official price record. Then the Team visited 3 wholesalers randomly at each market and asked them to provide the wholesale price information to the Agriculture Directorate.

The Counterpart calls the wholesalers every day by mobile phone to get the price information. Data obtained have been saved as a database in the PC at the Directorate provided by the Project. As for the information of traders, the Team collected the list of registered traders / wholesalers from the Chambers of Industry and Commerce in the Governorate and is also collecting them through word of mouth.

The Team started sending the wholesale price of tomato by SMS to the cooperative officers, extension engineers and farmers in the villages of the intercropping demo-farms (3 villages in each Governorate) from August, in which the tomato harvest begun. SMS information has been sent to the receivers

[1] Local and Global Agricultural Commodity Prices by the Egyptian Cabinet Information and Decision Support Center (IDSC) and Obour Market HP

almost every day since the beginning of August by the counterpart. The cooperative staff is writing up the daily price on the whiteboard provided by the Project set at the cooperative office. According to the cooperative officer, around 20 to 50 people are watching the price information on the board. Following summarize the outline of the market information collection and dissemination activity.

Table 3.2.1 Outline of Market Information Collection and Dissemination(As of Sep. 2011)

Governorate	Minia	Assiut
Target of the Pilot 1)	Tomato intercropping demo-farms (3 villages), Total 20 (Cooperative officers, extension engineers, farmers)	Tomato intercropping demo-farms (3 villages), Total 52 (Cooperative officers, extension engineers, farmers)
Information: wholesale price (Mean of collection)	Obour wholesale market in Cairo (Web), Hadra wholesale marketing Alex (Web), Minia Habashi wholesale market (collect from 3 wholesalers in the market)	Obour wholesale market in Cairo (Web), Hadra wholesale marketing Alex (Web), Assiut Arab El Madabegh wholesale market (collect from 3 wholesalers in the market)
Database making	PC (Excel) in the Agriculture Directorate	
Dissemination	Sending SMS to the group at once, writing up on the whiteboard of the cooperative	

1) In Minia as the owners of the demo-farms are selling the produce, SMS is only sent to the owners of the farmers. In Assiut, SMS is sent to the farmer group members as they intend to share the profit from selling produce.

At the end of August 2011, the Team conducted a questionnaire survey to get feedback from the SMS service receivers. Following summarize the results of the questionnaire.

Table 3.2.2 Feedback on SMS Service from the Receivers (End Aug 2011)

Number of Answers	Minia: 16 out of 20 receivers, Assiut: 48 out of 52
SMS is useful	Minia 13 (81%), Assiut 41 (85%), Total 54 (84%)
Reasons and how to use the information	· I can compare the prices in different markets and village and think of where to sell. (27) · It helps when negotiating with traders (11) · I can compare the retail price in the village and the wholesale price sent by SMS (4) · Ii helps because information source is limited (4) · I can know the wholesale price (against the farm-gate price) (3) · It is easy and fast mean to know the information (2) · This can be an indicator for the prices in different places (1)
SMS is not useful	Minia 3 (19%, Assiut 7 (15%), Total 10 (16%)
Reasons	· The price sent is very high (4) · Amount of produce is not so big that I cannot sell tomato outside the village (1) · There are many retailers to get price information (1) · I can sell tomato in the village (1) · My brother is a trader who can give information (1)
Price information source of the farmers	(District) wholesale markets / traders (38), retailers in the village (26), neighbor farmers (5), family (2), Internet (1), no source (1)
Other comments	I want you to continue this service, send not only price but also other information like traders and technology by SMS, it will cost a lot to send this information
Review of C/P (Minia)	The good response of the receivers encourages the Team to carry on. It was noticed that at the cooperative office, they delete the price of previous day and write on the price of the day only. So the Directorate will instruct the cooperative to keep the prices of a week on the board, so that we can know the trend of the market price and also can make use of the data more. We like to compare the actual price that the farmer sold tomato and the wholesale price.
Review of C/P (Assiut)	The good response of the receivers encourages the Team to carry on. Some farmers cannot read and ask others to read SMS. It needs to confirm the price is for middle grade to get price close to standard. According to the farmers' situation, the price in Cairo would not be useful so we'd better concentrate on the price in Assiut City.

The most frequent reason of those who say the SMS service is useful is: "I can compare the prices in different markets and village and think of where to sell". Actual situation in August was that the farmers were selling tomato in the village or nearby District wholesale market as they are convinced that the price in there is good enough compare to the price outside sent by SMS. Because the price sent by SMS is a wholesale price, it should be higher than the farm-gate price. Therefore, it needs to examine how farmers can utilize the wholesale price information. Many also answered that "It helps when negotiating with traders". There are also answers like "I can compare the retail price in the village and the wholesale price sent by SMS" and "I can know the wholesale price (against the farm-gate price)". These answers indicate how farmers are trying to utilize the SMS information.

On the other hand, those who think it is not useful say: "The price sent is very high", "There are many retailers to get price information", and "My brother is a trader who can give information". These answers give impression that farmers trust more in their own information source. As mentioned, the SMS service gives wholesale price, which is higher than the farm-gate price. This fact must be explained again to the receivers. There also opinions like "I can sell tomato in the village", or "Amount of produce is not so big that I cannot sell tomato outside the village". As the price trend from now on might change the situation, the Team will continue sending SMS.

Following figure shows the comparison between the farm-gate price of tomato harvested in the demo-farms in Minia and the wholesale market price at Minia Habashi wholesale market. Farmers of the demo-farms are mainly selling the tomato to the retailers in the village or District town. The farm-gate price is lower than the wholesale price in Minia City, though accuracy of the data should be taken into account as discussed below.

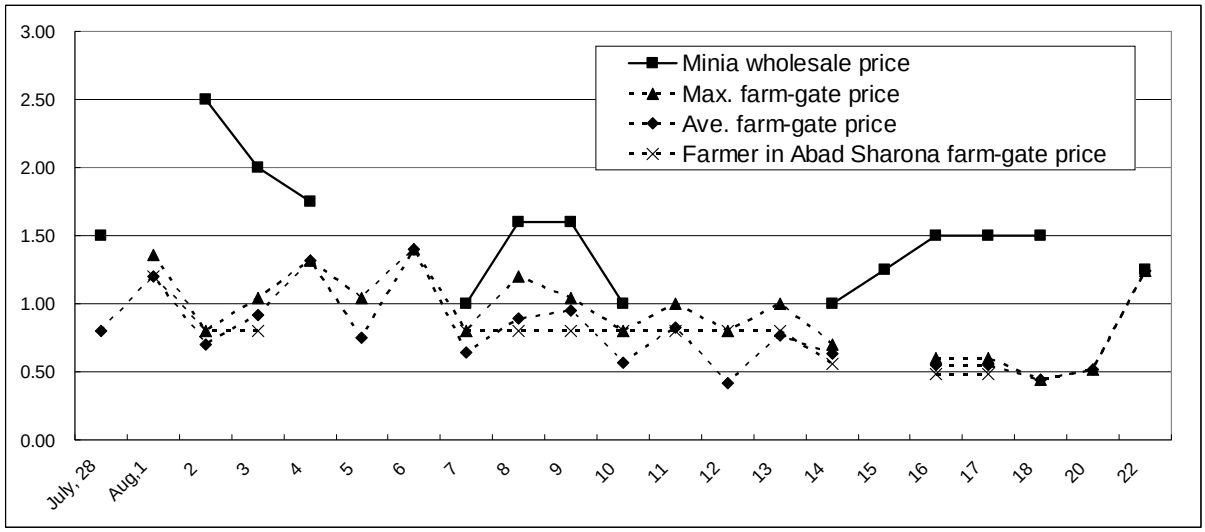
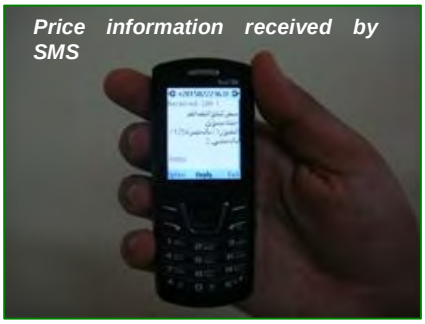


Figure 3.2.1 Farm-gate Price of Demo-farm in Minia and Wholesale Price of Minia Habashi Market (Tomato)



(3) Activities from Late September 2011 to End of March 2012: Market Information

Collection of and dissemination of market price information was carried on by the end of the Pilot Project period. It was agreed that the counterparts will keep collecting the price information. As for the distribution of information by SMS, it is expected that the Agriculture Directorate could source the budget for sending SMS to continue the activity but deemed that the budget is not easily prepared by them. Therefore, the Team made discussions with the Central Administration for Agriculture Extension to integrate the price information collection and dissemination into their mobile extension initiative.

In order to share the experience of the market price information and dissemination and discuss the use of the information toward future, a seminar was held each in Assiut and Minia on December 4 and 13 respectively. The participants were district extension officers from all the District, village cooperative and extension officers and farmers from the Pilot Villages.

In the seminar, the Team presented the following: method of market information collection (internet, and daily hearing from selected wholesalers), method of dissemination by SMS, definition of the price to have sent by SMS (not farm-gate price but wholesale price), and issues for sustainability including cost. Also the Team presented the results of the questionnaire for SMS receivers conducted in September 2011 and the figures of the prices collected so far to show the price trends. Then the floor was open for discussion on evaluation and how to utilize the information in future.

Seminar on Market Price Information Collection and Dissemination

The participants focused on the issue that if the SMS information was really useful for farmers. Some farmers said they could refer to the price information when they negotiated their selling price with traders, but there were also comments like “there is a gap between the actual selling price and the one sent by SMS”, “we are also getting information from traders”. At the seminar, the Team and the participants confirmed that the price sent by SMS is not a farm-gate price but a wholesale price, hence there is naturally a gap there. There is also a comment that at least displaying the price information at the cooperative office would be useful.

An extension officer pointed out that the accumulated data on the market price to show the price trend would help farmers plan the cropping pattern for next season, but on the other hand, it is necessary to consider not only market price but also weather, transportation cost, number of farmers who cultivate same crop, etc. Furthermore, a participant pointed out that the market price differs by quality or grade, therefore it is important to make difference by the quality improvement of produce.

At the seminars the extension officers reported that the extension office has also started collecting the market price on weekly basis in selected Governorates. The price information collection by the

extension office covers many kinds of vegetables, but it seems unclear how they will utilize the data after they send them to the Central Administration in Cairo. The Ministry is proceeding to establish the mobile extension system by the public – private partnership. At the seminar, the participants share the idea that the lessons learned from the Pilot should be built in to the activities of Agriculture Extension Sector.

The Team and the counterparts in Cairo visited the head of the Central Administration for Agriculture Extension (CAAE) to discuss the possibility of combining the market price information dissemination with the Mobile Extension Service of CAAE. The head of CAAE positively responded to the idea.

(4) Summary of Activities by Mid September 2011: Marketing by Cooperative

As for supporting marketing of the farmers through agricultural cooperative, the target farmers are identified as the farmers who participate in selling the tomato of the demo-farms. Consulting with the village agricultural cooperatives, supporting activities were planned and implemented as follows:

Minia Governorate

The Team planned to collaborate with a specialized agricultural cooperative, Agricultural Cooperative for Finance, which was established in 2010. The cooperative was established by the farmer members who used to work with the NGO (CEOSS) that has been assisting contract farming and the cooperative started their activity to be the agency between farmers and buyers. The cooperative and the farmers and officers of the village cooperative in each demo-farm village discussed and agreed that the Cooperative for Finance would inform the price to buy to the farmers 3 days before the harvest and if the price was good for farmers, they would sell tomato through the Cooperative for Finance. The cooperative takes commission for this assistance. Farmers are free to sell anywhere and they may sell their produce through the cooperative only if the condition is good for them. The Project provided equipment such as plastic crates to transport produce to the cooperative.

Harvest in the demo-farms has started since the beginning of August 2011 but the production meets the demand in the village and nearby District market and the price is also good for farmers and therefore no farmers have marketed through the Cooperative for Finance yet. It is expected that the effect of the intercropping would extend the harvesting time and market situation may change that the price of outside markets become better enough. In that case, the work of the Cooperative for Finance would be a new channel for farmers to sell their produce.

Assiut Governorate

The Team discussed with the village cooperative officers of the 3 demo-farm villages and 2 of them told that the existing marketing channel would be suitable for farmers. As for one village, Monshyet El Maasra village, El Fath District, it was agreed that they would establish a committee to help demo-farmers sell their tomato. The committee was organized with the counterpart of the Agriculture Directorate, District Agriculture Office (DAO), Village Cooperative and demo- farm farmers. In Assiut we considered this committee as a model case and share the experience with other villages. The Project provided equipment such as plastic crates.

Harvesting tomato in Manshyet EL Maasra village has started since the late August. The amount of harvest is still little, but the harvest has been sold at the direct shop of the DAO. Sales are about 2 *kafas* (around 35kg) in every 5 days. In this activity, the village cooperative officer takes role of supervising the harvest and coordination between farmers and the DAO. The harvest is transported

by the pick-up of the DAO. DAO has right to take fee for transportation etc., but the head of the DAO decided not to take that in this Pilot as the harvest is also little.

The head of the DAO has strong leadership and he refers to the wholesale price in Assiut sent by SMS by the Project and the retail price around the DAO office to decide the price of tomato to sell. They set the price between the wholesale price and the retail price. At present the amount of tomato sold at DAO is little but if the amount became big, they would have to consider the price to be equal to the retail price around the shops of DAO not to harm them. By direct selling at DAO, the margin of traders is cut and it will be the benefit of the farmers.

Table 2.2.3 shows the price of tomato and selling place of the farmers of demo farms. Two landowners (large-scale) who provided their lands to the demonstration in Abad Sharona sell all the *kafas* at once at Maghagha wholesale market, however, when the price at the wholesale market goes below the retail price in the village which is 15 L.E. / kafas, the permanent worker for the landowner goes around the village and sells by cart. The small-scale farmers of Abo Haseeba do not sell at the wholesale market all together, but they visit several retailers and sell one *kafas* by one *kafas*.

Table 3.2.3 Price of Tomato and Selling Place of Demo-farm

Governorate	Minia			Assiut		
District	Maghagha	Matay	Mallawe	Assiut	El Fath	El Kosya
Village	Abad Sharona	Abo Haseeba	El Baragel	El Zawya	Manshyet El Maasra	El Alsar
Price in August	Max. 30 Min. 12	Max. 34 Min. 11	Max. 26 Min. 20	Max. 25 Min. 15	Max. 35 Min. 30	Max. 40 Min. 25
Selling Place	Maghagha wholesale market and in the village	Matay retailers	Local retailers	Assiut and Abo Teeg wholesale markets	El Fath District Office	El Kosya wholesale market and in the village

The relatively large-scale farmer of El Zawya goes to Abo Teeg wholesale market first, and sells tomato there only if there are not so many tomatoes in the market. If there are many tomatoes and the price is not so high, they go to Assiut wholesale market.

(5) Activities from Late September 2011 to End of March 2012: Marketing by Cooperative

In Minia Governorate, the specialized cooperative, Agriculture Cooperative for Finance was involved to expand the market channel of the farmers in the demo-farm villages. However, by the end time of the harvest for sale of the tomato demo-farm, the marketing of tomato through this cooperative was not realized during the pilot period. The farmers of the demo-farms had expressed that they would not want to be bound for where to sell and they were satisfied with the sales in their neighboring market. It was agreed that the cooperative would keep communication with the demo-farm villages and when they were interested in selling any crop, the cooperative could intermediate the sales. The Cooperative has been working with several villages to intermediate the farmers and the private food and processing companies.

The committee organized to help marketing of tomato from Monshyet El Maasra village was selling tomato at the direct shop of the EL Fath District Agriculture Office. Since the tomato harvest was little at the demo-farm, sales of tomato at the direct shop ceased soon. Then the District worked for selling processing products from Rifa village, namely tomato paste and fig jam. These products were so popular that the products were easily sold out.

Supporting the sales of processing products is also actively carried out at the Governorate Agriculture

Office. The seminar was held to gather basil traders and producers and promote high quality with high price basil. Also, the Project supported to collect the information of traders who can rate the quality of basil and buy according to the grade of the product. Eventually the cooperative managed to sell the dried basil to an exporter in Alexandria.

3.2.2 Results of the Implementation

(1) Market Price Information Collection and Dissemination

The price information dissemination was generally well received by the farmers, but as the information was wholesale price, there was a gap with the farm-gate price. Therefore farmers were not able to confirm the relevance of their selling price directly by the information sent by the SMS, but they would be able to judge that the price that the buyers offer to them was not unreasonably high by comparing to the wholesa. The demo-farmers sold their produce within the village or at the nearby local wholesale market. It can be said that the Project was effective for the farmers in a way that they can know the going rate of the market price prior to choose which market to sell or negotiate with the traders.

As for the efficiency, the Project sent the SMS every day during the harvest period to the total 72 farmers, extension officers and cooperative officers related to the demo-farm in Minia and Assiut and it cost average LE335 per month or LE5 per person per month. In Egypt, there are three mobile companies and the Pilot applied a discount service of SMS offered by one of the three, namely we can send one SMS message to a group consisting maximum 20 people. But as this service was only available to the telephone number of the same company, cost saving effect was limited. The more we increase the number to send SMS, the more cost it is required. In the Pilot, we put the whiteboards at the cooperative office of the 6 villages where we established the demo-farm, so that the villagers were able to see the current market price. Unless the Government administration can charge to such services, saving the operation cost will be the crucial issue.

Since the market price is fundamental information for farmers to cultivate and sell their produce according to the needs of the market, the price provision service is considered relevant. However, it was indicated that the cost performance should be taken into consideration. In order to improve cost performance, it would be considered to send information only to cooperative to display there or collaborate with the mobile company to make it a part of their business strategy. For this consultation with IT specialists and public-private partnership as the Ministry would be require

(2) Supporting Marketing by Cooperative

For the marketing by village agriculture cooperative, it was not realized though we have tried to collaborate with the specialized cooperative for marketing (Agriculture Cooperative for Finance). One factor was that the village cooperative was not taking marketing of produce as their role after liberalization policy in 1980's and also the target farmers preferred to choose freely where to sell their produce and they were not attracted to sell their produce through the village cooperative or the specialized cooperative. Whereas, Arab El Kadadeh Village Agriculture Cooperative, in which the basil drying yard was established by the Pilot, has become an agent for marketing and sold the dried basil to a trader.

As for the activity of the specialized cooperative in Minia, namely the Agriculture Cooperative for Finance, they work with a basis of contract farming prior to cultivation. In case of dried basil, there is already distribution channels in the area; thus, the farmers was able to sell their produce to the

exporter without contract before. However, contract farming seems important for Agriculture Cooperatives to engage in collective shipping of agriculture produce. They would need such arrangement for success as securing where to sell, i.e. contract farming, giving low interest finance to farmers as the finance by the traders / middlemen to the farmers prior to cultivation has been prevalent. For this arrangement, the cooperative would need to make use of the asset of cooperative.

Salakos Village in Minia Governorate is known as Garlic production. Demonstration farm established to introduce improved variety of Garlic and farmers tried to sell high quality production with high price. However, market price of Garlic dropped sharply this season, and Garlic farmers suffered from serious low prices. In response to this situation, Village Agriculture Cooperative, farmers, and local traders had a meeting to discuss the price stabilization.

Farmers sell their production to local traders, and then local traders deal with exporters in Cairo. In this current distribution system, local traders play a role of shipping adjustment with cutting roots and peeling. It is suggested that local traders establish traders' union to negotiate exporters. Also, establishing farmers' association and using cold storage is considered to prevent price collapse. These ideas, however, are necessary to be examined more carefully because most farmers prefer to earn cash right after the harvest rather than to store their production.

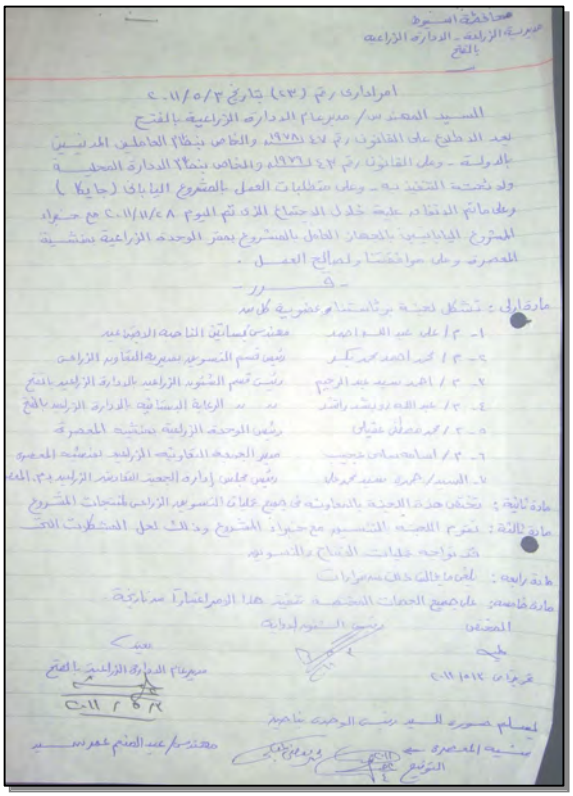
Local traders suggest that the Agriculture Cooperative contract with exporters, and they buy production with stable price from farmers. The Agriculture Cooperative needs support from Central Agriculture Cooperative in Minia Governorate due to their financial weaknesses. This system has already tried in Arab El Kadadeh Village in Assiut Governorate during the pilot projects. In this Village, basil farmers sold their basil to the Agriculture Cooperative, and the Cooperative dealt with exporters. The Agriculture Cooperative in Salakos Village is expected to look for the way of contract farming in the future with the coordination line of District, Governorate, and Central Administration.

After the liberalization policy of agricultural production and marketing in 1980's, the private sector for marketing has been well developed and the farmers are easy to sell their produce individually. This may have also been attributed to the ceasing of the role of agriculture cooperative for marketing. Historically, the agriculture cooperative in Egypt had been an agent to control the crop production and marketing. From such background of the cooperative, it is required for them to build the trust of the farmers in the village and revitalize the organization in order to make the cooperative get into the filed of marketing again. It is also necessary to consider again what would be the advantage for the cooperative to revitalize for marketing.

On the other hand, through the Pilot Project, we were able to make an example of activity, namely not focusing on the agriculture cooperative only but establishing a committee by the stakeholders to support the farmers for marketing. As mentioned above, In Manshyet El Maasra village, a committee with village cooperative, district agriculture office and governorate agriculture office was established and helped the demo-farmers sell their produce at the direct shop of the district agriculture office. Due to little harvest, the activity stopped in a short period so we could not see much effect or the role of the committee well. However, it showed the possibility of establishing a platform for stakeholders to get together for rural development, so that active persons may come to join the activity (in case of the Pilot, the head of district agriculture office was actively leading the activity).

The District / Governorate have been selling the processing products from the processing units of the Pilot Projects at the direct shop of the office even after the harvest of the demo-farm finished. This committee was established in accordance with the Laws for civil workers and local administration and

therefore, the work under the committee was an authorized administrative service work.



Assuit Governorate

Agriculture Department- El Fath Agriculture Administration

An administrative Decree No. (23) on 3/5/2011

Mr. Engineer/ General Manager of Agriculture Administration of El Fath District
After considering Law No. 47 of 1987 related to system of Civil workers in the government and also Law No.43 of 1979 related to the system of the local administration and it is executive regulations and the requirements of working with the Japanese project (JICA) and also what we had agreed during the meeting on 28/4/2011 with the Japanese experts in Agriculture unit hall in Manshyet El Masara about the team who will be responsible for the project

Decided

Article one: form a committee under our chairmanship and membership of
1- Mr. Ali Abd Allah Ahmed Horticulture Engineer (socially)
2- Mr. Mohamed A. M. Bakr Head of Marketing in Agriculture Cooperation Department
3- Mr. Ahmed S. Abd El Haleem Head of Agr Affairs in El Fath Agr Administration
4- Mr. Abd Allah R. Rashed Head of Horticulture care in El Fath Agriculture Administration
5- Mr. Mohamed Mostafa Ekely Head of Agriculture Unit of Manshyet El Masara
6- Mr. Osama Samy Ageeb Head of the cooperative of Manshyet El Masara
7- El Sayed Hamdy S. Mohamed Chairman of the cooperative of Manshyet El Masara

Article Two: this committee is specialized to help in collecting Agriculture Marketing processes for the project produce.

Article three: the committee helps to solve all the problems which may face production and Marketing processes with coordination with the Japanese experts.

Article Four: Eliminates as may be otherwise decisions

Article Five: all the competent authorities must implement this decree with effect from the date of

Competent
General Manager of Fath Agriculture Adminsitration
signature Dated on 3/5/2011

Eng/ Abd El Menaem Omar Sayed

One copy for head of Agriculture unit in Manshyet El Masara

Figure 3.2.1 Decree issued for the Committee to Help Marketing of Demo-farm in Assiut

3.3 Processing and Marketing of Excessive and Low Grade Produce

3.3.1 Pilot Activities

(1) Outline

There are 3 sites to implement the component of the processing of agricultural produce, namely Delga village, Dyre Muas District in Minia Governorate, Rifa village, Assiut District and El Egal El Bahry village, El Badary District in Assiut Governorate. This component aims at adding value to the excessive produce or low grade produce by processing. Establishing the processing unit in the village would contribute to creating job opportunity. Following are the major activities:

1) Assessment of present situation
2) Establishment of farmer group
3) Selection of place to install unit
4) Furnishing the unit and equipment procurement
5) Preparing operation methods and rules
6) Training to farmer group
7) Operation
8) Monitoring and Evaluation

(2) Summary of Activities by Mid September 2011

The Team and C/P had several meetings in the Pilot villages with the representatives of the farmers such as the board members of the village agricultural cooperatives and the officials of the village cooperatives for discussing the establishment of the processing unit and its operation. There would be two ways of operating the processing unit: 1) organize farmer group and they will rent the unit and run it, and 2) village cooperative will run the unit and hire farmers in the village.

It was planned as basic frame that the village cooperative will manage and operate the processing unit

and small-scale farmers in the village sell the produce to the cooperative and the cooperative processes the produce and sell in the village or at direct shops of the government offices in District and Governorate. The processing unit is run initially by the cooperative but in the future the group of farmers actually working for the unit may become independent and run the unit by renting the unit from the cooperative.

Establishing management group in the village cooperative has also been discussed. Decision making will be made by the board members or the general assembly of the cooperative. Actual operation will be executed by the management group of the cooperative. Following table summarizes the management group of each cooperative as a result of discussions.

Table3.3.1 Management Group of Processing Unit (As of Sep. 2011)

Cooperative	Management Group	Remark
Minia Gov. Delga village	Consist of 6 officials and staff of the cooperative (general manager, assistant manager, accountant, procurement and coordination). The director of the cooperative becomes the general manager.	Group (women and a man) will take 30% of the sales and the rest will go to the cooperative.
Assiut Gov. Rifa village	Consist of 2 cooperative officials and a committee formed by 6 board members. The director of the cooperative becomes general manager and the committee will be responsible for planning.	Women group who work for processing get wage from the cooperative.
Assiut Gov. El Egal El Bahry village	Consist of the Board Chairman and 3 cooperative officials. The Chairman is responsible for the unit. The cooperative officials work on accounting, procurement, sales, and coordination.	Women group who work for processing get wage from the cooperative.

In 2 villages, the board members of the village cooperative are involved in the management group and in 1 village, the unit will be managed by the cooperative officials and staff only. In all the units, the accountant of the village cooperative takes in charge of accounting the unit operation. They will open special account for the unit. For the processing work, mainly women in the village are hired. In Rifa and El Egal El Bahry villages in Assiut Governorate, the women will get wage from the cooperative, while in Delga village in Minia Governorate, it was agreed that 30% of the sales will be taken by the group of workers (in Delga, one youth man is a member of the women group) and 70% will go to the cooperative. As the actual operation starts, the operation and management would be modified to fit into the circumstances.

1) Planning of Processing Unit: Target Products

Basic plan at each village was made at the stage of pilot planning during the Phase I. As starting the Pilot Projects, detail planning was carried out at the 3 village cooperatives. Target products are mainly the ones using the major crops in each village and in order to increase the operation ratio of the unit, combining several kinds of products was planned. The major crop in each village was identified as onion in Delga, winter tomato in Rifa and pomegranate in El Egal El Bahry. Adding to these main crops, other crops are combined and the production calendar throughout the year operation was planned as shown in the table below.

Table 2.3.2 Delga Village Processing Calender

Month	Pickles	Dry vegetables
1	Carrot- Turnip	Peas- Coriander
2	Carrot- Turnip	Peas- Coriander
3	Carrot- Turnip	Peas- Coriander
4	Carrot- Turnip	Beans- Molohia- Grean kidney- onion (big)- garlic- mint
5	Onion (small)- Cucumber- Pepper	Okra- Molohia- onion (big)- garlic
6	Onion (small)- Cucumber- Pepper	Okra- Molohia- onion (big)- garlic
7	Onion (small)- Cucumber- Pepper- lemon	Okra- Molohia- onion (big)- garlic
8	Onion (small)- Cucumber- Pepper- lemon- olive	Okra- Molohia- onion (big)- garlic
9	Onion (small)- Cucumber- Pepper- lemon- olive	Okra- Molohia- onion (big)- garlic
10	Onion (small)- Pepper- lemon	Onion (big)
11	Onion (small)- Pepper- lemon	Onion (big)
12	Onion (small)- Pepper- lemon	Onion (big)

Table 2.3.3 Rifa village Processing Calender

Month	Tomato paste	Carrot Jam	Frozen okura
1	○	○	
2	○	○	
3	○	○	
4		○	
5			
6			○
7			○
8			○
9			○
10			
11	○		
12	○		

Table 2.3.4 El Egal El Bahry village Processing Calender

Month	Pomegranate seed	Pomegranate juice	Orange jam	Orange juice
1			○	○
2				
3			○	○
4			○	○
5			○	○
6			○	○
7				
8	○	○		
9	○	○		
10	○	○		
11	○	○	○	○
12			○	○

3) Installing Processing Unit

For installing the processing unit, the village cooperative provided the space and is responsible for connecting electricity, water and drain. The Project provided for the furnishing the unit and equipments required. Based on the identified processing products, furnishing design and selection of equipments were carried out by the Team and C/P.

As for the space to install the unit, Delga village cooperative constructed a house for installing the processing unit inside the compound of the cooperative by their own expenses. In Rifa village, the rooms of the building owned by the village cooperative were offered to install the unit. In El Egal El Bahry village, the village cooperative did not own building to spare the room and then the cooperative rented a room in the village.

According to the shape of the room and the processing methods, the design of furnishing and selection

of the equipments were re-examined and the furnishing work was ordered from May 8 to 12, 2011 and equipments were ordered on May 11. Furnishing is tiling inside the room, installing windows and fans, outlet of water and drain and electricity. The space of the units in the 3 villages is around 37 - 38 m^2. The furnishing also included the outer painting. The equipments mainly consist of stove burners, cooking tables, cooking devices, refrigerators, etc. The equipments differ according to the processing products, e.g. portable vegetable dryer in Delga, squeezer in Rifa, press squeezer in El Egal El Bahry. The furnishing work and equipment procurement have been almost completed by the end of June 2011.


Processing Unit in Delga Cooperative Compound


Delga Village Unit


Rifa Village Unit


El Egal El Bahry Village Unit

4) Trainings

In each site, a series of trainings for the processing was administered. In each site, total 18 trainees were selected by the officials and board members of the village cooperative. Criteria for selecting trainees discussed prior to the selection were youth aged from around 18 to 25, those who are not currently employed and have willingness. Trainees are basically women, but in Delga one youth man participated in the processing. As for Rifa village, all the 18 trainees are women and in El Egal El Bahry village, for the first lecture, several men attended but from practical trainings all occupied by women.

As initial session for the processing training, one day lecture was carried out in each village. District extension engineers and the village cooperative officials also attended the lecture. After the processing unit was installed, practical trainings at the unit were administered. The trainees were made into 3 groups (6 per group) and when one group practices, other groups were observing the practice and the practice was rotated to the 3 groups, namely training for one item of processing took basically 3 days. Also training for management to the cooperative officers were carried out. As for trainers, in Delga in Minia, the Rural Women Center in Minia Agriculture Directorate conducted the training. For Rifa and El Egal El Bahry in Assiut, an expert for processing, who is a lecturer at the Faculty of Food Economy in Assiut University was invited.

Trainings administered as of mid September 2011 are summarized in the table below. In order to increase the operation ratio of the unit, the trainings for fig jam was also carried out at the 2 villages in Assiut Governorate. The trainers evaluated that the almost all the trainees were satisfactory with the basic skills. Apart from the trainings, women group were practicing by themselves and studying the taste of the products. In El Egal El Bahry village, the women group repeatedly worked on examining the amount of sugar to add to the orange jam. It was difficult to decide the amount of sugar due to

the unequal quality of orange. The products processed during the trainings sold in the villages and the Rural Women Center in Minia as a trial offer and the women group is collecting the opinions of the consumers.

Management training for key staffs of the agriculture cooperative was conducted in Delga village (will be conducted in other two villages from late September) concerning how to manage post harvest processing facilities, how to sell the product and to encourage people participating in the project. After finishing this training, the Team prepared the future sales-plan together with cooperative staffs considering the capacity of facilities constructed by the pilot project as below. In the latter half of the pilot project, the cooperative will act independently managing and selling, based on this sales plan.

Table 3.3.5 Trainings for Agro-processing

Village	Trainings		
	Contents	Time	Target Group
Rifa	Lecture (Agro-processing)	May 2011 (1 time)	Cooperative staff, women group
	Practical training (tomato paste, frozen okra, carrot jam, fig jam)	Mid July 2011～Mid August (10 times)	Women group
El Egal El Bahary	Lecture (Agro-processing)	May 2011 (1 time)	Cooperative staff, Women group
	Practical training (orange jam, orange juice, fig jam, pomegranate vacuum packing)	Late June 2011～Mid September (10 times)	Women group
Delga	Lecture (Agro-processing)	May 2011 (1 times)	Cooperative, Women group (including 1 man)
	Practical training (pickles, dry vegetables)	Late June 2011～Mid September (6 times)	Women group (including 1 man)
	Management training (economic analysis, accounting, etc.)	August 2011 (6 days)	Cooperative staff

4) Trial Sales and Sales Planning

Apart from the trainings, the women groups gathered several times at the processing unit and examined the quality of the products. The products were sold at the village or the Rural Women Center in MInia (pickles from Dlega village) and opinions of the consumers were collected. Opinions of the consumers are: “Sugar should be lower for orange jam (EL Egal El Bahry village)”, “Plastic package is better than bottle”, and “Mixing several vegetables are better than single one” for pickles (Delga village).

Improving the products in response to the opinions of the consumers, the Team assisted the cooperative to plan for production and sales in order to go into full operation of the processing unit. Also while starting the sales at the direct shops of the Government administration offices in the Governorate and District and villages, the Team is collecting information of buyers through word of mouth. In Assiut, There is a trader who is interested in the vacuum pack of pomegranate seeds. The cooperative provided the sample to the trader and started negotiation. Also in order to sell the products in the supermarket in town, the cooperative is planning to get license of the products.


Training for orange jam making


Training for tomato paste making


Pickles made in Delga village

5) Summary of Progress

Following table summarize the progress of the three processing units:

Table 3.3.6 Progress of the Agro-processing Units (Mid September 2011)

Site	Delga	Rifa	El Egal El Bahry
Products	Pickles, dry vegetables	Tomato paste, frozen okra, carrot jam, fig jam	Pomegranate juice, vacuum pack of pomegranate seeds, orange jam, orange juice, fig jam
Processing Unit	Procedure to get license of 3-phase electricity is still under process. As soon as it is finished, dry vegetable production will start.	Small devices will be added as required.	Squeezer is under repair and will be ready by late Sep. Small devices will be added as required.
Trainings	18 (1 man, 17 women) attended trainings for pickles and dry vegetable trainings	18 women attended trainings for tomato paste, frozen okra, carrot jam, and fig jam.	18 women attended trainings for orange jam and juice, and pomegranate vacuum pack.
Sales, etc.	Sold around 50 bottles of pickles at the Rural Women Center in Minia. Made sales plan for September (onion 300kg, lemon 500kg, olive 500kg)	Sole mainly frozen okra and earned around LE1,400 by the end of August. Weekly sales plan is made from mid September. The Season of okra finished and they sell tomato paste and fig jam by checking the weekly result.	Sold trial products of orange jam and juice in the village and earned around LE800 by the end of August. Trying to negotiate with a trader. To sell pomegranate product.

(3) Activities from Late September to End of March 2012

1) Trainings

In each Pilot site, at the same time of regular monitoring, follow-up trainings to advise and instruct the management group and women working at the processing unit were carried out. Apart from that, additional trainings such as management training for the cooperative staff, processing training for additional products and market visit to study market demand.

Table 3.3.7 Additional Trainings (from late Sep. 2011)

Place	Time	Contents	Participants
Minia Rural WomenCenter	Sep. 2011	Management training for the agriculture cooperative staff who are responsible for managing the processing unit	9 women
El Egal El Bahary Village	Nov. 2011	Training for a new product of pomegranate (preservation in syrup) in order to diversify the products of next season.	10 women
Delga Village	Dec. 2011	Visiting market in Minia city by the women. Visited the supermarket to see the actual products sold at the store and learned kinds, way of packaging, etc. in order to reflect market demand to their own products.	9 women
Delga Village	Feb. 2012	Training for making dried onion. 3-phase was finally installed to the unit and another item of product to use the specialty crop in this village. Dried onion would be sold to the traders in the village or retailers in town.	2 men and 5 women
Rifa Village	Feb. 2012	Training for frozen vegetable making in order to increase the number of products and hence to increase the operation ratio of the unit.	8 women
El Egal El Bahary Village	Mar. 2012	Training for tomato paste making in order to increase the number of products and hence to increase the operation ratio of the unit.	10 women

Management Training

Management trainings were carried out for the management team of the village cooperative on how to manage the processing unit and how to prepare the production and sales plan. Based on the trainings, the management teams of the village cooperatives started preparing the production and sales plan and procurement of the raw materials and processing. As the cooperatives had never worked for the processing of jams, frozen okra, pomegranate juice, drying basil etc., the Study Team agreed to help them to produce the products to attract customer based on the information of preference collected from the traders and consumers.

First training was carried out at Delga village cooperative in the end of August 2011. As for the management teams of the cooperatives in Assiut Governorate, they all gathered together and the training for them was carried out at the Rural Women Center in Minia from September 26 to 28, 2011. The main contents of the training included the basic knowledge on management and record keeping, method of cost benefit analysis, etc. Although the products processed in the cooperatives are different among another, the basis of management is the same and therefore, the three village cooperative management teams took the training together at the center. Total 9 members attended the training.

Contents of the Management Training (Sep.26 – 28, 2011)

Day	Contents
Day 1	Business Administration: basic knowledge of managing processing unit
Day 2	Accounting: accounting method, record keeping ,etc.
Day 3	Economic Analysis: cost-benefit analysis, planning of production and sales

This training session was not only to acquire knowledge but also became a venue for actively exchanging the opinions about their common issues such as how to deal with the hired women group as they had not known about other's activities.

The level of understanding on the training differed according to their educational background. Among the 9 attendants, 3 were graduates of college, 2 agricultural diplomas after graduating senior high school, and 4 agricultural vocational school graduate after graduating junior high school.

Post-training questionnaire revealed that the college or agricultural diploma graduates felt the training contents were somehow easy while the vocational school graduates answered it was a little difficult. It was recognized that the supporting program should be designed according to the capacity of the members. Among the attendants, 7 persons said the economic analysis was the most useful topic. They said, "We could apply the method for any processing products" and "it became clear about the method of calculating the cost and profit".

Lecture on Economical Analysis

Lecture on Accounting

Market Visit

In December 2011, a study tour to visit the markets in Minia city was carried out for the women working for pickles processing unit in Delga village. Delga village is considered a remote area and especially the women in the village seldom go out of the village as they have only visited Minia city to go to hospital. Therefore, it was considered useful for the women to visit the market in the city to see how they are packaging the products or what kinds of pickles are sold. By this tour, it was expected that the women can improve their products for better marketing.

For this study tour, 9 women participated and they went round the major super markets in Minia city and saw how the products were sold. They also got the needs of the retailers. They also visited the Faculty of Agriculture in Minia University and received a lecture on agro-processing from a professor there. For the post-study tour evaluation, the participant women said, "We learned how to attract customers by various ways of packaging", "We want to use the knowledge we got today for our processing", etc.

Study Tour for Market by women in Delga Village

2) Production and Marketing

In each processing unit, the cooperative management group gradually advanced their business with the process of sales of trial production, collection of consumers' opinions, and improvement of products. Following describe the activities of each processing unit.

Delga Village

From late September 2011, the cooperative made a plan to produce 300kg of the pickles of onion, 500kg of lemon and 500kg of olive per month. For marketing the products, they decided to make 3 kind of packages, namely small bottle (400g) and big bottle (1kg) for consumers and small bucket (10kg) for retailers such as restaurant. Target market was set to the shops in nearby towns.

The cooperative staff procured the raw materials within the village except for olive, which they got outside the Governorate through the introduction of the trainers. However, the quality of the olive was not so good and the fruits were small. As for the lemon which they procured directly by themselves in the village were in good quality and they managed to buy them less than their estimate. When it is required to procure bulk of raw materials, the way of procurement will greatly affect the profit. It was recognized by the cooperative staff the importance of how much and when to procure raw materials according to the trend of the market.

Consulting with the trainer on the quality of the pickles (Delga)

Processing work at Delga Unit

In the beginning, for pickles making, it takes 1-2 months to barrel the vegetables and therefore, actual working days at the processing unit was around 10 days per month. The cooperative decided to secure more space within the compound of the cooperative to keep the barrels, so that they can increase the number of barrels and extend the working days up to 15 days. They carried out their decision at once.

The first pickles prepared in September 2011, namely 500kg of lemon, 500kg of olive, 300kg of onion, and 50kg of pepper were started sealing in the beginning of November 2011 after the feast holiday. Also the cooperative started making 500kg of cucumber pickles in November. The cooperative staff worked hard for marketing and they developed the marketing routes such as direct shop at the Village Agriculture Bank and retailers in Assiut city and even in Suhag Governorate.

Transportation cost was an issue to increase the production cost, but they managed to negotiate with the retailers to let them come to collect the pickles to the unit. Another factor to affect the profit was the wage for women, which was higher than the pickles factories around. Original plan was to share the profit between women and cooperative with 7:3, but this was not executed as women cannot receive cash until the products are sold. Then they agreed to pay for women LE15 per day. The cooperative introduced price work system in January 2012, namely to pay LE30 per barrel. Before this new system, 5 women used to make 2 barrels per day, but after the new system the same women made 3 barrels per day. As a result of increasing efficiency, the labor cost decreased from LE37.5 per barrel to LE30 per barrel. The cooperative manager was, however, thinking that the labor cost is still high. Then he found other laborers who work with cheaper wage and asked the women to work for drying vegetables. They will keep the negotiation between employer and employees.

In Delga village, dried vegetables were also planned to process to increase the operation ratio of the unit. However, the installment of 3-phase electric power was delay due to slow official procedure.

The procedure was completed in February 2012 and the Project conducted the training for drying vegetables. There is a trader who can deal with dried vegetables and marketing the product to the trader is the next target. They produce products as expected, and monthly production maintain its target level.

Rifa Village

In Rifa village, the cooperative management planned to process 150kg of tomato and 75kg of fig per week in October 2011. However, the market prices of tomato and fig were getting high at that time so that they processed one-third of their plan for that period. The products were sold at the village cooperative and direct shops of agriculture directorate and El Sadfa district agriculture office. On the day of operating the processing unit, villages come to buy the tomato paste or jam, which were just made. Also the products are popular at the direct shops of the governorate and district. The main product of the Rifa cooperative is tomato paste, but the market price of tomato got high in November and then they shifted to process fig jam in this winter.

In Rifa an accident happened on December 26, 2011. A lady was washing the tomato squeezer without turning off the power. Her hand was pinched by the machine and get injured (The Team was training them to turn off the power when they wash it). By this accident, the operation of the processing unit in Rifa was suspended to review the safety of the operation. Rifa village cooperative, which is responsible for the management of processing unit, submitted a report for enhancing safety measures to the governorate agriculture directorate and the Team and C/P agreed to resume the operation from February 2012.

The safety measures that the cooperative reported were 1) put one cooperative staff to operate the machine, 2) give instruction before starting the work every day and 3) add more posters for caution. Also to enhance the safety of the squeezer, the Team asked the supplier to put a cover on the hole of the squeezer so that the hand would not easily reach inside the hole.

The processing operation of Rifa village resumed from February 19, 2012. They started with frozen vegetables and carrot jam making. Because some of women changed due to the accident, the Team invited the trainer to the unit and carried out the training for the first day. The lady who was injured by the accident also came to the training indicating her mental recovery from the accident. They started making tomato paste in March as the price level of tomato was still low.

El Egal EL Bahary Village

As the harvest of pomegranate, which is suitable for processing started from September 2011, training for pomegranate processing was carried out in September. The product is as simple as only to vacuum pack the pomegranate seeds and the reaction of market was good, as some traders in Minia or staff of UNIDO project contacted the counterparts and the village cooperative to ask for the products. UNIDO project staff visited the village cooperative and commented that the quality of the product was good, although a contract with bulk of product was not materialized.

The cooperative managed to deal with a supermarket in Assiut city to sell the pomegranate vacuum pack. At the first time, they sold 80 bags (400g per bag) to the supermarket. The product was well received by the consumers and all the products were sold out in 3 days. However, the supermarket staff was re-packaging the pomegranate with plastic tray at the shop. The cooperative learned the needs to improve the packaging.

At the beginning the cooperative could not find the plastic bag especially for vacuum packing. First

time was ok but from the second time, the air came in 2 to 3 days after vacuumed and the product was damaged. Then the Team provided the suitable plastic bag and address to procure the bag to the cooperative to use it. As for orange and pomegranate juice processing, the equipment firstly procured had problem and they exchanged to another and started the work from late October 2011. This year, juice processing was just for trial and they will do the proper production next season.

After November 2011, when the harvest season of pomegranate ended, the cooperative sold their stored pomegranate vacuum pack and made orange jam. To increase the operation rate of the unit, the cooperative plans to process frozen vegetables and tomato paste during winter season.

3) Sold Amount So Far

The profitability of each processing unit is still weak since they have not achieved the bulk production and sales and they have set relatively cheaper price to their products to attract the consumers as initial strategy. But they are gradually increasing their sales and hence it is expected to increase their profitability. The Project assisted the processing units with raw material procurement for about one month. After that each unit is procuring materials by themselves and selling the products. The cooperatives are trying to diversify the products by season in order to increase the operation ratio of the unit. Following are their sales of the products during the Pilot Period. Delga Village shows the best performance in terms of sales amount.

Table 3.3.8 Production and Sales of the Processing Units

Village	Delga	Rifa	El Egal El Bahary
Products	Pickles, Dried vegetables	Tomato paste, fig jam, frozen vegetables	Pomegranate vacuum pack, orange jam
Sales from Sep. to Nov. 2011	Olive, Onion etc. 300kg (LE767)	Fig jam 350 jars (LE875)	Pomegranate vacuum pack 415bags (LE915)
Sales in Dec. 2012	Onion, Lemon, Olive etc. 103kg (LE672)	Tomato paste 74 jars (LE221) Fig jam 856 jars (LE1,867) total: LE2,088	Pomegranate 296 bags (LE715) Orange jam 591 jars (LE1,433) Total: LE2,148
Sales in Jan. 2012	Olive 32kg (LE290), Mixed vegetables 591 bottles (LE4,892) Total LE5,182	Work was suspended due to accident Sales: Fig jam 96 jars (LE240)	Frozen vegetables 542 bags (LE2,044) (Sold: during from Jan and Mar.)
Sales in Feb. 2012	5kg box of pickles 410 boxes, Small bottles 27kg (LE4,870)	Resume the activity from 19th Frozen vegetables: 62bags (LE233) Carrot jam : 66 jars (LE198) Total: LE431	
Sales in Mar. 2012	Mixed pickles 790 boxes (LE6,150)	Tomato paste: 5 jars (LE15) Frozen vegetables: 23 bags (LE86) Carrot jam: 31 jars (LE93) Total: LE194	

4) Safety Measures

Upon the accident happened in Rifa village processing unit in December 2012, the Team informed

immediately informed this to the other processing units to alert for the safety. Then the Team reviewed the safety of each processing unit including the bail drying yard, i.e. we checked the risks of accident by the equipments of the processing unit and documented them and distributed to all the processing units. Also as the most important measure is that the workers should be well aware of the risks, some simple but important points were briefed on the paper so that the workers can easily memorize and this paper was delivered to each processing unit

Safety Measures

1. Making order, Tidying up, and Cleaning (3S).
2. Start and finish the work with calling out. Do not work by your own.
3. Work together. Do not work alone.
4. Take off the power and close the gas burner when you do not use them.
5. Non-smoking inside the Processing Unit.

3.3.2 Results of the Implementation

Results of the implementation and issues occurred during the implementation are examined for the major activities.

(1) Assessment of present situation

Assessment of present situation includes detailed schedule and plan. Schedule and plan were designed with C/P and specialists based on the present village and village cooperative situations. Results of the assessment were satisfied with some arrangements. About receiving the materials, various low materials were considered for effective operation of the processing unit. Since the low materials in the village such as Rifa and Bahary were limited in variety, it was considered to be necessary to train for operators about various low materials and processing technologies. Therefore, training times have been increased and it took for long times. On planning for these facilities implementation, it should be taken enough time for assessing low materials' variety, volume, price, acquired in and around village, harvesting period, etc. in cooperation with the village, district and governorate cooperative and farmers, specialist and related agencies.

(2) Establishment of farmer group

The initial plan was that farmer group would be established with the support of the village cooperative, procure the low materials and operate the unit by itself based on the plan. However, since the farmer or village cooperative have not such experiences, it was not set up the plan, and it was decided that the village cooperative would operative the unit and procure the low materials. As the cooperative has many members of farmers, it is easy to contact them. However, at the beginning, though, the significance of the pilot project was explained to the farmers with holding the several workshops, and discussions were held, the participants were limited, explanation and information methods were improper, then the cooperation with the farmers was stagnated. The significance of the pilot project becomes known step by step with the effort of the village cooperative, it should be more promoted.

(3) Selection of place to install unit

For pilot project, the units were designed, considering the limited period and budget as well as the significance of the pilot project, selected the minimum scale but effective for the project. The units have the repaired interior of the room, procured equipment and enough space for operation and

maintenance. The usual building size and room size were considered for the units. Each repaired unit is around 40m2 in space, corresponding to the two-room size of usual building in the area. The place to install was firstly considered the village cooperative land and building, then the place being able to be easy operation and maintenance, having good access for procurement of low materials and selling the projects, and/or staying in good environment, etc. About the selected places, they were satisfied based on such selection criteria, except in Bahary village, the unit of which was obliged to be hired from the private farmer. In Delga village, the village cooperative constructed the building for the project, and expanded the area by itself for more active operation. When the place of the units is in the cooperative land and building, operation and maintenance become easier and costs of public utilities are lower than the usual house, which are preferable.

(4) Furnishing the unit and equipment procurement

For the unit, it was designed to tile on floor and walls, to furnish the drain, ventilation, ceiling fan, etc. in consideration with a good quality of hygiene and safety. Repairing the room for the unit, it wad conducted within 45 days by the civil company in the village after selected from not less than three candidates. Construction of the unit was satisfied. Designing of equipment capacity and quantity to be procured was conducted with the help of C/P and specialists. It was also satisfied. In Rifa village, unfortunately, an accident was happened during the equipment cleaning and stopped the operation. After awarded and re-confirmed the more safety operation and maintenance, and established the safety management organization for it, the unit began to operate. Size of the units and major equipment are referred to the followings:

Table 3.3.9 Furnishing and Equipment of the Processing Units

Item	Delga village	Rifa village	Bahary village
Products to be processed	Pickles, Dried onion	Tomato paste, Carrot jam, Frozen okra	Pomegranate seed pack & juice, Orange jam & juice
Interior, Size of the units	Ceiling fan 2 units, ventilation fan 2 units, tilling of floor & walls, sink 2 sets, etc. Floor: 42m^2	Ceiling fan 2 units, ventilation fan 2 units, tilling of floor & walls, sink 2 sets, etc. Floor: 42m^2	Ceiling fan 2 units, ventilation fan 2 units, tilling of floor & walls, sink 2 sets, etc. Floor: 37m^2
Major Equipment	Cooking tools, plastic containers, sealing machine, small-scale dryer, scales, etc.	Cooking tools, squeezer, refrigerators, freezer, gas oven, sealer, scale, etc.	Cooking tools, vacuum packing machine, juicer, sealer, gas oven, scale, etc.
Remarks	Frozen vegetables are under consideration	Fig jam was tried.	Tomato paste and jam were tried.

In the near future, Bahary village intends to improve the quality and store for longer period to obtain the good profits by means of improve the vacuum packing with nitrogen infusion. It should be consider the cost-profit ratio before introduction. Moreover, Rifa and Bahary villages expect the cold storage for frozen vegetable for storing longer period. It was found by the pilot project that the frozen vegetables would have more consumers' demands. It should be taken care that the cold storage needs large store space and large consumption of electricity which leads to taking high cost of operation and maintenance (yet, Agriculture Cooperatives will be given 15% discount of electricity fee). It is suggested that before planning and implementing for it, research of demands would be conducted and selling price and volume should be confirmed for base values of designing, and examined the cost-profit ratio. For the time being, in order to collecting the data for selling volume and price as well

as obtaining the better shops and buying-repeaters, it should be put the priority on effective operation of present own equipment and the unit. It is suggested that firstly, produced products should be immediately transported to the shops and/or be quickly sold to the consumers, and next, if obtained the good sales, its capacity would be increased by means of adding the equipment one by one.

(5) Preparing operation methods and rules

At the beginning, two methods were examined; one is that farmer group would be established to manage, operate and maintain the unit to be constructed for the pilot project, other is that the village cooperative would manage and maintain the unit and trained farmer or group operate it. In Delga village, village cooperative and farmer group made a contract to operate and maintain the unit according to the former method. However, since farmer group has no experience for management and maintenance of such activities, it could not manage the unit, except that operation of equipment is technically good. Therefore, they changed and amended the contract according to the latter method. Rifa and Bahary village selected the latter method and have no objection. It is learned that village cooperative has educated staff, experiences for cooperative operation and maintenance and knowledge for O&M, it would be preferable for village cooperative to manage, operate and maintain the unit and the ownership should be handed to the village cooperative. Bahary village requests the more firm ownership and intends to process various vegetable and fruit processing for effective unit operation. For operation organization, since actual management was conducted by three main staff such as manager, accountant and procurement & marketing, organization should be improved according to the actual operation and future plan. Initially set-up organizations are shown in the following:

Table 3.3.10 Management Structure of the Processing Units

No.	Roles	Delga village	Rifa village	Bahary village
1	Manager	1 person (head of coop)	1 person (head of coop)	1 person (head of coop)
2	Assist manager	1 person (staff of coop)	1 person (staff of coop)	1 person (staff of coop)
3	Account	1 person (accountant of coop)	1 person (accountant of coop)	1 person (accountant of coop)
4	Procurement of materials	1 person (staff of coop)	1 person (staff of coop)	1 person (staff of coop)
5	Marketing of products	1 person (staff of coop)		
6	Organization support	1 person (staff of coop)	6 persons (board of member)	6 persons (board of member)
7	Unit operator	3 – 6 persons (trained farmers)	3 – 9 persons (trained farmers)	4 – 10 persons (trained farmers)

(6) Training to farmer group

Operation and maintenance of the processing unit need the technology. There are few farmers who have technology. At the beginning, training to the farmer was conducted using the equipment of the unit after constructed for the project. Since the farmer group was not in the villages, 15-18 farmers were selected and trained, which may be able to establish around three groups. Training was conducted several times for each processing products. Plan is to operate the unit by one group consisting of 5-6 operators and it is corresponding to the actual activities, which is satisfied for the pilot project. Moreover, training to the C/P about the management was conducted. After that, C/P has suggested the management step by step to the village cooperative, it would be effective that the village cooperative becomes to manage and operate the unit in the better conditions and better book-keeping

of the low materials procurement and sales activities. It is expected that management technology would be increased in future.

(7) Operation

Since the pilot project has limited period and budget, it was begun the training to farmers and estimation of unit capacity. Therefore, some of low materials for processing were those of off-season and prices were high, so cost-benefit ratio was out of consideration at that time. Capacities of units are satisfied according to the estimated initial plan, except that in Rifa village. Equipment capacity in Rifa village has 2-3 times against the unit capacity, it is restricted to the room size of the unit. According to the past performance of the unit operation, when conducted the better management, proper procurement of low materials, effective operation and obtained wide sales shops and routes with the increased business technology, capacity of the unit would be increased by 50% comparing to the estimated capacity. It was found that some processing would not obtain the enough profit. In such case, it should be stopped the operation until price of low material comes down.

Table 3.3.11 Expected Capacity of the Processing Units

Items		Delga village	Rifa village	Bahary village
Initial plan	Organization Unit operation Capacity	1 person (manager from farmer group) 5 persons (farmers) 100kg/day	1 person (manager from farmer group) 5 persons (farmers) 200kg/day	1 person (manager from farmer group) 5 persons (farmers) 100kg/day
Actual	Organization Unit operation Capacity	3 persons (village coop) 3 – 6 persons (famer) 250kg/day	3 persons (village coop) 3 – 6 persons (famer) 100kg/day	3 persons (village coop) 3 – 6 persons (famer) 250kg/day
Estimated after results of pilot project	Organization Unit operation Capacity	3 persons (village coop) 5 persons (farmer) 250kg/day (actual: half capacity)	3 persons (village coop) 5 persons (farmer) 100kg/day	3 persons (village coop) 5 persons (farmer) 100kg/day
Remarks		Organization staff consists of manager, accountant and procurement & marketing. Capacity becomes half because storing requires 1-3 months.	Organization staff consists of manager, accountant and procurement & marketing. Equipment has enough capacity (500kg/hr), but the unit capacity is restricted by the room size.	Organization staff consists of manager, accountant and procurement & marketing.

On procurement of low materials, in initial plan, low materials would be procured from farmers, but the training was conducted at the beginning, therefore, procurement route from farmers was not set-up. At present, the village cooperative procures the low materials from farmer in and around the villages. Procurement of low materials at reasonable price is a main issue in future. It is preferable to coordinate more firmly with farmers in the village. At the selling, village cooperative is creating the marketing routes to consumers, retailer shops, supermarkets, etc. with the help of district and governorate agricultural and cooperative offices. Products in Delga in Minia are selling in the Women Development Center, and those in Rifa and Bahary in Assiut selling in agricultural and cooperative offices. Selling prices of the products are restricted at low because of trial selling, except those in

Delga. From this, reasonable selling prices should be set-up. Village cooperative should create the wider and various marketing routes, and the district and governorate offices should support it such as instructing the marketing methods and holding agricultural fares.

For pilot project, it was recognized the trail, and selling almost within the areas, therefore, any application forms to be publicly registered are not submitted. When the unit is officially operated, it should be registered for unit operation (trade register, tax card), safety hygiene unit (health license, environmental document, and fire safety license), labor insurance, etc. It is expected to be conducted smoothly with the supports from the district and governorate agriculture and cooperative offices.

Capacity of production and production cost are analyzed so that Agriculture Cooperatives can decide selling price of products and how many products they need to produce. The following shows the results of this analysis.

Table 3.3.12 Minimum Target Price of Major Processing Items

Site	Major Items	Capacity (kg/day)	Variable cost (LE)	Fixed cost (LE)	Total cost (LE)	Production Amount		Minimum price (LE/pack)
						Kg	Pack	
Delga	Pickles (onion)	250kg	713	129	842	250	250	3.4
Rifa	Tomato paste	100kg	146	78	224	21	60	3.8
Bahary	Pomegranate seeds	100kg	268	98	366	50	125	3.0

1) Production capacity is amount of row materials
2) Fixed cost includes depreciation cost and labor cost
3) Minimum price is to cover all the cost of production.

(8) Monitoring and evaluation

Monitoring and evaluation (M&E) of the pilot project were conducted mainly by the C/P and district agriculture and cooperative offices. C/P has worked hardly for instructing the book-keeping ways, procurement methods, expansion of selling route. Study team in cooperation with C/P has transferred technologies for hygiene & safety operation and effective operation of equipment, book-keeping, methods of evaluation, etc. with submitting the sample sheets. C/P, who has a good experience of such activities, has understood them gradually. Since the period and budget for pilot project were limited, and the unit operation was conducted for only half of year, it would be necessary to operate throughout the year. Therefore, monitoring and evaluation become more important for effective and yearly operation under the good low materials procurement. It is expected to set-up the M&E organization consisting of C/P, as a main member, who has already had experiences during the pilot project.

3.4 Reducing Post-harvest Loss and Quality Improvement

3.4.1 Pilot Activities

(1) Outline

The target village for post-harvest improvement is Arab El Kadadeh village in Abnoub District, Assiut Governorate, which is famous for basil production. This Pilot aims at increasing the income of farmers by improving the drying process of basil and also introducing the primary processing of dried basil to the farmer side. Improving drying process of basil would enable to make better quality dried basil and as well as reducing the post-harvest loss. Introducing primary processing of dried basil to farmer side enables farmers to sell the dried basil to the trader with added value. Following are the

activities of the Pilot.

1) Establishing farmer group
2) Identification of the site to lay drying yard
3) Construction of drying yard
4) Preparing operation rules
5) Trial by farmer group
6) Operation of the facility
7) Monitoring and Evaluation

(2) Summary of Activities by Mid September 2011

1) Establishing Farmer Group and Preparing Operation Rules

Stakeholder meetings were held for several times concerning with 1) establishing farmer group and 4) preparing operation rules. The management body is the village cooperative and decision making is done by the board members or general assembly of the cooperative as required. Operation and management of the facility will be executed by the management group of the village cooperative. It was planned that those who will use the facility would not let them form a group but basically open to anybody and every farmers can use the facility as they pay the fee.

In the planned drying yard facility, green basils are to put into *kafas* (traditional basket) and the *kafas* are piled up on the concrete yard. Then equipments for primary processing of dried basil, i.e. separating leaves from stem and crushing leaves) is installed and the primarily processed product is going to be sold to the traders. The facility is operated by the village agricultural cooperative. Drying work will be done by farmers who bring green basil and hired laborers will operate the equipment of primary processing. The processed product is returned to the farmers and farmers are to sell the products to the traders. The village cooperative will charge fee to use the facility from farmers. The village cooperative also wishes to buy the products from the farmers and sell them by the cooperative. However, the cooperative does not have enough capital to buy basil from farmers right now.

As for the management setting, 4 members of the cooperative staff were selected to be the management group. An engineer of the cooperative was selected as the director of the management instead of the head of the cooperative. The accountant of the cooperative is responsible for the accounting of the facility, too. The management set-up would be adjusted to the actual circumstances as the operation starts.

2) Selection of the Location of the Drying Yard

Prior to implement the Pilot Project, it was agreed that 2 feddan of the public land of the Governorate in the desert area of the Arab El Kadadeh village was going to be allocated to the village cooperative. The Pilot Project was to use 1 feddan of the land. However, the Governor changed in May 2011 and the Project requested again to the new Governor for allocating the land. The procedure took long and finally the permission was given on 5th July 2011.

3) Construction of the Drying Yard

The facility consists of concrete drying yard, a house for equipment installment and office with the area of 48m^2 and fence of the facility. The contractor was selected through bidding and the construction work was begun as soon as the land permission was obtained from the Governor. The construction work was completed on September 19. Equipments procured are *kafas* for drying basil, separator, stand folk, and crusher and they will be installed to the drying yard around the day of the construction completion. Practical trainings will follow.

4) Trial of Improved Drying Method of Basil

During the time of awaiting the permission of land use for the drying yard construction, an improved method of drying basil was tried out with a basil farmer in the village. This improved method has been practiced in Fayoum. The method can reduce the mixture of sand and dust and also improve the quality of dried basil by drying in shade. As mentioned above, the improved method will introduced with the concrete yard and special-size *kafas* to be piled up on it. In the trial, we only used *kafas* placing on the ground directly and compared the results with the traditional method that is to scatter the basil on the ground directly.

At present situation, farmers directly scatter green basil on the ground to dry under sunshine basil and after the green basil is dried they collect them into heaps and carry the heaps by covering plastic sheets. As for the improved method, we put green basil into *kafas* which is bigger than the normal one and pile around 6 kafas up and leave them under the sunshine. By this way, mixing sand and dust into basil can be reduced and also basil is dried in shade by piling up *kafas* resulting in better quality.

Following table summarizes the result of the trial:

Table 3.4.1 Trial of Improved Drying Method (July 2011)

	Traditional Method	Improved Method
Basis	Harvested 2,400kg of green basil from 8karat(0.14ha)	Harvested 2,400kg of green basil from 8karat(0.14ha)
Drying Method	Scatter green basil on the ground and dry by direct sunlight. After basil is dried, collect dried basil into heap from the area of a circle with radius around 5 meters. Put the heap on a plastic sheet and tie the sheet to carry basil. Workload is less than improved method.	Put around 6kg of green basil into *kafas* with the size of 80cm × 56cm × 18cm (H). Pile up six *kafas* and dry under sunlight. Piling up *kafas* works as drying in shade. Work load is heavier than traditional method.
Drying time	Started on 6th July and dried in 5 days	Started on 6th July and dried in 6 days
Weight of dried output	Around 400kg Sand and dust were inevitably mixed up in the process of drying and collection and that made the weight heavier than the improved method.	Around 360kg Piled *Kafas* reduced sand and dust to mix up with basil and therefore the dried output became lighter than the traditional one.
Quality	Mixture of sand and dust, and color gets brownish by strong direct sunlight.	Mixture of sand and dust is very little and the color is maintained green and aroma is stronger than the traditional one.
Loss	Some amount of basil is left on the ground when they collect basil for not mixing sand and dust.	Some amount of basil drop on the ground when transferring basil from *kafas* to plastic sheet
Selling price / profit	Price sold to the trader: LE4/kg Gross Income: 1,600LE/8karat	LE4.5/kg Gross Income; 1,620LE/8karat

Workload:

Drying time of the improved method takes longer than the traditional one due to drying in shade. This time can be shortened by reducing the amount of basil per *kafas* or widening the interval of heaps of *kafas*. The workload for the improved method is heavier than the traditional one. However, the improved method greatly contributes to improving the quality of dried basil.

Quality:

For the traditional method, sand and dust is already mixed when green basil is laid on the ground and when farmers collect the basil to make into heaps on the plastic sheet, sand and dust are inevitably mixed again with the basil. Traders do not rely on farmers to collect basil but very often bring their own laborers for more attentive collection in order to reduce the sand and dust to be mixed up with basil. Observing the work of a trader, he divides the workers into two: one is to collect the upper part of the basil heap and the other to collect the basil left on the ground. Remaining of basil on the ground after taking the upper part of the basil heap is more than the way farmers do, so there will be two kinds of collected heap of basil: one with less sand and dust and the other with more sand and dust. The one with more sand and dust will be treated more than the other. Anyway, even though the collection is done attentively as traders, the sand and dust can still be mixed inevitably.

Basil collection (traditional way)

As for the improved way, mixture of sand and dust will be much less than the traditional way. In the trial, the weight of basil after drying became 400kg for the traditional way, while the one for the improved way became 360kg. It is assumed that the output by the traditional way would include 10% of sand and dust.

Furthermore, the effects of drying in shade by the improved way produced much better quality dried basil with brighter and greener color and stronger aroma. The dried basil by the traditional way looks brownish with dust.

Dried basil by traditional way

Dried basil by improved way

Loss:

In the traditional way, farmers try to collect basil on the ground as much as possible but they have to leave some of the amount connected to ground as that part involves a lot of sand and dust. The improved method using kafas can avoid this problem and loss, but when they transfer dried basil from kafas to plastic sheet, some amount always drop onto ground. Dropped basil can be collected with

minimum mixture of sand and dust should the operation is carried out on the concrete yard.

Profit:

The farmer who tried the drying method with *kafas* was impressed with the high quality of dried basil, but the issue is whether the local traders would reward this quality. If the quality was not considered, profit of farmer side would decrease as the weight lowered and the value of upgraded quality would go to the benefit of the traders. Therefore, in the Pilot Project it is planned that the primary processing will be carried out by the cooperative and farmers will sell the primarily processed products to the traders so that their share of margin will increase.

In fact of the result, the trader bought the basil dried by the improved way at higher price than the traditional one. The trader bought the basil dried by the traditional way at 4LE/kg, while the one by the improved way at 4.5LE/kg. But the trader said that he would mix the quality basil with normal one due to its little amount. Even though they mix the quality one with normal one, it would have worth buying the quality one at higher price for them as they could skip a process of sieving to remove sand and dust. If we produce bulk of high quality dried basil, it could be sold as its grade without mixing with low grade and the price would be higher.

The Pilot Project is aimed to upgrade the reputation of the region as an area of supplying high grade basil product by the measures: introducing the improved drying method with *kafas*, constructing concrete yard to reduce loss and mixing of sand and dust, adding value by primary processing prior to sell the traders, and introducing traders outside the village, who would give high price for high quality, so that the local traders would also follow the pricing according to the quality.

(3) Activities from Late September 2011 to End of March 2012

The equipment for processing dried basil, which was procured from Cairo, was installed at the site on September 27, 2011. Followed by the installment, training for the operation of the equipment was carried out for the cooperative staff from October 8 to 10, 2011. Then on October 17, 2011, we held a seminar for farmers and traders in the village for the purpose of introducing the facility to the villagers and leading them to acknowledge that the facility could bring benefits to both the farmers and traders by showing the way of upgrading the quality of basil. A large scale trader in the village addressed his view that the facility could upgrade the quality of dried basil and sell the product at higher price.

From October 2011, the cooperative started the operation of the facility. In this time, the cooperative changed the plan, namely the cooperative would buy green basil from farmers and will dry and process it and sell the secondary processed dried basil to the traders or exporters. Exporters will undertake the forth processing to export the final product. Because it needs to prepare bulk of product to sell to the traders (at least 2-5 tons), the processed dried basil was preserved at the storage of the cooperative until the bulk was made.

Equipment installed

Basil drying at the concrete yard

Drying and the secondary processing of basil were carried on until the end of November. With the assistance from the Project, the cooperative purchased total 73.37 tons of green basil from total 19 farmers or 12.09 feddan. From the amount of green basil, total 13.432 tons of dried basil (extraction rate: 18%) and the 8.115 tons of secondary processed product (extraction rate: 11%) was made. Farmers who sold green basil to the cooperative were not only from Arab El Kadadeh village but also from neighbor village. Also the majority of farmers, who sold the green basil, were small scale ones. According to the local traders, the traders give priority to large scale farmers since they deal with large amount of basil. As for small scale farmers, the facility by the Project created new marketing channel for them to get benefit and for the cooperative, they could compartmentalize the market from the local traders rather than competing with them. Table 2.4.1 shows the land holding status of the farmers who sold green basil to the cooperative. The cooperative bought the basil a bit higher price than usual based on their expectations of selling the processed product at higher price to traders (The cooperative bought green basil at LE0.3/kg on average, while the average price in the village was LE0.25/kg).

Table 3.4.2 Land Holding of Farmers who sold green basil

No.	Village name	Land Holding (fed)
1	-	0.41
2	El Kadadeh	0.50
3	-	0.50
4	-	0.50
5	El Kadadeh	0.66
6	-	0.75
7	El Kadadeh	0.83
8	Bany Ebraheem	less than 1
9	Bany Ebraheem	less than 1
10	Bany Ebraheem	less than 1
11	-	1.00
12	El Kadadeh	2.54
13	El Kadadeh	3.16
14	El Kadadeh	4.00
15	El Kadadeh	8.00
16	-	Renter
17	-	Renter
18	Bany Ebraheem	-
19	Bany Ebrahem	-

The cooperative collected information of traders to deal with under the assistance of the Project. They contacted local traders, exporters in Cairo and Alexandria. Traders in Cairo and Alexandria requested the cooperative to send the sample of dried basil to examine the quality, so the cooperative sent the sample to them. The cooperative considered not only the price but also the credibility of the traders and eventually they decided to sell the product to the exporter in Alexandria. The selling price was agreed with LE4.8/kg. As the local traders gave the price of not more than LE3.5/kg, it can be said that the cooperative managed to sell the product at good price, though the fact that the local traders sell their

Table 3.4.3 Profit of Basil Drying Yard(1.5 month operation)

Item		Remark
Sold Amount	8,070 kg	
Unit Price	4.8 LE/kg	
Sold	**38,736 LE**	
Cost		
Green basil	24,485 LE	73.37t
Drying labor	7,685 LE	
Depreciation cost	2,732 LE	allocated to operation month
Management cost	500 LE	allocated to operation month
Total Cost	**35,402 LE**	
Net Profit	**3,334 LE**	
Net Profit Ratio	8.6 %	

product again to the exporters should be taken into consideration. Total amount to have sold and the gross income were 8,080kg and LE38,736 respectively.

As the table right shows, the net profit after deducting the cost was calculated at around LE3,300. Due to the delay of construction, the facility was used only for 1.5month. Also the facility has not been used at its full capacity. For next season they can start the operation from June and more farmers to sell green basil would be expected. Therefore, we could expect that the production of next season will be several fold of this season. The income of this year will be used as a capital of the cooperative for the next season and the profit will be used for the cooperative activity according to the Agriculture Cooperative Law. The cooperative and C/P are discussing how to utilize the drying yard in off-season of basil, e.g. to use for drying other crops like fennel.

3.4.2 Results of the Implementation

(1) Establishing farmer group

The initial plan was that farmer group would be established with the support of the village cooperative, procure the low materials and operate the unit by themselves based on the plan. However, they said that even small-scale farmer dry the basil using the unit, they would not be able to sell to the traders at good price because of low bargaining power. At the workshop with C/P, district office, village cooperative, and farmers, it is decided that the village cooperative would buy low material from farmers, dry using the unit, sell to the traders and/or exporters. The operation of the unit constructed by the pilot project was satisfied according to this operation method.

(2) Identification of the site to lay drying yard

Usually, basil, after harvested, is transferred to the drying places, and sold to the traders after dried. Since drying needs wide area and farmers oblige to use their limited own basil field, they has expected to construct the drying yard. Fortunately, there is a desert land owned by the government and many farmers have used it. For pilot project, it is decided that one part of this land would be transferred to the village cooperative. At the beginning of the design, there was another idea, which is installed large drying machine instead of drying yard. However, after site visit with C/P was conducted to research the advanced technology in Fayum area, it is finally decided that the drying yard would be suitable at this time after evaluation of the site visit. It is learned that there are many issues about the drying for such agricultural products, and it should be solved before planning and implementation.

(3) Construction of drying yard

Since the governor in Assiut was suddenly shifted by means of political change, transferring the land to the village cooperative was delayed. Therefore, operation of the unit was conducted only last two months instead of full harvesting season from June to November. For construction, since scale is a little bit large, middle class civil company was selected among three candidates in Assiut city instead of those in village. Construction was conducted within 75 days and at the same time, equipment was procured. The unit and equipment are satisfied about the scale, quality improvement and harvesting loss, according to the plan of pilot project. On summer time, sunshine is very strong and it might affect the basil quality. In such case, kafas piling and basil turning-over should be more frequently conducted. If necessary, some cover sheet would be applied for quality protection. It is expected to operate more efficiently and effectively. The unit and major equipment is as follows:

Table 3.4.4 Outline of Basil Drying Unit and Major Equipment

Item	Description
Facility of unit	Area: 1 feddan (4,200m2) Concrete drying yard, Building (48 m2), Fence (brick fence: 140m, wire fence: 140m) (At present, original land of 1 feddan was additionally transferred to the village cooperative for expansion area.)
Equipment	Basil kafas 2,000 pieces, thresher 1 unit, separator 1 unit, sewing machine 1 unit, platform scale 2 units, desk 1 unit, etc.

(4) Preparing operation rules

At the beginning, it is designed that farmer group would be established to manage, operate and maintain the unit to be constructed for the pilot project, it would be necessary to set-up the operation rules. Finally, as it was decided for the village cooperative manage, operate and maintain the unit, operation rules was decided by the village cooperative with instruction by the district office and C/P and the village cooperative is responsible to operate the unit. Operation is conducted on full days during the harvest season from June to November. Staff and workers for operation and maintenance have been awarded the 3S (clearing, tiding and cleaning) and safety using the sign board. It is expected in future that the farmer group effectively and efficiently operate and maintain the unit in order to minimizing the operation and maintenance cost in consideration with 3S and safety. About the organization, the manager mainly conducted the works for the unit operation, it is expected to improve it for better operation and maintenance. Organization set-up after initial discussion is shown in the following:

Table 3.4.5 Management Structure of the Basil Drying Yard

No.	Roles	Kadadeh village
1	Manager	1 person (head of coop)
2	Assist manager	1 person (staff of coop)
3	Account	1 person (accountant of coop)
4	Unit & Equipment	1 person (staff of coop)
5	Organization support	6 persons (board of member)
6	Unit & Equipment operator	3 – 8 persons (trained farmers)

(5) Trial by farmer group

Since the unit operation was conducted by the village cooperative for the pilot project, farmer group was not established. And unit operation for pilot project was only 2 months. Farmers used this unit consider that the unit is not operated by farmers, but by the village cooperative. Since the seminar and workshop with the farmers, traders and village cooperative shows the devoted discussions about the selling price and product quality, it is expected that the more effective operation of the unit would be conducted with the longer experiences. In the near future, the village cooperative will continues to operate the unit. If it is necessary to reduce the O&M cost in future, farmer group might be able to operate. In such case, roles of the village cooperative are of management and support for O&M and product selling.

(6) Operation of the facility

Operation of the facility was started on the last two-month of harvesting season because of delay of construction. At the beginning of operation, trainings were conducted to the village cooperative and farmers by the specialists from the manufacturer cum exporter about the drying methods, quality

improvement, decision of selling price, unit operation ways, etc. The operation of equipment is of simple, trainees could operate smoothly after training. The village cooperative conducted operation and maintenance, as buying low material from farmers, drying, threshing, separating and packing by hiring the trained farmers. Though, the actual drying results are 41 ton/month (October), and efficiency of drying yard on that time was half capacity. Therefore, it is expected that the unit has maximum 2 times capacity of the results in October. Receiving days are around 10 days, which shows three days drying, and it is the same capacity of initial plan. Capacity of equipment is of around 5 ton/hour (dried basil), it has enough capacity for the facility.

Table 3.4.6 Expected Capacity of the Basil Drying Yard

Items		Kadadeh village
Initial plan	Organization Facility, equipment operation Capacity	1 person (manager, others are from farmers) Drying: 2 persons; Processing: 4 persons (farmer group) 500 ton/year (83 ton/month)
Results	Organization Facility, equipment operation Capacity	5 persons (actually conducted by only head of coop) 3 – 8 persons (trained farmers) 41 ton/month (October)
Estimated capacity	Organization Facility, equipment operation Capacity	2 persons (manager & accountant) 4 persons (trained farmers) 50 ton/month
Remarks		Capacity is depending on that of drying yard. When effectively operated, it is expected to increase the capacity by double.

Production cost during the pilot project indicates that monthly production cost will be LE23600 to produce 50 tons/month. 50 tons of fresh basil will reduce 5.5 tons after drying and processing. As such, they need to sell their dried basil at least LE 4.3/kg. Making a profit this season, they were able to deal with traders at LE4.8/LE.

Since it is necessary to collect a specific volume corresponding to the truck capacity, product during two months was stored in the house of village cooperative. It was sold to the exporter in Alexandria, who offered the highest price, after selected the candidates from Fayum, Cairo and Alexandria. It is expected in future, to firmly contact to this exporter as well as create various marketing routes.

For pilot project, as it was recognized the trail, any application forms to be publicly registered are not submitted. When the facility is officially operated, it should be registered for operation (trade register, tax card), safety hygiene unit (environmental document, fire safety license), labor insurance, etc. It is expected to be conducted smoothly with the supports from the district and governorate agriculture and cooperative offices.

(7) Monitoring and evaluation

Monitoring and evaluation (M&E) of the pilot project were conducted mainly by the C/P and district agriculture and cooperative offices. C/P has worked hardly for instructing the book-keeping ways, procurement methods, expansion of selling route. Study team in cooperation with C/P has transferred technologies for hygiene & safety operation and effective operation of equipment, book-keeping, methods of evaluation, etc. with submitting the sample sheets. C/P, who has a good experience of such activities, has understood them gradually. The facility would be necessary to operate throughout the year. Therefore, monitoring and evaluation become more important for effective and yearly operation

under the good low materials procurement. It is expected to set-up the M&E organization consisting of C/P, as a main member, who has already had experiences during the pilot project.

3.5 Improving Profitability of Specialty Crops through Production Improvement

3.5.1 Pilot Activities

(1) Outline

Through the Phase 1 Study, garlic, onion and potato have been focused as important crops in Minia and tomato in Assiut. For garlic and onion, using traditional varieties and self produced seed for a long time are causing the devaluation of the produce quality. Thus, the project is to introduce new varieties and certified seeds to sell agricultural produce with higher price. For potato and tomato, the project introduces to intercropping for adjusting cultivation and harvesting period to sell the produce in off-season. Following are the activities:

1) Selection of farmers and farmland for demo
2) Training for field extension workers
3) Procurement and supply of necessary materials
4) Preparation of demo-farm
5) Training for farmers on demo-farm
6) Monitoring and evaluation

(2) Summary of Activities by Mid September 2011

1) Garlic

New varieties of garlic, namely Sids-40, Egaseed-1, Egaseed-2, etc., may provide higher profit to the producers, who cultivate Chinese or Balady (local) garlic now. Owing to excellent quality of those high-yield varieties, their bargaining power can be much stronger than ordinary garlic.

Salakos village of El-Edwa district was selected for the trial of the new garlic varieties, because this village has produce large amount of garlic. The area of garlic cultivation is 300 feddan out of the total farmland of 1,542 feddan. Because of shortage of irrigation water, farmers cultivate additional garlic in outside of village territory.

The training on the new varieties of garlic was implemented at Sids Agriculture Research Center in Beni Suef governorate on April 13, 2011. The number of trainee was 18 of officers and farmers related to garlic production in Salakos. The ex-researcher, Dr. Abbas gave a lecture on garlic production and characteristics of the new varieties. The participants were interest in the improved varieties of garlic by observing them, and decided to try to grow Sids-40 and Egaseed-1 in the village.

Then, 10 skilled garlic growers in Salakos were selected by the village cooperative officers to demonstrate those new varieties of garlic in 0.5 feddan each. The Team procured 2 ton of seed garlic for 5 feddan of demonstration farm on September 7, with witness of the cooperative officers and selected farmers. All cost except seeds shall be provided by the farmers participated.

Each farmer will plant 180 kg of Sids-40 and 20 kg of Egaseed-1 in the middle of September. They may learn difference among the varieties in growth, harvest and marketing. Village cooperative officers will supervise the demonstration farms with help of extension officers of El-Edwa District Agriculture Office.

Photo: Training on Garlic Varieties and Procurement of Seed Garlic

2) Onion

The certified seed of onion might give high productivity and high quality to growers, who used to use their own or locally circulated onion seeds. The demonstration of certified seed is implemented in Delga village of Dayr Muas district, where onion is cultivated in 1,500 feddan.

Similar to garlic demonstration, 10 skilled onion growers in the village were selected by the village cooperative officers to cultivate the certified seed of onion in 0.5 feddan each. The Team procured 200 kg of onion seed for 5 feddan of demonstration farm on August 18. Although the onion researcher in Field Research Institute recommended the varieties of Giza-6 and Giza-20 for the Minia governorate, only Giza-20 was available at a private company at the time. All cost except seeds shall be provided by the farmers participated.

Two selected farmers will sow the onion seed in 6 kerat nursery each in the middle of September in order to prepare seedlings for 5 feddan of main field. In the middle of November, 10 farmers will share the onion seedlings and plant them in their 0.5 feddan of their farms. Village cooperative officers will supervise the demonstration farms with help of extension officers of Dayr Muas District Agriculture Office.

3) Potato

As the price of Nile potato in Minia is very high at the beginning of harvest but becomes very low in high producing time, the early harvest of Nile potato seems very profitable for producers. Early planting of seed potato can shift the harvesting time forward, but very high temperature in the mid-summer makes it difficult. There is an idea that the early planting might be possible under the shade of maize. Therefore, intercropping of potato with maize was planned to be demonstrated aiming at higher price of potato. The target site was set at El Borgaya village of Minia district in Minia, where the potato planted area in Nile season is 2,100 feddan out of total farmland area of 2,664 feddan.

The training on intercropping was provided to the officers and farmers concerned on April 11, 2011, as a part of training course for the component of "Promoting Horticultural Crop to Small-scale Farmers" mentioned in the following section. Twelve persons learned the intercropping of potato with maize in the training.

After the training, the meeting for action plan was held in the village on May 12, 2011. The Study Team explained the outline of the intercropping of potato with maize and proposed the implementation plan of demonstration farm to about 10 villagers including cooperative officers. However, they refused the idea of the demonstration farm, because they could not easily believe the benefit of the intercropping method. Then, the Study Team proposed an implementation of the study tour to see the

successful intercropping site in the season of 2011, instead of the establishment of the demonstration farm in the village.

4) Summer Tomato

Tomato is the most popular vegetable in Egypt but the price fluctuates quite widely by season. Winter tomato is the most popular cropping pattern in Minia and Assiut due to suitable weather to produce tomato easily, but its price usually goes down in the harvest season. On the contrary, summer tomato needs more care to grow healthy but its price can be much higher than winter tomato. Therefore, the summer tomato production shall be promoted to give higher income to producers.

The intercropping of tomato with maize was taken as an idea to grow tomato under shade of maize during the extremely hot summer. The demonstration of the cropping method was implemented in El Ansar village of El-Kosya district in Assiut. The village is a tomato producing area, where the tomato planted area is 500 feddan in winter and 250 feddan in summer in the total farmland area of 3,560 feddan. Actually the tomato is mainly produced in the new land, and the small-scale farmers in the old land produce tomato a little. The demonstration has been implemented in the old land of the village, harmonizing with the IMAP concept.

The demonstration of the intercropping of tomato with maize was also taken as a possible technique to promote horticultural crops to small-scale farmers. Therefore, it has been implemented with other 5 villages selected for the next component of "Promoting Horticultural Crop to Small-scale Farmers". The progress in El Ansar is described in the following section 2.6.

(3) Activities from Late September 2011 to End of March 2012

Garlic cultivation started from late September 2011 and the seedlings of onion grown on a farmland of a demo-farmer were transplanted to the demo-farms in the beginning of December 2011. On the garlic demo-farms, 90% of the improved variety, Sids 40 and 10% of Ega-seed-1 were planted. According to the director of the village cooperative, Sids 40 is reddish in color, which is preferred by Arabs. Since Salakos and Delga villages are famous for the specialty crops of garlic and onion respectively, farmers in the villages have long experience to grow these crops and therefore the cultivation had been done well.

Garlic demo-farm in Salakos village

Onion demo-farm in Delga village

3.5.2 Results of the Implementation

(1) Off-season production of vegetables

Among four main cropping patterns of tomato shown in the following figure, the pilot project adopted the pattern 2 under intercropping with maize. Tomato seedlings were transplanted in the demonstration farms in late May. The harvest period started in late July and lasted one month or more. A farm had produced tomatoes until February. During this harvest period, the price of tomato was relatively high in mid to late September and early November to early December. The farmers who could harvest tomato in those times got some high return.

For example, Demo Farm El Ansar No.1 produced tomato in August to September only and its average shipping price was LE 0.78 /kg. On the other hand, Demo Farm El Ansar No.2 produced tomato in August to September and then November to January. Therefore, the average price was LE 2.09 /kg and the total gross income was LE 25,000 /feddan which was the best among the demo farms.

Intercrop demo-farm in EL Ansar

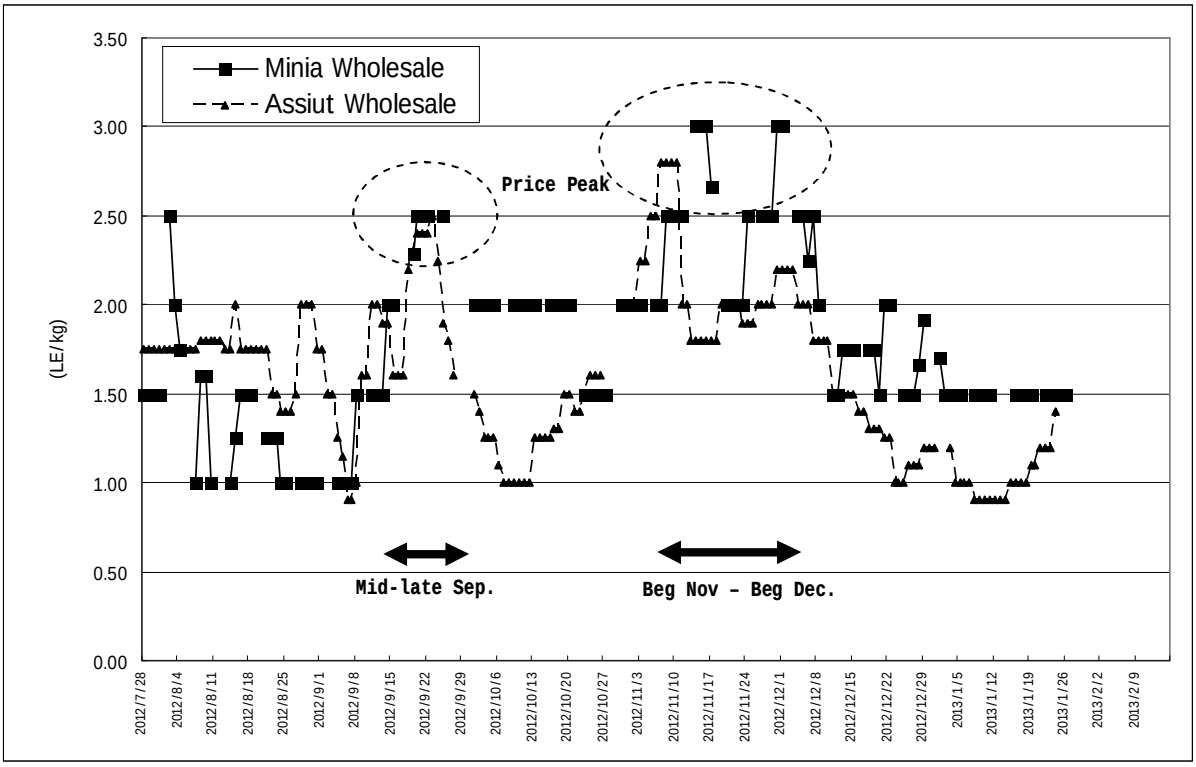


Figure 3.5.1 Price Trend of Minia and Assiut Wholesale Markets (Tomato)

Although the trend of tomato price might differ year by year, only the cropping pattern 1 and 2 growing healthy in midsummer and the pattern 3 successfully transplanted in midsummer could enjoy the high price in the year. Some special cultivation methods to survive extremely high temperature in July and August are necessary to get high return. It can be said that intercropping method with maize is one of the possible methods.

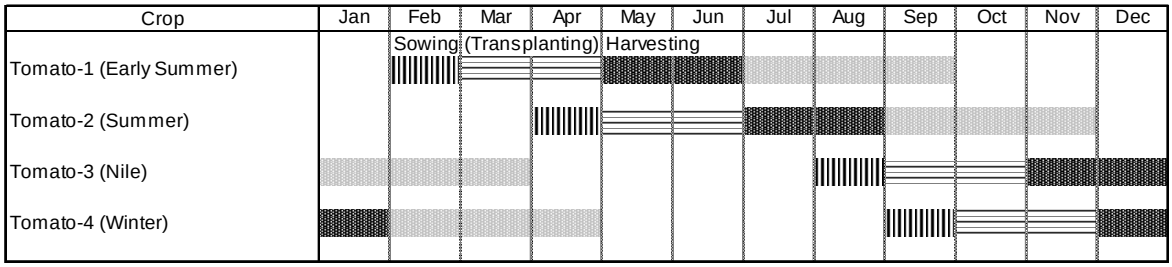


Figure 3.5.2 Tomato Cropping Pattern in Egypt

(2) Introduction of varieties and certified seeds

The demonstration of new varieties of garlic was carried out in Salakos village in Minia. As the varieties of Sids-40 and Egaseed-1 were expected to be more profitable due to high yield and quality, the demonstration was done in the farms of 0.5 feddan of 10 farmers. The garlic was sown in late September and harvested in late March. The demo farm operated by the head of village cooperative produced 12 ton/feddan of Sids-40, which was higher than common Chinese garlic at 8 - 10 ton/feddan. The yield of Sids-40 in another demo farm was estimated at 16 ton/feddan. Little damage by pest and disease was reported in the demo farms. The bulb size of Sids-40 was larger than the common ones. Egaseed-1 also showed good performance except somewhat low germination rate observed. A part of products was kept for the next cropping, and also some surrounding garlic producers bought them as a seed for the next season. Therefore, it was verified that the introduced varieties were attractive in terms of production.

The evaluation in the marketing aspect was very difficult because the recent price of garlic is a half or one third to the previous year caused by decreasing the export volume and overproduction. However, the higher quality garlic might have higher priority in the market. Some measures for marketing support shall be considered for stabilization of the prices.

Regarding the production cost, the price of seed garlic of common varieties is about LE 7 per kg, while the price of Sids-40 and Egaseed-1 was LE 12 per kg. Assuming the seed rate of 400 kg/feddan, the cost of seed garlic increased at from LE 2,800 to LE 4,800. The increment of profit shall be larger than LE 2,000 in a feddan. In case of use the seed garlic repeatedly, the incremental cost shall be recovered in certain years.


Sids-40 from demo-farm


Shipping adjustment conducted by local traders


Packing style for export

The demonstration of certified seed of onion was implemented in Delga village in Minia. The results of production and marketing shall be obtained after the harvest in May 2012. The advantage of the certified seeds is higher price of products due to unified quality and size, and higher yield due to the unified timing of harvest. The cost of onion seed circulated in village is LE 100 per kg, while the certified onion seed was LE 320. Assuming the seed rate at 4 kg for a feddan of main field, the seed cost increases at LE 880 (from LE 400 to LE 1,280) per feddan. If increment of gross income is higher than LE 880 per feddan, the use of the certified seed is economically viable for producers. Assuming the present yield of onion at 15 ton/feddan, increment of unit price at LE 0.06 per kg or increment of yield at about 1 ton/feddan make cost recovery. As the price of onion is extremely low in this year, the economic evaluation of this demonstration might be very difficult.

3.6 Promoting Horticultural Crop to Small-scale Farmers

3.6.1 Pilot Activities

(1) Outline

Majority of the small scale farmers cultivate traditional crops such as maize, wheat, and berseem, and only a few surplus are sold in the market. They depend on traditional crops, livestock, and unstable off-farm income. The project is to introduce an option for livelihood improvement through transforming subsistence agriculture to commercial agriculture by encouraging small scale farmers to produce profitable horticulture crops. Following are the activities:

1) Selection of farmers and farmland for demo
2) Training for field extension workers
3) Procurement and supply of necessary materials
4) Preparation of demo-farm
5) Training for farmers on demo-farm
6) Monitoring and evaluation

(2) Summary of Activities by Mid September 2011

1) Farmers' Group for Demonstration Farm

Intercropping of Tomato with Maize was taken as a typical way to introduce vegetable production for the subsistent farmers. The concept of the Farmer Field School was employed for implementation of demonstration farm on the intercropping for the effective technical guidance to farmers. The Team explained these ideas to farmers in the 6 target villages including El Ansar in March and April 2011. The basic idea given by the Team was that 2 farmers' groups consisted of 5 - 10 members cultivated 1 feddan of demonstration farm each in every 6 villages. After discussions, the following farmers groups were formulated under responsibility of the relevant village cooperatives. Almost all farmers have never cultivated tomato before.

Table 3.6.1 Location and Farmers Group for Demonstration of Intercropping of Tomato with Maize

Village	Abad Sharona	Abo Haseeba	El Baragel	El Ansar*	El Zawya**	Manshyet El Maasra
District	Maghagha	Matai	Mallawe	El-Kosya	Assiut	El-Fath
Governorate	Minia	Minia	Minia	Assiut	Assiut	Assiut
No. of groups	2	2	4	2	2	2
No. of members	10	20	35	20	20	20
No. of fields	2	4	4	2	2	2
Field area (fed)	2	2	2	2	2	2

Note: * El Ansar is a site selected for "2.3 Improving Profitability of Specialty Crops though Production Improvement".
** El Zawya is a newly selected site as a substitution of Nazlet El Ablak village in Sadfa district, due to security reason in the original candidate site.

2) Trainings

The trainings on the horticultural crop production and intercropping method were implemented in Minia and Assiut in the middle of April 2011. The extension officers in the governorate directorate, district offices and village cooperatives, as well as selected farmers in the target villages participated in the 3-days training. The researchers in Agricultural Research Centers, professors of universities, and staff of governorate agricultural directorates gave lectures in classrooms and fields. Achievement test was not carried out in the training, because the original level of the participants varies from unskilled farmers to agricultural engineers. Judging from the many discussion made by the participants, they obtained some new knowledge and information in the trainings.

Table 3.6.2 Outline of Training on Horticultural Crop and Intercropping

Item	Minia	Assiut
Date	10 - 12 April 2011	18 - 20 April 2011
Lecturer	a) Dr. Abbas (Sids ARC in Beni Suef) b) Dr. Yousry (Minia Univ.) c) Mr. Tag (Minia Governorate)	a) Dr. Abbas (Sids ARC in Beni Suef) b) Dr. Abd El Hakim (Abnoub ARC in Assiut) c) Dr. Emad (Abnoub ARC in Assiut)
Program	Day 1) Horticulture Crop Production (b)* Day 2) Intercropping (a) Day 3) Field Study (c)	Day 1) Horticulture Crop Production (b, c) Day 2) Intercropping (a) Day 3) Field Study (c)
Participant	44 in total, consisted of; 7 for Abad Sharona, 16 for Abo Haseeba, 9 for El Baragel, and 12 for El Borgaya	31 in total, consisted of; 8 for El Ansar, 8 for El Zawya, 7 for Manshyet El Maasra, and 8 for Sadfa district

Remarks: * shows lecturer on the subject.

Photo: Training on Horticulture Crop and Intercropping in Minia and Assiut

3) Input Supply and Monitoring

The all inputs necessary for the demonstration farms were basically provided to the farmers' groups by the Study Team. Tomato seedlings in Minia were prepared at the Model Farm under control of the Governorate Agriculture Directorate. On the other hand, the counterparts prepared tomato seedlings at the screen house in Governorate Agriculture Directorate in Assiut. Maize seeds, fertilizers, agro-chemicals, etc. were selected by the counterpart and provided to the farmers on time

Daily monitoring has been performed by village cooperative officers, and weekly monitoring been made by the district extension officers and counterparts. In addition, local technical advisors were assigned in each governorate. A senior engineer of the Minia Agriculture Directorate, Mr. Tag has performed in 3 sites in Minia, and a researcher of the Abnoub Agriculture Research Center, Dr. Emad has worked for 3 sites in Assiut. The fertilizer application and plant protection plan was prepared by them, and technical instruction was given to the farmers groups at sites time after time.

The Team instructed the extension officers and farmers to keep daily farming record, weekly meeting record and harvest record, and provided necessary stationeries and digital camera to persons

responsible for monitoring.

4) Plant Growth and Production

Tomato seedlings were planted in the demonstration farms in the second half of May, and maize seeds were sown in the second half of June. The farms have been maintained by the leading farmers of the groups under supervision by the extension officers and instruction by the technical advisors. As for plant protection, chemical control method was taken in Minia and bio control method was employed in Assiut.

The tomato production has started at the beginning of August in Minia and at the end of August in Assiut, as showing in the following table. The target yield of tomatoes is roughly set at 1,000 boxes (*kafas*) or 25 ton per feddan during 3- to 4-month harvesting period. One demonstration farm might achieve the target already, and many other farms might achieve in the following months. On the other hand, the yield of maize shall be more than 70 % of the normal maize field. The target yield of maize can be achieved in all fields due to better fertilizer application. Maize will be harvested at the end of September and tomato will grow continuously in open fields until November.

The effects of demonstration have appeared though it is still a bit. Neighboring farmers (one in El Zaway village and one in El Ansar village) of the demo-farms have tried to apply for the intercropping method. Also some farmers in the villages are coming to the extension offices to ask for the method of tomato crop.

Table 3.6.3 Progress of Demonstration Farm of Intercropping of Tomato with Maize by Mid September

Village	Field Condition
Abad Sharona	One farm has been managed very well. The production of tomatoes can reach 1,000 boxes of tomato (about 25 ton) from 1 feddan, which is a target yield of this demonstration farm. Condition of another farm, which was affected by diseases, is recovering in September.
Abo Haseeba	Harvest of tomatoes had started at the beginning of August. The farms keep growth of tomato and maize, but tomatoes of one farm were unfortunately damaged by mismanagement during Ramadan month. Another one farm is managed very well and producing tomatoes continuously.
El Baragel	Although vegetable cultivation is new challenge in the village, tomatoes were harvested in the 4 demonstration farm successfully in August. However, exhausted tomato plants shall be reactivated by top dressing of fertilizers.
El Ansar	Two farms have been managed very well and produced tomatoes since the end of August. As growth of new shoots is also active, the tomato production can be continuous until November.
El Zawya	Two adjacent farms have been managed very well and produced tomatoes since the second half of August. As growth of new shoots is also active, the tomato production can be continuous until November.
Manshyet El Maasra	Management by farmers' groups was not well, and one demonstration farm was given up to grow tomatoes due to lack of care. The most probable reason is that the group composed of only small-scale or landless farmers could not follow the instruction of the technical advisor. Another group has started to follow the instruction and the field may be recovered at the certain level.

Photo: Growth of Tomato and Maize

Table 3.6.4 summarizes the first one month of the provisional harvest record in the demo-farms in Minia. As the harvest in Assiut has just started in the beginning of September, the data are sill under collection. The data were collected from the demo-farm owners and the extension workers in the village. The record is still provisional and will be reviewed and kept recording until the harvest ends. The farmers sold the produce not in one time but for several days in one month. Farm-gate price of tomato dropped from the beginning to the end of August, i.e. from around 20- 30 LE/*kafas* to 11 to 20LE/*kafas*. Therefore, the level of income for the first one month from the selling tomato depended on not only the yield but also when and where they sold them.

Table 3.6.4 Provisional Record of First One Month: Sold Amount of Tomato in Demo-farm

Village	Demo-farm (fed)	Sold from Jul 28 to Sep 3: *Kafas (t)*	Gross Income (LE)	Sold amount converted to 1fed (t/fed)
Abad Sharona (Mina)	A (1 fed)	431 (10.8)	8,376	10.8 t/fed
	B (1 fed)	129 (3.2)	1,890	3.2 t/fed
Abo Haseeba (Minia)	A (2/3 fed)	40 (1.0)	623	1.5 t/fed
	B (1/3 fed)	15 (0.4)	140	1.1 t/fed
	C (2/3 fed)	66 (1.7)	1,564	2.5 t/fed
	D (2/3 fed)	Nil	Nil	
El Baragel (Minia)	A (1/2 fed)	177 (4.4)	3,600	8.9 t/fed
	B (1/2 fed)	127 (3.2)	2,779	6.4 t/fed
	C (1/2 fed)	143 (3.6)	3,000	7.2 t/fed
	D (1/2 fed)	91 (2.3)	2,025	4.6 t/fed

Note:

1) Data were collected from the owners of demo-farm and extension officers. Data will be revised.
2) The data are for the first one month of the harvest only and the harvest is expected to last by November.
3) Not all of the harvest was sold but some were consumed home or damaged ones were thrown as loss.
4) Tomatoes were damaged in one farm in Abo Haseeba village.
5) As the harvest in Assiut just started from end of August, the data are under collection.
6) Farm-gate price of tomato dropped from the beginning to the end of August, i.e. from around 20- 30 LE/*kafas* to 11 to 20LE/*kafas*. The average farm-gate price differs among the demo-farm depending on the time and place to have sold the tomatoes.

5) Extension Officers Meeting, Exchange Visit and Field Day

The Team organized the meetings of extension officers concerned to the demonstration farms twice each in Minia and Assiut from June to July. The village cooperative officers and district extension officers gathered in the meeting room to report the progress in each demonstration farm by showing their pictures. They also discuss several issues regarding the farm management each other. Further, the technical advisors gave useful information to the extension officers in the meeting.

- June 9: Extension officers meeting in Minia
- June 15: Extension officers meeting in Assiut
- June 30: Extension officers meeting in Minia
- July 5: Extension officers meeting in Assiut

The exchange visits were implemented for the farmers and extension officers, as listed below. The farmers working for the demonstration farms visited other villages in order to learn the farm management method at the other well-maintained demonstration farm and discuss the farming method each other. The visitors were expected to emulate the well-performed farmers. The farmers who received the visitors felt proudly and were motivated again.

- June 27: 3 farmers and extension officers of Abo Haseeba visited Abad Sharona
- July 5: 13 farmers and extension officers of Abo Haseeba visited El Baragel
- July 18: 37 farmers and extension officers of El Ansar and Manshyet El Maasra visited El Zawya



Photo: Exchange Visit at El Zawya

The field day was held on September 19 at El Ansar village in El-Kosya district. More than 60 persons participated in this ceremony, including 1) undersecretary of Assiut governorate agriculture directorate, 2) Head and staff of Cooperative Department of MALR, 3) head and staffs of extension department of Assiut governorate agriculture directorate, 3) extension and horticulture officers of 11 districts in Assiut and 3 related districts of Minia, 4) village extension officers in 6 pilot project sites in Assiut and Minia, 5) farmers concerned to demonstration farms in Assiut, 6) researchers of Abnoub agricultural research center, 7) manager of Central Laboratory of Organic Agriculture, and so on.

At first, the participants visited the demonstration farm in El Ansar to see and learn the introduced techniques. Then, they moved to the meeting room of the El-Kosya district agriculture office and discussed various technical and management issues, including bio-control method of insect for tomato cultivation, improvement of agricultural extension system, and so on. It was a fruitful day because of field visit by extension officers who did not directly implementing demonstration farm, exchange of views between Assiut and Minia, frank discussion among high-ranked officers, researchers and field extension workers.



Photo: Field Day at El Ansar

(3) Activities from Late September 2011 to End of March 2012

As of Late September 2011

From late September 2011, maize of all the intercropping demo-farms was harvested. Following were the status of each village demo-farm as of late September 2011:

- Abad Sharona (Maghagha): the peak of harvesting tomato on the two demonstration farms had passed and the farmers removed the tomato stems and planted green beans.
- Abo Haseeba (Matai): harvesting of maize was finished in all the 4 demonstration farms. The farmers planted green beans after the maize.
- El Baragel (Mallawe): among the 4 demonstration farms, fruiting tomato was continued in two demonstration farms. As for the other demo-farms, the peak of harvest was passed but the demo-farmers tried to reactivate the plant by additional fertilization.
- El Ansar (El-Kosya): both the two demonstration farms in this village were n good condition and the better demo-farm was used for study tour of extension workers and farmers including the ones from Minia.
- El Zawya (Assiut): the instruction of the advisor was well followed by the demo-farmers and therefore both the two demonstration farms in this village were managed very well. Maize was harvested in late September 2011.
- Manshyet El Maasra (El-Fath): among the two demonstration farms, one was still under care, but due to conflict among the families in the village, it became difficult for outsiders to go into the village. Then the Team followed the demo-farm by remote supervision of the cooperative officer.


Demo farm in El Ansar (October 2011)


Demo farm in El Zawya (October 2011)


Evaluation WS in Abad Sharona

As of November 2011: Evaluation Meetings for the Intercropping Demonstration

Most of the demonstration farms for intercropping of maize and tomato had ended the harvest by November 2011, and evaluation workshop wit stakeholders was held in the end of October to the middle of November. By the end of the evaluation workshop, most farmers finished harvesting maize. The main purpose of this activity is to keep harvesting a certain amount of maize with high profitable tomato production. In this sense, most farmers harvested enough maize production even they produced tomato. As of November 2011, there are two villages which farmers still continue to harvest tomato.

After December 2012

The harvesting of tomato continued even after December 2011 in 2 sites each in Minia (Abo Haseeba and Baragele) and Assiut (El Ansar and El Zawya). In Minia, the demo-farmers cleared the field to start the wheat cultivation by the end of December. On the other hand, in El Ansar and El Zawya in Assiut, they decided to give in the wheat cultivation in this season but continue the tomato harvest. The harvesting of tomato was lasted by the end of January 2012 in El Ansar and by mid February 2012 in El Zawya.

3.6.2 Results of the Implementation

(1) Income from the Intercropping of Maize and Tomato

The intercropping method was employed for the promotion of horticulture crops to small-scale farmers relying on traditional crops. The monthly results of crop production in all demonstration farms except Manshyet El Maasra are shown in the following table2.

Table 3.6.1 Results of Crop Production in Demonstration Farms

Village	Group	Area (fed)	Output		Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Tomato Total	Per Feddan	Maize Total	Per Feddan	Total Per fed
Abad Sharona	G-1 (Zakarya)	1.19	Harvest	Kg	1,400	18,000							19,400	16,303	2,520	2,118	
			Unit Price	(LE/kg)	1.00	0.97							0.97		1.79		
			Income	(LE)	1,400	17,500							18,900	15,882	4,500	3,782	19,664
	G-2 (Moustafa)	0.8	Harvest	Kg	1,660	3,700	4,120						9,480	11,850	1,680	2,100	
			Unit Price	(LE/kg)	1.00	0.89	1.04						0.97		1.79		
			Income	(LE)	1,660	3,275	4,279						9,214	11,518	3,000	3,750	15,268
Abo Haseeba	G-1-1 Reda	0.63	Harvest	Kg		280							280	444	1,260	2,000	
			Unit Price	(LE/kg)		1.00							1.00		1.79		
			Income	(LE)		280							280	444	2,250	3,571	4,016
	G-1-2 Ahmed	0.33	Harvest	Kg	280	4,080	500		300	700			5,860	17,758	700	2,121	
			Unit Price	(LE/kg)	1.25	0.87	0.85		1.75	1.96			1.06		1.79		
			Income	(LE)	350	3,549	426		525	1,375			6,225	18,864	1,250	3,788	22,652
	G-2-1 Mahmoud Ahmed	0.59	Harvest	Kg		1,920	240						2,160	3,661	1,400	2,373	
			Unit Price	(LE/kg)		0.55	0.53						0.55		1.79		
			Income	(LE)		1,061	128						1,189	2,015	2,500	4,237	6,253
	G-2-2 Mahmoud	0.2	Harvest	Kg		1,100	340						1,440	7,200	420	2,100	
			Unit Price	(LE/kg)		0.52	0.42						0.50		1.79		
			Income	(LE)		573	142						715	3,575	750	3,750	7,325
El Baragel	G-1 Antar	0.45	Harvest	Kg		1,920	560						2,480	5,511	1,260	2,800	
			Unit Price	(LE/kg)		1.13	1.14						1.14		1.79		
			Income	(LE)		2,179	640						2,819	6,264	2,250	5,000	11,264
	G-2 Saleh	0.54	Harvest	Kg		3,500	720						4,220	7,815	840	1,556	
			Unit Price	(LE/kg)		1.02	1.06						1.03		1.79		
			Income	(LE)		3,565	765						4,330	8,019	1,500	2,778	10,796
	G-3 Ali	0.29	Harvest	Kg		2,740	440						3,180	10,966	700	2,414	
			Unit Price	(LE/kg)		1.05	1.18						1.07		1.79		
			Income	(LE)		2,880	520						3,400	11,724	1,250	4,310	16,034
	G-4 Mohey	0.28	Harvest	Kg	150	2,340	460		100				3,050	10,893	700	2,500	
			Unit Price	(LE/kg)	1.04	1.10	1.14		1.25				1.11		1.79		
			Income	(LE)	156	2,579	525		125				3,385	12,089	1,250	4,464	16,554
El Ansar	G-1 Goma	0.87	Harvest	Kg		200	400						600	690	1,400	1,609	
			Unit Price	(LE/kg)		0.75	0.80						0.78		2.14		
			Income	(LE)		150	320						470	540	3,000	3,448	3,989
	G-2 Fatah	0.93	Harvest	Kg		100	660		3,000	3,700	2,200		9,660	10,387	1,400	1,505	
			Unit Price	(LE/kg)		0.75	0.77		3.00	2.27	1.00		2.09		2.14		
			Income	(LE)		75	508		9,000	8,400	2,200		20,183	21,702	3,000	3,226	24,928
El Zawya	G-1+2	1.73	Harvest	Kg		2,700	5,620	120	2,400	3,600	2,200	600	17,240	9,965	2,800	1,618	
			Unit Price	(LE/kg)		0.97	0.94	1.65	1.15	1.15	1.15	1.15	1.06		2.14		
			Income	(LE)		2,627	5,279	198	2,760	4,140	2,530	690	18,224	10,534	6,000	3,468	14,002

[2] The data on harvest and income was based on the information from the farmers or extension workers, although farmers generally tell income lower than the actual. In this evaluation, the farmers' data were used for more severe evaluation. At the same time, the weight of tomato in a box (kafas) set at 20 kg although it ranges 20 - 25 kg.

In technical and economic evaluation, the production is evaluated first. The target yield of tomato is 100 % of normal tomato fields (16.6 ton/feddan * 100 % = 16.6 ton/feddan), and the target yield of maize is 70 % of normal maize fields (3.4 ton/feddan * 70 % = 2.4 ton/feddan). It is hard to say that the target was achieved because those average yields given by the farmers and extension workers were 8.7 ton/feddan and 2.1 ton/feddan for tomato and maize, respectively. The yield data from farmers are generally lower than the actual production, and the data from extremely poor fields are included. Among the demonstration farms mostly operated by the farmers without experience of tomato cultivation, the Abad Sharona G-1 and Abo Haseeba G-1-2 almost achieved the target yield. This shows the possibility of future extension of this intercropping method.

Assuming the production cost at LE 10,000 per feddan, which is a total of LE 7,000 for normal tomato and LE 3,000 for normal maize3, 9 demo farms out of 13 produced more than LE 10,000 per feddan to give some profit. As the simple maize cropping gives only LE 300 per feddan, the intercropping of tomato with maize seems more profitable than simple maize cropping. The period of the intercropping is longer than simple cropping, the profitability shall be evaluated more carefully in annual cropping calendar. In case of long harvest of tomato until December or more, the wheat cropping has to be laid aside and change their cropping pattern drastically. Therefore, the farmers chose short harvest of tomato and wheat and berseem as winter crops in Minia, and the farmers in vegetable production area in Assiut realized long harvest of tomato.

In the evaluation meetings on the intercropping of tomato with maize in November 2011, the farmers and extension officers concerned evaluated qualitatively the demonstration farms. The farmers showed understandings on the introduction of cash crops through intercropping method. Some surrounding farmers showed interests on the demonstrated techniques, and actually some farmers already followed the intercropping as a result of the farmer-to-farmer extension. The continuous demonstration could promote horticultural crop production and intercropping techniques through farmer-to-farmer extension. The intercropping systems other than tomato and maize shall be disseminated in trainings to extension officers and demonstration to farmers in future.

There are some findings by site of the demonstration. In El Baragel, where farmers had produced lots of sugar crops but no vegetables before, certain amount of tomato was produced under the effective support by the village and district extension officers. The harvested tomato could be sold easily within the village due to advantage in price. On the contrary, in El Ansar and El Zawya, where lots of vegetables were produced, the pilot project has been implemented smoothly. As some surrounding tomato producers inquired the intercropping techniques as well as bio-control techniques, the demonstration was effectively worked in these villages.

3.7 Promoting Organic Materials Utilization

3.7.1 Pilot Activities

(1) Outline

The small scale farmers have been razing the issue of high production cost. Especially in this season affected by the revolution, the price of chemical fertilizers skyrocketed as 3 times as the price of last year. This Pilot is to reduce the production cost by reducing the chemicals instead using organic materials and also to upgrade the quality of produce with fewer chemicals aiming to sell them at

[3] The actual production cost in intercropping seems to be lower than the simple summation of the production costs of those crops due to cost of some labor and fertilizer can be saved.

higher price. Following are the major activities:

1) Selection of farmers and farmland for demo
2) Training for field extension workers
3) Procurement and supply of necessary materials
4) Preparation of demo-farm
5) Training for farmers on demo-farm
6) Monitoring and evaluation

(2) Summary of Activities by Mid September 2011

Egypt is an exporting country of nitrogen and phosphate fertilizers; 1,691 thousand ton (conversion to N) to France, 899 thousand ton (P2O5) to India and 552 thousand ton (P2O5) to Indonesia in 2010. FOB price is always reflected by the international trade price. The cheapest production method of nitrogen fertilizer is to elaborate ammonia reacting nitrogen gas in air with hydrogen contained in natural gas. Therefore, the exporting prices of chemical fertilizers are directly reflected by the index of international future market of natural gas (NYMEX: New York Mercantile Exchange).

The domestic prices of chemical fertilizers normally show the peaks during the preparation of soils in January for summer crops and in July for Nile crops. In 2011, the price was jumped up from 150LE/50kg-bag in May to 350LE/50kg-bag in July.

Nitrogen fertilizers are manufactured by two national fertilizer companies; Abu Qir Group and Delta Rising Group. The distributing channels are divided into two; quota system through BDAC and free market through private agents. According to agricultural officers, 20-25% of total demands are distributed to farmers through BDAC. Phosphate fertilizer is mainly manufactured by Egyptian Financing and Industrial Company (Assiut) including Suez for 70% of market demands.

The national companies have independent accounting system and act as a private company. So they are shifting from governmental order to private marketing system or export. In this circumstance, it is necessary not only to promote bargain power and upgrade product quality, but also to reduce production costs and keep productivity. The increase of population density in rural areas makes ease to sell vegetables locally. Following activities using organic materials are being carried out.

Abo Hasseba Village: by utilizing space of rooftop, pot cultivation of vegetables will be promoted for micro-scale farmers and women. In the initial stage, the extension officer of Matay District, Minia, will verify cultivating techniques. The Study Team examined to make fermented compost and natural pesticide using micro-organisms.

Borgaya Village: the micro-organisms are introduced to potato farmers in order to reduce the costs of chemical fertilizers (total 1,900LE/feddan in quota price: Urea 500kg, Super Phosphate 750kg and Potassium 50kg) and upgrade quality. Target farmers are 5 persons with 1 feddan each. The district extension officer will handle application of inputs. The growth and quality of potato are monitored by means of dripping 4 kinds of micro-organisms into pumped-up irrigation water. The change of soils will be confirmed in chemical and biological properties before and after application of micro-organisms. The soils in some areas appear excessive nitrogen, which is caused to non-adhesion of rhizobium in the root system of soybean and bersium. Furthermore, introduction of Trichoderma will be planned instead of chemical pesticides for nematode.

Delga Village: the target farmer is the leading farmer in the village to produce vegetables for processing and fresh shipping such as onion in 4 feddan. In the village, the poultry production is prevailed and it is relatively easier to obtain chicken wastes for compost. The Study Team advised to prepare 4 tons of fermented compost. For The compost is expected to be contained high percentage

of Nitrogen and Phosphorous, soil analysis will be conducted before tillage and during harvest.

Rifa Village: the target farmers are the leading farmers in the village to produce tomato, okra and other vegetables for processing in 2 feddan. The production methods of compost are experimented in 2 types; anaerobic fermentation method using micro-organisms and aerobic fermentation method using natural Bacillus spp. and natural filamentous fungi.

Anaerobic method was failed under more than 40°C of ambient temperature in July, and inside of compost increase to 80 °C, which was caused to eradicate useful micro-organisms such as lactic acid bacteria and yeast. As the result, organic matters were decomposed to ammonium with strong odd and amino acid was not synthesized. It is necessary to control temperature in easier way in order to make high quality compost. Aerobic method is under examination.

Including the villages above, introduction of organic materials will be carried out for winter crop in the target villages in Minia and Assiut and detail planning is undergoing together with the counterparts.

(3) Activities from Late September 2011 to End of March 2012

Plan and Implementation of Winter Crop Demonstration

In the intercropping demonstration for summer tomato, bio-control against pest was confirmed effective. Especially against Tuta Absoluta, the prevention measures by the growth stage of the pest was verified effective, namely, parasitizing to the eggs by Trichogramma, calcification of protein at larval stage, and inhibition of mating by pheromone at the adult stage.

Along the Nile, alkali soil is prevalent and there is a possibility that the absorption of potassium and iron by plants is constrained by saline elements such as CaO and NaCl. To mitigate the constraint, it is desirable to apply leaching with irrigation water or strengthening drainage system. However, the limitation of water resources in Egypt hinders this mitigation measure. Therefore, following alternatives are recommended: 1) mix diluted sulfuric acid with irrigation water, 2) accelerating the production of mugineic acid by salt tolerant crops such as sorghum and adsorbing salt to the plant, and 3) accelerating the production of organic acid by microorganisms in heavy use of full matured compost.

Compost making for winter crop preparation from September to October has to be done from July to August when the temperature at day time reaches more than 40 degree Celsius. Under such condition, the temperature of anaerobic fermented compost can reach to 80 degree Celsius. Careful management of temperature is required. This point should be well informed to the inexperienced farmers. Considering the heat condition, it has been recognized that the recommended way of compost making is firstly to decompose organic matter by aerobic fermenting the residue of maize, cow dung by filamentous bacterium for about 3 months and then go into anaerobic fermentation. Or it could be more acceptable for farmers to use microorganism materials as liquid fertilizers.

Table 3.7.1 Winter Crop Demo (Quality Improvement and Cost Reduction by Organic Material utilization)

Gov't	Village	Area (fed)	Inputs	Target Crop
Minia	Abo Hasseba	5	Microorganism materials Pot cultivation system (compost, seedlings, net, pot system)	Farm: potato Pot system: cauliflower, eggplant, tomato
	Borgaya	5	Microorganism materials	Potato
	Delga	2	Materials for compost, microorganism materials	Onion
	No.8 (demo-farm	4	Microorganism materials	Tomato, eggplant, wheat

	of Agr. Directorate,, New land)			
	Abo Kurkas	4	Microorganism materials	Onion, garlic, potato
	Balagele	5	Microorganism materials	Wheat
Assiut	El Ansar (New land)	2	Microorganism materials	Tomato
	El Ansar (Old land)	1	Bio-control materials, microorganism materials	Cabbage, lettuce, cauliflower, carrot
	Beni Adi (New land)	4.67	Bio-control materials, microorganism materials, micronutrient	Tomato
	El Masaraa	0.83	Bio-control materials, microorganism materials	Cauliflower, cabbage, tomato, onion, lettuce, carrot
	El Hamam	1	Bio-control materials, microorganism materials	Tomato (requested from IFAD to cope with Tuta Absoluta)
	Zawya	1	Bio-control materials, microorganism materials	Garlic
	Abnoub	2	Residue of basil	Wheat (made compost using the residue of basil)

The Team and the counterparts discussed how to carry out winter crop demonstration based on the above factors, lessons, improvement of sales and experience of summer crop demonstration. As a result of discussion between the C/p and the farmers in the target villages for winter crop demonstration, the inputs and target crops were decided as following table. For winter crop demonstration, since the Project focused on organic materials to provide for the demonstration farms, the Project selected farmers who had been already cultivating vegetables and also added some villages, in which there are vegetable farmers willing to participate in the Pilot.

The focuses of the demonstration of organic material utilization are defined as 1) to reduce the chemical fertilizers, and 2) to produce quality produces with good taste. Upon these focus, the target was set not to be perfect organic agriculture but be relatively safe less chemical agriculture produce considering the economic efficiency and readiness of sales. The demonstration farms were selected from the farmers who are reliable to the agricultural office and the area where the extension officers are posted. The Project and the demo-farmers agreed with the conditions: there is no guarantee for harvest, inputs other than organic materials, i.e. seeds, seedlings, chemical fertilizers and labor should be provided by the demo-farmers. The Project provides organic materials, namely bio-fertilizers and bio-control materials.

Winter tomato at demo-farm (Minia Village No.8) : left: bio-fertilizers and chemical fertilizers, right: only chemical fertilizers. Fruits are ell grown on left picture.

In Minia, utilization of bio-fertilizers and compost making were specifically applied, while in Assiut bio-fertilizers and bio-control for pest control were applied. The Project got cooperation from the Faculty of Agriculture in Minia University for procuring bio-fertilizers and the Central Laboratory for Organic Agriculture under ARC of MALR for procuring bio-control materials.

Holding Field Day

Field day for the agriculture officers, extension workers and farmers were held both in Minia and Assiut on December 15 and December 19, 2011 respectively. In Minia, field day was held at the demo-farm of Village No.8, Minia District and for Assiut it was held at thedemo-farm in El Ansar village in EL Kosya District. The number of participants was around 100 people on each field day. As the both tomato demo-farms in Minia and Assiut were at the peak of harvest, the participants were able to confirm visually the effects of the pest control and increased fruiting. Almost all the participants acknowledged the effectiveness of bio-fertilizers to the yield increase. In Assiut, bio-control was deemed 99% successful and the farmers around the demo-farms have been keen on trying the bio-control. Both in Minia and Assiut, extension workers and farmers have been sharing the views that the distribution system of the inputs should be materialized soon as they could verify the effects of the bio-materials.

Field Day: Minia Village No.8 (Up), Assiut Ansar village (Down)

Reaction of the Stakeholders on Winter Crop Demonstration

Although the demo-farmers reduced the amount of chemical fertilizers (urea fertilizer and calcium superphosphate) by 50% of usual year, the growth of crops (especially potato and tomato) was good and the damage by pest was only little observed. There was virus infected from neighbor farm, but the infection was stopped at edge of the demo-farm with limited damage.

The reaction of the farmers on the microorganism materials was good as the neighbor farmers are visiting the demo-farms and the technology has been spread through these farmers. Many extension workers have not been convinced with the effectiveness of the microorganism materials. It is required to repeat the field day or exhibition of the produce to promote their better understanding. To visualize the effectiveness, comparative farms of winter tomato were prepared with 1) only chemical fertilizer application, 2) microorganism materials + chemical fertilizers, and 3) micro organisms materials + compost in Minia Village No.8.

Trial sales for the staff of agriculture directorate were carried out. Potato and tomato from the demo-farms were sold in Minia and Assiut respectively and questionnaire survey for taste was carried out. Many officers gave comments like “not watery and tasty”, “taste like the vegetable in old time”, “no bitterness”. About the quality of potato, younger generation gave better rating. The better taste would be because the cell of potato root was well divided and the trace-element fertilizer was well adsorbed. It is guessed that the youth was more sensitive with the sense of taste. It was also tested that the sugar content was higher. The researcher of the Central Laboratory of Organic Agriculture indicated that the good taste came from the inputs of the bio-fertilizers, which drove the cell division of potato and tomato, and the bitterness was suppressed due to non-use of chemical pesticides.

As part of winter crop demonstration, the Project has introduced pot cultivation system for rural women or landless to cultivate vegetables on the roof of the house. In this demonstration, cauliflower, tomato and eggplant have been grown in the pots on the roof. Bio-fertilizers have also been applied for it. The women who participated in this demonstration said, “We did not need to buy vegetables from market because of this pot cultivation” though the amount was not enough for selling. It is helping the family to reduce their expenses and provide healthy vegetables to them. The women reported that more than 10 persons started the pot cultivation after they saw the demonstration. Especially for women who are somehow restricted to work on the farmland, pot cultivation would give them supplementary value and opportunity to work.


Pot cultivation system on the roof


Tomato grown in pot


Well grown cauliflower

Not only the microorganism materials, but also combination of several kinds of vegetables in a farm has been demonstrated in Assiut. By this way, farmers can get continuous cash flow as the harvest of crops come one by another. The income from the first harvest will help buy inputs for other crops. This method would suit the small-scale farmers.


Combination of several kinds of vegetables

3.7.2 Results of the Implementation

The input materials should be of approved substances in organic farming by Central Laboratory of Organic Agriculture in Agricultural Research Center (herein called as the Lab). They can be classified into 3 categories; i) microorganism solutions, ii) biological pesticides and iii) supplements such as minerals. The microorganism solutions were used as bio-fertilizer in Minia Governorate, and then all inputs were used in Assiut Governorate in cooperation with the Lab.

The reasons to input these materials are aimed to reduce the costs of chemical fertilizer which trends to increase the international prices and to increase farmers' income by means of quantitative and qualitative improvement of crops. The domestic price of chemical fertilizer jumped up to triple in June, 2011. MALR had directed to allow distribution system through agricultural cooperatives, not only through BDAC. The landowning farmers can procure fertilizer from agricultural cooperatives, but the peasant farmers do not possess to purchase fertilizer from agricultural cooperatives, which cost 6000-5400LE/feddan depending on crop. The most of peasant farmers are forced to purchase from private distributors at 1.5-3.0 times in price. The international trade conditions in export and import of fertilizer show increasing demands and limited supplies, and the price will set on higher range. This situation affects to farmers' income directly.

Market Environment of Chemical Fertilizer

Increase of worldwide demands
- Increase of demands of foodstuff due to expanding population
- Increase of cereals due to change of life style in BRICs and other countries
- Increase of production of bio-fuel

Limited supplies
- Maldistribution and oligopolization in production
  (P2O5 : USA, China, Morocco)
  (KO2 : Canada, CIS, Germany)
- Tightening in supply market (decrease of surplus)

Price increase in petrochemical products
- Cost increase in raw materials of chemical fertilizer

↓

Increase of international prices

↓

Low supply and price increase in domestic market

Increase of export from Egypt due to gap of international and domestic prices

Generally, the farmland soils along Nile River indicate the range of pH7.5-9.0. In the alkaline conditions, the displacement of nitrogen from ammonium to nitrate by nitrate bacteria process in slow actions. The mineral deficiency diseases due to less resolving of minor minerals appear. Specially, the minerals such as K, Fe, Mn and B cannot be absorbed by the plant roots. As the result, it can trigger to malnutrition and disease damages, and then the crops will be valueless due to damaged shapes and shorter shelf lives, which are negative features in marketing. The tastes of crops are degraded by depression of amino acid and enzyme required for Tricarboxylic acid (TCA) cycle of biochemical reactions of plants and less production of synthesis of glucose.

Furthermore, various pests can frequently appear on the farmlands along Nile River such as Tuta absoluta against solanaceae crops; tomato, aubergine, etc. Many tomato farmers spray organophosphorous pesticides with intervals of once 3-5 days, which cost 600-5400LE/feddan/crop season.

Regarding marketing of agricultural products, farmers have to produce crops with differential advantages except crops of government controlled quota system; wheat, sugar cane, sugar beet and cotton, after liberalization of agricultural marketing since 1990s. The advantages can be defined as forwarding during shortage of supply in market, keeping freshness/ prolonging shelf lives, enlarging/ grading larger sizes and supplying in cheaper prices with low cost production. However, the tastes of crops are not generally reflected on pricing in local transactions. Demands of organic agro-products have increased only for high-end consumers in Cairo, while conscious on food safety has not been penetrated to local urban inhabitants.

By means of introduction of bio-fertilizer (microorganisms) and bio-control, it is verified that how incomes of farmers are improved with changes of their consciousness on agricultural technologies in current environment of production and marketing of horticultural crops. The economical comparison by site before and after use of bio materials is show in bellows (ANNEX-2):

Table 3.7.2 Economical Comparison in Demo-farm by feddan

Site	Crop	Cost of Fertilizer (LE/fed)		Cost of Pesticide (LE/fed)		Farm Income (LE/fed)		Farmers' Comments
		Last Season	This Season	Last Season	This Season	Last Season	This Season	
Abo Korkus	Potato	1,400	760	500	100	1,230	5,320	Increased production
Abo Korkus	Garlic	3,600	1,800	300	200	1,540	1,940	Less chemicals
Abo Korkus	Potato	1,400	720	1,500	0	1,400	6,630	Increased production
Abo Korkus	Onion	800	400	300	100	7,910	－1,950	Increased production
Matai	Potato	750	600	250	50	305	1,555	Increased production
Matai	Potato	1,800	1,200	250	0	1,170	10,150	Less chemicals
Matai	Potato	2,100	900	250	50	3,590	11,190	Increased production
Matai	Potato	1,920	1,200	250	50	1,870	11,270	Increased production
Matai	Potato	1,800	1,250	250	50	－3,300	7,265	Increased production
Minia	Potato	1,500	1,050	400	0	4,170	10,520	Increased production
Minia	Tomato	1,550	1,180	700	400	-3,390	3780	Good taste
Dayr Muas	Onion	3,000	3,000	3,250	2,800	100	－17,950	Price collapse
Mallawe	Wheat	675	80	0	0	3,975	6,345	Less chemicals
Assiut	Garlic	3,970	4,470	3,000	2,178	No sales	No sales	Price collapse
Abnoub	Tomato	5,645	3,656	5,000	2,718	19,205	continue	Less chemicals
Manfloot	Tomato	5,445	2,450	5,000	3,205	13,200	25,495	Increased production
El Kosya	Tomato	2,395	1,955	3,000	3,431	26,175	35,064	Increased production
El Kosya	Onion	3,200	1,600	3,000	NA	-10,295	－4,995	Price collapse
El Fath	Tomato, Others	—	1,800	—	2,945	—	Continue	Frost damage

Results of the Implementation

The most important verification item is that whether inputs of bio-fertilizer and bio-control is effective on increase of farmers' incomes or not. As visible indicators, the beneficial farmers except onion and garlic could obtain better gross incomes comparing with the last season at 14 sites out of 19 sites. The overall costs after introducing bio-fertilizer and bio-control can be depressed 10%, furthermore, economic advantages of those biological materials can be verified due to higher yields than conventional farming methods. As invisible impact, the farmers including some villagers have recognized to enhance farmer's health himself and food safety by means of pest reduction. Most of farmers testify improvement of bargaining power against traders due to high quality products in larger size, better taste and longer shelf life.

The following factors are verified through implementation of the pilot project:

Plant Growth

- The inputs of microbiological solutions are effective on alkalinity soils for horticultural production due to increase of absorption of non-available minerals in soils by organic acids produced by microorganisms in rhizosphere of plants.
- The inputs of chemical fertilizers can be saved at less than 50% of normal year. The crops can grow in healthy conditions.
- The chemical pesticides are reduced or not used at all. Pests did not appear or was under control.

Biological Pest Management

- The biological pest control program on Tuta absoluta is effective using pheromone, anti-insect (plant extracts), trichogramma and Bacillus thurigiensis

- The bio-pesticides such as Trichoderma, plant extracts, EM fermented vegetable liquid are also effective on nematodes, fusarium and other fungi diseases.

Quantitative and Qualitative Improvement of Crops

- The yields of crops increased at 20-50% plus at any site.
- Agricultural Officers tasted the organic vegetables and evaluated as excellent due to less bitter taste, tightness of cells density and containing of amino acids and glucose in crops.
- The harvested crops can prolong shelf life periods, which is affordable to marketing.
- Safety and quality up-grading of products in terms of taste, larger forms and freshness can be advantages on marketing.

Change of Farmers' Consciousness

- The selling unit prices are stable for local consumers, but many neighboring farmers starts organic farming in some villages. It becomes organic farming promoting movement in the village.
- It is important to select sophisticated farmers in dissemination of farming technologies in villages.
- The problems are distribution system and prices of biological inputs (microorganism solutions and biological control materials).

Other Related Matters

- Anti-frost treatments are required for winter crops.
- Small-scale farmers are recommended to plant small volume but many varieties of crops to avoid marketing risks; eg. leaf vegetables including iceburg lettuce.
- Most of extension officers monitored the projects at site have intention to expand the technologies of bio-fertilizer application and bio-control in/out of villages through demonstration farms as a farmers' school.

3.8 Evaluation by the Stakeholders

3.8.1 Participatory Evaluation Workshops of the Pilot Projects

Evaluation of the pilot projects by the stakeholders basically followed the OECD-DAC criteria which are commonly used for JICA projects. They are Efficiency, Effectiveness, Relevance, Impact and Sustainability as in Figure 2.8.1. *Efficiency measures the outputs -- qualitative and quantitative -- in relation to the inputs. Effectiveness is a measure of the extent to which an aid activity attains its objectives. Relevance is the extent to which the aid activity is suited to the priorities and policies of the target group and the governments. Impact is the positive and negative changes produced by a development intervention, directly or indirectly, intended or unintended. And sustainability is concerned with measuring whether the benefits of an activity are likely to continue after project funding has been withdrawn. ("DAC Criteria for Evaluating Development Assistance", Development Co-operation Directorate (DCD-DAC), http://www.oecd.org/document/)*

Great emphasis was put on effectiveness, however. Since the project period is very short and also the pilot projects are not full-scale with a lot of input from the outside, efficiency and impact were not discussed fully. For relevance and sustainability, which might be too early to evaluate, several questions were used to evaluate. "If you didn't participate the pilot project and the pilot comes today, do you want to participate in the pilot?" and "If you didn't marry your spouse and you meet him or her today, do you want to marry him or her?" were asked for relevance. "Do you want to continue next season?" and "Do you recommend the project to your relatives and friends to participate in?" were asked to farmers for sustainability, "Will you continue extending the project to other villages?" was asked to village extensions and district extensions, "Will you continue extending to other districts?" was asked to governorate officers regarding sustainability.

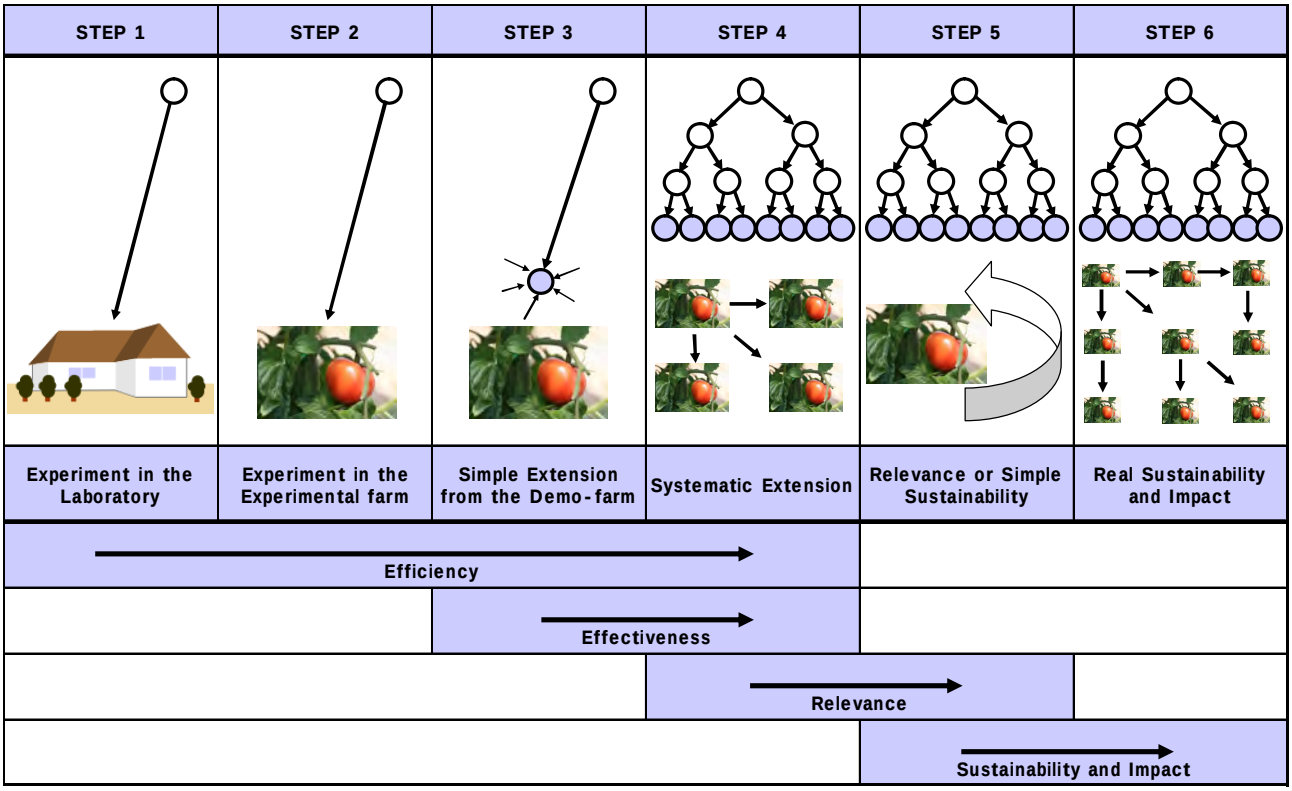


Figure 3.8.1 Participatory Verification and Evaluation of the Pilot Projects

The schedule and the number of participants of participatory evaluation workshops are shown in Table 2.8.1 and 2.8.2. Demonstration farms for intercropping in 5 villages (3 villages in Minia and 2 villages in Assiut) were evaluated in Novermber 2011. Regarding the pilot project for winter crops and agricultural processing, eight pilot projects in five villages of Minia Governorate, and five pilot projects in five villages of Assiut Governorate, which make 13 pilot projects in total, were evaluated by 291 participants. Female participants totaled 16 including 6 women for pot planting with bio-fertilizers in Abo Haseeba Village, 4 workers for vegetable processing in Delga Village, 4 workers for pomegranate processing in El Ekal El Baharey Village, and 2 governorate-level officers for vegetable processing in Delga Village. A breakdown of the 13 pilot projects is five pilot projects with bio-fertilizers, two pilot projects with improved varieties and one pilot project with vegetable processing in Minia Governorate, and three pilot projects with bio-control and two pilot projects with processing in Assiut Governorate.

The participatory evaluation workshops were proceeded to build up four or more levels of evaluation starting from the evaluation of the pilot projects by 1) farmers or workers, then 2) cooperative or sector extensions, 3) District extensions, and finaly 4) Governorate officers.

Table 3.8.1 Schedule of participants of Evaluation Workshops (Tomato&Maize Intercrop)

Pilot	Intercrop Tomato & Maize				
Governorate	Minia			Assiut	
District	Mahagha	Matai	Mallawe	Assiut	El Kosya
Village	Abad Sharona	Abo Haseeba	El Baragel	El Zawya	El Ansar
Date	31 October	31 October	1 Novmber	13 November	14 November
Place	Village Agriculture Cooperative			Village Agriculture Cooperative	
Participants	17 (M17)	20 (M17, F3)	17 (M17)		

Table 3.8.2 Schedule and Number of participants of Evaluation Workshops

Pilot Project	Bio-fertilizers and bio-control								Improved varieties		Processing			
	Potato demo-farm with bio-fertilizers	Pot planting with bio-fertilizers	Wheat with bio-fertilizers	Various crops with bio-fertilizers	Various crops with bio-fertilizers	Bio-control (tomato)	Bio-control (various vegetables)	Bio-control (garlic)	Improved variety of onion	Improved variety of garlic	Vegetable processing	Pomegranate processing	Basil processing	
Governorate	Minia					Assiut			Minia		Minia	Assiut		
District	Matay	Matay	Mallawe	Abo Korkas	Dayr Muas	Manfloot	El Kosya	Assiut	Dayr Muas	El Edwa	Dayr Muas	El Badary	Abnob	
Village	Abo Haseeba	Abo Haseeba	El Baragel	Bany Abeed	Delga	Beni Adi (New Land)	El Ansar (New Land)	El Zawya	Delga	Salakos	Delga	El Ekal El Baharey	El Kadadeh	
Date	31 January, Tuesday	4 February, Tuesday	2 February, Thursday	5 February, Sunday	7 February, Tuesday	9 February, Thursday	12 February, Sunday	22 February, Wednesday	7 February, Tuesday	20 February, Monday	1 February, Wednesday	21 February, Tuesday	13 February, Monday	Total
Demo-farmers / workers	5 (M5)	4 (F4)	3 (M3)	5 (M5)	1 (M1)	1 (M1)	1 (M1)	1 (M1)	5 (M5)	7 (M7)	4 (F4)	4 (F4)	5 (M5)	42 (F12,30)
Neighboring farmers	4 (M4)	5 (F2,M3)	1 (M1)	20 (M20)	24 (M24)	6 (M6)	3 (M3)	5 (M5)	20 (M20)	0	0	0	11 (M11)	99 (F2,M97)
Traders	-	-	-	-	-	-	-	-	-	-	-	-	1 (M1)	1 (M1)
Cooperative / Sector extension	0	0	1 (M1)	3 (M3)	1 (M1)	0	0	2 (M2)	1 (M1)	1 (M1)	2 (M2)	6 (M6)	4 (M4)	21 (M21)
District	2 (M2)	1 (M1)	2 (M2)	3 (M3)	0	0	2 (M2)	1 (M1)	0	1 (M1)	0	1 (M1)	3 (M3)	16 (M16)
Governorate	2 (M2)	0	3 (M3)	1 (M1)	1 (M1)	5 (M5)	2 (M2)	4 (M4)	1 (M1)	1 (M1)	3 (F2,M1)	3 (M3)	5 (M5)	31 (F2,M29)
計	13 (M13)	10 (F6,M4)	10 (M10)	32 (M32)	27 (M27)	12 (M12)	8 (M8)	13 (M13)	27 (M27)	10 (M10)	9 (F6,M3)	14 (F4,M10)	25 (M25)	210 (F16,M194)

3.8.2 Summary of Participatory Evaluation

(1) Effectiveness

Summary of participatory evaluation (effectiveness) is shown in Table 2.8.3 and 2.8.4

1) Effectiveness is categorized into "Very Good", "Good", and "Not Good" in the participatory evaluation for intercropping demonstration farms. The result of evaluation was positive in general. In particular, district extension workers gave a higher standing than farmers and village extension workers did. Demonstration farm in Abad Sharona Village was damaged by insects: as a result, their tomato harvest was less than they expected. This situation seems to cause the result of their evaluation as "Not Good".

2) Evaluation of the effectiveness of Bio-fertilizers and bio-control is good and consistent, and also higher in Assiut Governorate than in Minia Governorate. There are only one [Excellent] and four [Very Good] in Minia Governorate, but there are three [More than Excellent] and four [Excellent] in Assiut Governorate.

3) Evaluation of the effectiveness by the District and Governorate Officers are higher than the Farmers in Bio-fertilizers and bio-control, and improved varieties. For example, there are one [Excellent], four [Very Good] and three [Good] by the District and Governorate Officers in Bio-fertilizers in Minia Governorate, but there are only [Good] (six in total) by the Farmers.

4) In Processing, evaluation of the effectiveness of vegetable processing and pomegranate processing is not so good, where evaluation of basil processing is very good. Workers said [So So] for vegetable processing and [Good] for pomegranate processing, but [Very Good] for basil processing. The Cooperative Extensions said [Not Good] for vegetable processing and pomegranate processing, but [Very Good] for basil processing.

The fact that the evaluation of the people who are directly involved in managing the processing unit was severe would indicate that they are the one who embraced the real difficulty of establishing business. The high rating on the improving basil drying could have been attributed by the fact that the there has already been established value-chain of the dried basil and there was a market to accept the high grade of the product.

Table 3.8.3 Summary of Participatory Evaluation for Intercrop (Effectiveness)

Pilot Project	Tomato & Maize Intercrop				
Governorate	Minia Governorate			Assiut Governorate	
District	Maghagha	Matai	Mallawe	Assiut	El Kosya
Village	Abad Sharona	Abo Haseeba	El Baragel	El Zawya	El Ansar
Farmers	Good Not Good	Very Good	Good	Good	Good
Village Extension Workers	Not Good	Good	Good	Good	Very Good
District Extension Workers	-	It will be excellent if the distance between plants be suitable It will be excellent if we make the intercropping for several times not for	Very Good	Very Good	Good

Table 3.8.4 Summary of Participatory Evaluation (Effectiveness)

Pilot Project	Bio-fertilizers and bio-control								Improved varieties		Processing		
	Potato demo-farm with bio-fertilizers	Pot planting with bio-fertilizers	Wheat with bio-fertilizers	Various crops with bio-fertilizers	Various crops with bio-fertilizers	Bio-control (tomato)	Bio-control (various vetetables)	Bio-control (garlic)	Improved variety of onion	Improved variety of garlic	Vegetable processing	Pomegranate processing	Basil processing
Village	Abo Haseeba	Abo Haseeba	El Baragel	Bany Abeed	Delga	Bany Ady	El Ansar	El Zawya	Delga	Salakos	Delga	El Ekal El Baharey	El Kadadeh
District	Matay	Matay	Mallawe	Abo Korkas	Dayr Muas	Manfloot	El Kosya	Assiut	Dayr Muas	El Edwa	Dayr Muas	El Badary	Abnoub
Governorate	Minia					Assiut			Minia		Minia	Assiut	
Demo-farmers / workers	Good	Good	Good	Good	Good	Good	Excellent	More than Excellent	Not Yet	Good	So So	Good	Very Good
Neighboring farmers	Good					Very Good	More than Excellent	Very Good					Very Good
Traders													Good
Cooperative / Sector extension			Good	Very Good	Very Good			Very Good	Not Yet	Excellent	Not Good	Not Good	Very Good
District	Excellent	Very Good	Good	Very Good			More than Excellent	Excellent		Good		Good	Very Good
Governorate			Good			Excellent	More than Excellent	Excellent		Excellent	Very good / Good in training, Not Good in production	Good - Medium	Excellent

(2) Relevance

Summary of participatory evaluation (Relevance) is shown in Table 2.8.5 and 2.8.6.

Table 3.8.5 Summary of Participatory Evaluation for Intercrop (Relevance)

Pilot Project	Tomato & Maize Intercrop				
Governorate	Minia Governorate			Assiut Governorate	
District	Maghagha	Matai	Mallawe	Assiut	El Kosya
Village	Abad Sharona	Abo Haseeba	El Baragel	El Zawya	El Ansar
Farmers	We want to try the intercropping of medical and aromatic plants with Wheat. We want to try to cultivate other important crops by using intercropping methods	We will cultivate tomato with maize but with less percentage of maize We want to try to cultivate other crops by using intercropping methods We want to extend the intercropping to other villages	We want to recurrence If I have good seeds and seedlings I will recurrence We want to recurrence Do intercropping other crops	Repeating this trial again. There are some farmers already used intercropping. Those farmers did intercropping with wrong method. After seeing the demo-farm, they applied the correct method. The neighbors farmers opinions: some of them find intercropping is good and some opinion was that its cost a lot.	We want to repeat the experiment by ourselves Some farmers are ready to experiment. Many farmers asked the intercropping method
Village Extension Workers	We don't want to use intercropping method.	We will use intercropping methods. We don't want intercropping with tomato We want to use intercropping methods but not tomato with maize	The farmers will use it next season Encourage farmers to cultivate	We surely try it in the next season. A lot of farmers will repeat the experience.	Demo-farm Members want to repeat the experience. Large number of farmers want to make intercropping
District Extension Workers	-	Some farmers will apply intercropping idea.	We will encourage intercropping in other places Some villages had hoped to have this trail Intercropping will lead to the vertical expansion	We will disseminate the experience. In the village, there are a lot of farmers use intercropping.	Demo-farm members want to repeat the experience in other places Many farmers want to repeat the experience by themselves after seeing the Demo-farm We want to repeat the experience by using bio-control.

Relevance was evaluated by asking "Do you want to use intercropping method in the next season?" in the evaluation workshop of Intercropping. Most participants showed positive attitude to Intercropping method. However, participants from Abad Sharona commented that they want to do intercropping with medical and aromatic plants.

Table 3.8.6 Summary of Participatory Evaluation (Relevance)

Pilot Project	Bio-fertilizers and bio-control								Improved varieties		Processing		
	Potato demo-farm with bio-fertilizers	Pot planting with bio-fertilizers	Wheat with bio-fertilizers	Various crops with bio-fertilizers	Various crops with bio-fertilizers	Bio-control (tomato)	Bio-control (various vetetables)	Bio-control (garlic)	Improved variety of onion	Improved variety of garlic	Vegetable processing	Pomegranate processing	Basil processing
Village	Abo Haseeba	Abo Haseeba	El Baragel	Bany Abeed	Delga	Bany Ady	El Ansar	El Zawya	Delga	Salakos	Delga	El Ekal El Baharey	El Kadadeh
District	Matay	Matay	Mallawe	Abo Korkas	Dayr Muas	Manfloot	El Kosya	Assiut	Dayr Muas	El Edwa	Dayr Muas	El Badary	Abnoub
Governorate	Minia					Assiut			Minia		Minia	Assiut	
Demo-farmers / workers	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	So So	Good	Good
Neighboring farmers							Good	Good					Good
Traders													
Cooperative / Sector extension			Good	Good	Good			Good	Good	Good	Not Good	Good	Good
District	Good	Good	Good	Good			Good	Good		Good		Good	Good
Governorate			Good			Good	Good	Good			Very good / Good in training, Not Good in production	Good	Good

Relevance is good across the board except vegetable processing in Delga Village, Dayr Muas District, Minia Governorate, where the workers said [So So], the cooperative said [Not Good] and the Governorate said [Very Good] in training, but [Not Good] in production. Because of labor cost / wage issue, evaluation of effectiveness is not so good and the participants think milk processing is more appropriate in Delga.

According to the extension officers in the District and Governorate, there are not enough cows in Delga villafge, so that they have to procure outside the village and it is costly to procure fresh milk from outside. Although the demand for milk procewsing products is high in the village, the extension officers do not think that the milk processing is suitable in Delga village.

(3) Sustainability

Summary of participatory evaluation (Sustainability) is shown in Table 3.8.7 and 3.8.8.

Table 3.8.7 Summary of Participatory Evaluation for Intercrop (Sustainability)

Pilot Project	Tomato & Maize Intercrop				
Governorate	Minia Governorate			Assiut Governorate	
District	Maghagha	Matai	Mallawe	Assiut	El Kosya
Village	Abad Sharona	Abo Haseeba	El Baragel	El Zawya	El Ansar
Farmers	We want to try to cultivating tomato, eggplant, and pepper, by intercropping.	We want to cultivate vegetables and continue with it.	We will try intercropping again. Many farmers want to try I want to try intercropping maize with other vegetables.	We want to try another horticulture crops. There are a lot of farmers cultivating horticulture.	Use intercropping by tomato and maize. Try intercropping by other combination, if they can learn those methods. More horticulture corps, especially fruits Training course for intercropping Taking soil samples before cultivation for determining the type of crops
Village Extension Workers	—	We want to cultivate other crops and vegetables.	Vegetables cultivation	We want to try vegetables. A lot of farmers have already cultivate vegetables.	We want to increase fruit production.
District Extension Workers	—	—	Encourage vegetables crops After intercropping some farmers will try cultivating vegetables.	We want to cultivate vegetable, because it is profitable.	Many farmers wish to cultivate horticulture crops.

Sustainability was evaluated by asking "Do you want to try to cultivate horticulture crops?" Participants gave positive comments on starting horticulture crops. Farmers who involved in demonstration farms especially mentioned that they want to start horticulture crops with intercropping method.

Table3.8.8 Summary of Participatory Evaluation (Sustainability)

Pilot Project	Bio-fertilizers and bio-control								Improved varieties		Processing		
	Potato demo-farm with bio-fertilizers	Pot planting with bio-fertilizers	Wheat with bio-fertilizers	Various crops with bio-fertilizers	Various crops with bio-fertilizers	Bio-control (tomato)	Bio-control (various vegetables)	Bio-control (garlic)	Improved variety of onion	Improved variety of garlic	Vegetable processing	Pomegranate processing	Basil processing
Village	Abo Haseeba	Abo Haseeba	El Baragel	Bany Abeed	Delga	Bany Ady	El Ansar	El Zawya	Delga	Salakos	Delga	El Ekal El Baharey	El Kadadeh
District	Matay	Matay	Mallawe	Abo Korkas	Dayr Muas	Manfloot	El Kosya	Assiut	Dayr Muas	El Edwa	Dayr Muas	El Badary	Abnoub
Governorate	Minia					Assiut			Minia		Minia	Assiut	
Demo-farmers / workers	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Neighboring farmers							Yes	Yes					Yes
Traders													
Cooperative / Sector extension			Yes	Yes	Yes	Yes		Yes	Yes	Yes	No	Yes	Yes
District		Yes					Yes	Yes		Yes		Yes	Yes
Governorate						Yes	Yes	Yes			No	Yes	Yes

All the participants said they will continue what they are doing except vegetable processing in Delga. The head of the cooperative said "We will stop if the labor cost does not become lower as in the private sector". *(There was a meeting after the participatory evaluation workshop, and an agreement was made between the cooperative and female workers as shown in Chapter 2, 2.3.1)*

3.8.3 Opinions in the Participatory Evaluation Workshops

(1) Bio-fertilizers and bio-control

1) How could we improve the pilots?

Site	Opinions from Farmers, Village Extension, Governorate	Remark
Abo Haseeba Village Matay District Minia Governorate	• Instruction is necessary to farmers at least 15 days before cultivation. – *Farmers* • To supply bio-fertilizer on time. – Farmers • We need monitoring from extension and advertising of the produce. – *Farmers* • To decrease the price of bio-fertilizer so that all the farmers can use it. – *Farmers* • I have to know the future effect to the soil to decide if I can use it again or not. – Farmers	Major point is the limited distribution system of bio-materials
Delga Village Dayr Muas District Minia Governorate	• To provide bio-fertilizers through cooperatives, so that we can get bio-fertilizers on time. – Farmers • To have seminars. – Village Extension	
Beni Adi Village Manfloot District Assiut Governorate	• It is better to increase the frequency of visits of the team till twice / week. – *Farmers* • It is better to increase the number of pheromone traps to 2 or 3 from 1 per feddan because it is too few. – *Farmers* • Using bio-control from the beginning of cultivation to get pure organic production. – *Governorate* • Direct contact with the advisor and the Study Team. – *Governorate*	It is required to develop the capacity of the extension workers and strengthen the organized extension work to realize the intensive monitoring.
El Ansar Village El Kosya District Assiut Governorate	• We need more visits. – *Farmers* • We need more visits. – *District, Governorate*	
El Zawya Village Assiut District Assiut Governorate	• Seeds should be well prepared. – Farmers, Cooperative Extension, District, Governorate	

2) Way forward

Site	Opinions from Farmers, Village Extension, Governorate	Remark
Abo Haseeba Village Matay District Minia Governorate	• I will use if the price of bio-fertilizer is lower. – *Farmers* • Seminars and symposiums for farmers are necessary. – *District*	Improvement of the distribution system of bio-materials
Bany Abeed Village, Abo Korkas District, Minia Governorate	• We would buy from the cooperative / district not at private shops because traders might increase the price. – *Farmers* • It is better to supply bio-fertilizers at certified shops in the future. – *District*	
Beni Adi Village, Manfloot District, Assiut Governorate	• We need to offer bio-control materials and bio-fertilizers at the places where farmers can access easily. – *Governorate*	
El Ansar Village El Kosya District Assiut Governorate	• I want to continue if I can get bio-control. – *Farmers* • Establish a laboratory for the bio-control to supply bio-control to farmers. – *Governorate*	

(2) Improved varieties

1) How could we improve the pilots?

Site	Opinions from Farmers, Village Extension, Governorate	Remark
Delga Village Dayr Muas District Minia Governorate	• We need more instruction. – *Farmers* • To plant more seedlings in a line (intensification). – *Farmers* • Intercropping of onion and other crops. – *Village extension*	It is required to develop the capacity of the extension workers and strengthen the organized extension work to realize the intensive monitoring.
Salakos Village El Edwa District Minia Governorate	• Establish a cooperative or an association for exporting. – *District* • To use bio-fertilizers for garlic. – *Governorate*	Target was to increase the high grade produce by quality improvement and see them at higher price. Due to over supply the market price in this season dropped, but the demo-farmers managed to produce and sell the quality produce from the demo-farm.

2) Way forward

Site	Opinions from Farmers, Village Extension, Governorate	Remark
Salakos Village El Edwa District Minia Governorate	• The problem is marketing. – *Village Extension* • Exporters control traders and traders control farmers. – *Village Extension* • The project is a marketing project but why did you deal with variety of seeds? – *District*	The target was to produce high grade produce to sell at higher price. However, a big drop of the market price diminished the effect of the quality improvement.

(3) Processing

1) How could we improve the pilots?

Site	Opinions from Farmers, Village Extension, Governorate	Remark
Delga Village Dayr Muas District Minia Governorate	• We need a cutting machine. – *Female Workers, Governorate* • We need big build-in basin. – *Female Workers* • We need a better work plan. We need to know when we need to work. – *Female Workers* • Labor cost is high and transportation cost is high (no truck). – *Cooperative* • There is no profit for the cooperative. – *Cooperative* • We are paying three times more than factories. (300 L.E. / ton vs. 100 L.E. / ton) – *Cooperative* • Female workers demand daily wage and refuse to take 70% of the profit. – *Cooperative* • Officers are not getting any wage for packaging and marketing. – *Cooperative* • We'd better involve associations to give training. – *Governorate*	After the workshop, the cooperative management is making effort to improve the business such as negotiation with the workers, introducing the price work system, negotiation with the retailers to bear the transportation cost, etc. Delga cooperative has achieved the highest sales among the processing units of the Pilot Projects.

2) Way forward

Site	Opinions from Farmers, Village Extension, Governorate	Remark
Delga Village Dayr Muas District Minia Governorate	• We will choose milk processing rather than vegetable processing. We originally thought it's a milk processing project. We prefer milk processing to make cheese and yoghurt – *Female Workers* • We want milk processing more. – *Cooperative* • We need a pickup for transportation. – *Governorate*	Governorate and District extension officers commented that supply of milk inside the village would not be enough, so the milk processing would not be suitable for the village albeit the high demand. Also animal production was out of the scope of IMAP, which was a constraint for the alternatives.

(4) Promoting Horticulture Corp (Tomato & Maize Intercrop)

1) How could we improve the pilots?

Site	Opinions from Farmers, Village Extension, Governorate	Remark
Abad Sharona Village Maghagha District Minia Governorate	• The demo-farm had high humidity, because the farm located near the Nile River. – *Farmers*	It is required to improve the assessment for site election and further develop the capacity of the extension workers.
Abo Hasseba Village Matai District Minia Governorate	• It will be excellent if the distance between plants be suitable – *Farmers*	
El Balagele Village Mallawe District Minia Governorate	• Very good if the farmers have trained before – *District* • Select right location far from sugarcane – *Farmers*	
El Kosya Village El Ansar District Assiut Governorate	• Delaying the time of cultivation – *Farmers* • The time of cultivation was not suitable – *District*	
El Azwya Village Assiut District Assiut Governorate	• Increasing the space between maize and tomato – *Farmers*	

2) Way forward

Site	Opinions from Farmers, Village Extension, Governorate	Remark
Abad Sharona Village Maghagha District Minia Governorate	• We want to try the intercropping of medical and aromatic plants with Wheat. – *Farmers* • We want to try to cultivate other important crops by using intercropping methods – *Farmers* • We want to try to cultivating tomato, eggplant, and pepper, by intercropping. – *Farmers*	Needs for development and extension for combination of various crops for intercropping according to the market needs or cultivating small amount with many varieties are required.
Abo Hasseba Village Matai District Minia Governorate	• We want to try to cultivate other crops by using intercropping methods – *Farmers* • We want to cultivate other crops and vegetables – *Village Extension Worker* • It will be excellent if we make the intercropping for several times not for once – *District*	
El Balagele Village Mallawe District Minia Governorate	• If I have good seeds and seedlings I will recurrence – *Farmers* • I want to try intercropping maize with other vegetables – *Farmers* • We will encourage intercropping in other places – *District*	

El Kosya Village El Ansar District Assiut Governorate	• We want to repeat the experiment by ourselves – *Farmers* • We want to increase fruit production *Village Extension Worker* • We want to repeat the experience by using bio-control. – *District* • The plant providing the bio-control material is needed close to the village. – *District*	
El Azwya Village Assiut District Assiut Governorate	• Offering the place providing bio control material near to the village – *District* • May we try okra intercropping with maize – *Farmers* • We want to try another horticulture crops. – *Farmers, Village Extension, and District* • We will disseminate the experience. – *District*	

3.9 Capacity Development of the Stakeholders

3.9.1 Governorate and District Agriculture Offices

The pilot activity for supporting marketing was rather new one for the counterparts. After we established the way of collecting information and disseminating them by SMS, the counterparts are collecting the price data on daily basis and the accumulation of the data shows the trend of the price change by market. Through the activities, the counterparts were able to confirm not by the feeling but by the actual data about the fact that the market price of horticulture crop differ place to place and change time by time. This enlightens the counterparts to think about the role of administration not just from the production point of view but also from the marketing point of view.

Activity for assisting the establishing processing unit in the village, i.e. assistance to business promotion is also new role for the counterparts especially in Assiut. In Minia, the Rural Women Center established through IFAD project has given the counterparts somehow the experience in this field. The counterparts are learning the planning, designing and facilitating the business together with the agricultural cooperative officers in the village. This experience should be succeeded as a part of the administrative services of the Agriculture Directorate.

3.9.2 Village Agriculture Cooperatives

Staff of Village Agriculture Cooperatives has participated in the pilot project actively. For example, they were involved in operation of processing facilities and given various trainings. Therefore, they earned a valuable learning experience in the field of establishment of agri-businesses. However, it is not necessarily the case that they have a strong motivation for doing businesses because they receive a salary from the government. It is important to advertise the advantages of business activities for cooperatives staff such as holding business orientations. In addition, getting board members of cooperative involved in these activities is necessary to encourage Agriculture Cooperatives to do businesses. These will lead to revitalize Agriculture Cooperatives and contribute to rural development.

3.9.3 Agricultural Extension

Quality Improvement: At the end of the demonstration of garlic and onion, the extension officers could identify the benefit of new varieties or certified seeds through careful management and evaluation. They are expected to provide technical guidance to famers to disseminate them in future.

Promoting Horticulture: The extension officers, especially village cooperative officers learned many things in tomato cultivation under intercropping system in the training and in the implementation of

the demonstration farms. Frequent and direct communication with the advisors inspired them with the new techniques. Most cooperative officers can instruct the intercropping to farmers in the next season without full assistance by the advisors.

3.9.4 Farmers and Rural Women

With regard to farmer's organization, small-scale farmers participating in demo-farming are directly delivering and selling tomatoes at the local markets due to small amount of tomato-produces in demo-farms. There is no symptom of farmers organizing a group for marketing. Before organizing formal farmer's groups, it would be useful to enlighten farmers through the study tour of demo-farms being successful in intercropping of tomato with maize. To activate farmer's grouping, a supporting system composed of related extension officers from governorate to village level shall be established in order to support small- scale farmers in terms of farming management covering diagnosis and measures for diseases and insects, procurement of pesticides, dissemination of price information and business planning.

3.9.5 Recruiting New Staff in the Ministry of Agriculture and Land Reclamation

The Ministry of Agriculture and Land Reclamation has resumed recruiting new staff since 2012. There is around 70 new staff in Minia Governorate Agriculture Office. Most of them graduated from the department of Agriculture in Minia University. In Assiut, 53 graduates of Assiut University were recruited between 2002 and 2010. The MALR is expected to revitalize itself to promote various activities.

4 EVALUATIONS AND LESSONS FROM THE PILOT PROJECTS

4. 1 Supporting Marketing

4.1.1 Relevance and Use of Information

As mentioned above, the wholesale price data obtained from Minia and Assiut wholesale markets are from randomly selected sample wholesalers and therefore the relevance of the data should be taken into account. To support the use of the data with such shortfall, it would be useful to see the trend of the price. Continuous collection and distribution of data would enable the receivers to capture the price trend and it needs to instruct the cooperative to maintain at least one week of price data on the white board so that people can see the trend of the price.

Being available of official local wholesale markets with strengthening the function of wholesale markets, local wholesale markets could be signal for price formulation of agricultural produce. There are wholesale markets in Minia and Assiut, yet they do not have any functions as wholesale markets. Therefore, these wholesale markets are expected to strengthen their functions such as recording prices and supervising wholesales and traders and work out as the wholesale markets with proper management organization. Cooperation of Governorates is necessary to strengthen the role of wholesale markets because wholesale markets are under supervision of Governorates.

4.1.2 Use of Information: Off-season Crop and Necessity of Year-round Cropping Pattern

Figure below on the wholesale prices in different markets is made on the data collected by C/P through this Pilot Projects. From June to August, trucks transporting tomato mainly go from Cairo to Upper Egypt. This means that the price of tomato in Upper Egypt is higher than that in Cairo. This situation is reflected to the price trend of Figure 3.1.1

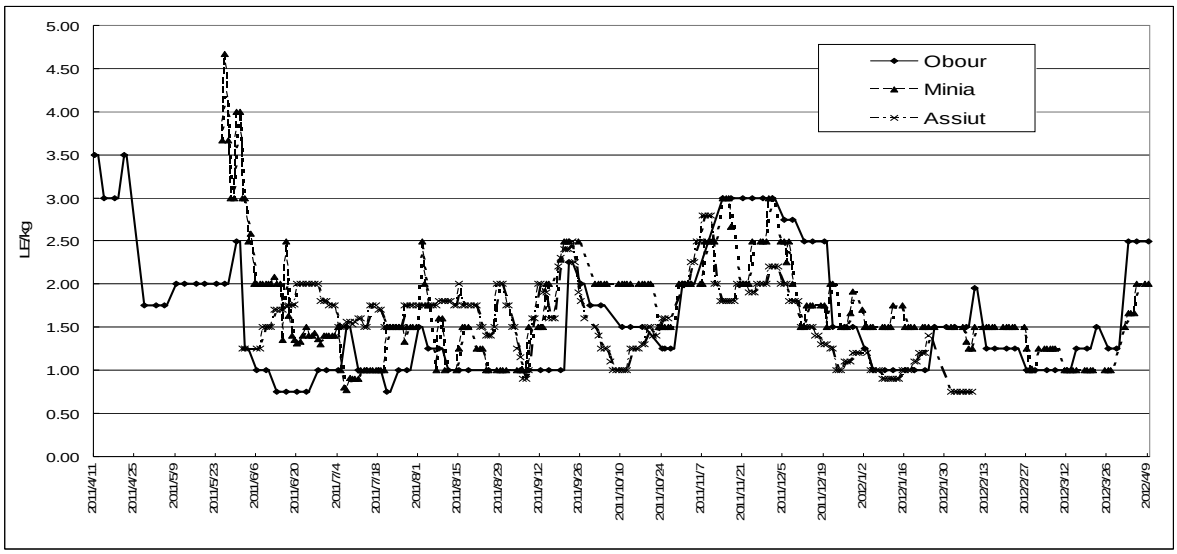


Figure 4.1.1 Wholesale Price Data Collected by C/P (Tomato)

The above data, the wholesale tomato price, has been collected since the pilot project started. This data would be helpful for farmers to decide the timing of cultivation. However, farmers need to utilize price data carefully because price trend is different from year to year. Also, it is influenced by the international price trend. It often happens that farmers cultivate their crops at the same time with other farmers since farmers within the same area refer to the same price trend. From this point of view, price data should be utilized with careful consideration.

One of the pilot projects was to introduce intercropping method to make tomato harvest period longer and sell at a higher price. Some of the succeeded farmers harvested their tomato from September 2011 to January or February 2012. These farmers did not cultivate wheat in winter, but cultivate cucumber after tomato harvesting. This cropping pattern is totally different from traditional one. Farmers need to think about what the best cropping pattern is to maximize their profits. Agricultural Extension workers will be expected not only to give price information, but also advise suitable cropping pattern with the viewpoint of year around cultivation.

4.1.3 Expansion of Activity and Cost

SMS service is generally welcomed by the receivers and then it can be considered to increase the number of receiver, increase the villages, and increase the number of crops to send price information. However, increasing service costs a lot. In order to reduce the cost at the same time of expanding the service, there will a way, e.g. only sending SMS to the village cooperative office and write up the information on the board at the office. Also workload of the directorate staff, who collect, record and send information, should be taken into consideration.

MALR has tried to implement a mobile extension service from 2009 to 2010 in corporation with a mobile company for agricultural extension. In this trial, the Ministry provided SIM card to farmers in the selected area at a cost of LE10 and the farmers can access to the free dial of the Agriculture Research Center (ARC) under MALR to consult with cultivation issues. According to the extension engineers on the ground, farmers do not use this service much because they have to contact themselves to the ARC otherwise the information sent by ARC was limited. It seems very useful for farmers to have such line to consult, but if the procedure to access is complicated, farmers would find difficult to utilize it.

There is already a price hotline in the Ministry, but it takes long procedure to reach the information you want, i.e. when you call the number, you need to hear the announcement to follow and push the button several times to select the service until you reach the information you need. SMS service by the Pilot Projects has a point that the administration side sends information to the farmers. However, it means that the cost will have to be born by the administration side. This is an issue for sustainability.

After going through the trial, MALR launched the Mobile Extension Service in corporation with the companies, Vodafone and Quick Serve in June 2011. Vodafone plans to distribute SIM card to one million farmers and the Ministry sends information about cultivation technology by crop to the SIM holders free of charge. Also free dial hot line about the cultivation technology will be established. For this project, MALR does not allocate special budget but the private companies are investing in this project as public-private-partnership. The private companies can obtain the contents to provide to the customers from MALR and this can contribute to increasing the number of their customer. Also this can be considered as the activity for Company's Social Responsibility (CSR).

This public-private-partnership is realized as it brings benefit for both sides: MALR can utilize SMS as channel of extension service without allocating budget and the companies can increase their customers. The market information collection and dissemination activity in the Pilot Project can provide some lessons to the policy of MALR and if this Pilot is evaluated worth expanding, it can be recommended to incorporate in the ministry's mobile extension service.

At the Governorate level, agriculture extension department conducts price survey periodically at the selected wholesale markets and village markets. Therefore, Governorate Agriculture Extension should be a major player of collecting price information. The Head of Agriculture Extension in the Central Administration is also willing to incorporate price information with the existing Mobile Extension Service.

The MALR has started new TV channel, and wholesale price information in Cairo and Alexandria is broadcasted on TV screen. This is a good example of integrating different type of mass media to disseminate information widely.

4.1.4 Supporting the Market Channel Development for Value-added Products

Official Agencies should support implementing organizations in agri-business. For example, village cooperatives advertise their products to local residents in villages, and promote marketing to local retailers under the support of District offices. At the District offices, a direct shop will be established, and local agriculture fares will be held with Governorate Agriculture Directorates. At the Governorate level, Governors will promote agriculture fares and other events. Giving prize and competitions will be helpful to succeed these events.

Governorate and District Agriculture offices already have a function of selling local agricultural produce. As such, these existing marketing channels should be utilized to promote marketing of agricultural produce and processed products. In addition, direct shops at Governorate Agriculture Directorates should also be utilized for creating differentiation and brand as high quality healthy organic products. Village cooperative members can learn customer satisfaction and their needs through dealing with customers directly at these shops. It also suggests that this kind of direct shop establish inside the village cooperatives, and members learn consumer opinions and demand at their own direct shop.

4.1.5 Upgrading the Specialty Crop Area

When we look at the current practice of basil drying, it is rational from labor saving point of view, but tends to result in low quality – low price marketing. The Pilot aims at introducing the improved drying method to upgrade the quality of dried basil. The issue is whether the local traders would reward this quality. The result of the trial above indicated that if the amount of production is little albeit the quality is high, the quality would not be fully evaluated by the trader. In order to promote the high quality – high price transaction of the product, it is necessary not just to produce quality product but also to produce certain level of amount stably.

During the pilot project, the seminar was held to explain the advantages of producing high quality basil as the region to local basil producers and traders. It also needs to promote investment in facilities for producing high quality dried basil. Basil drying yard was constructed on the public land for the pilot project. A large public facility like drying basil yard should rely on not only private investment, but also public investment. This kind of facility could be regarded as public project, and public investment should promote to formulate specialty crop areas.

4.1.6 Role of Agriculture Cooperative in Marketing

For the marketing by village agriculture cooperative, it was not realized though we have tried to collaborate with the specialized cooperative for marketing (Agriculture Cooperative for Finance). After the liberalization policy of agricultural production and marketing in 1980's, the private sector for marketing has been well developed and the farmers are easy to sell their produce individually. This

may have been attributed to the ceasing of the role of agriculture cooperative for marketing. Also the village cooperative was not taking marketing of produce as their role after liberalization policy and the farmers prefers to choose freely where to sell their produce. Meanwhile, the establishment of specialized cooperative for marketing has come up since 1980's. These specialized cooperatives are engaged in marketing activities for their special crops though their share in the market is minor.

Historically, the agriculture cooperative in Egypt had been an agent to control the crop production and marketing by 1970's. From such background of the cooperative, it is required for them to build the trust of the farmers in the village and revitalize the organization in order to make the cooperative get into the filed of marketing again. It is also necessary to consider again what would be the advantage for the cooperative to revitalize for marketing. For the small scale farmers to enjoy the scale-merit of economy by collective production and shipping, it would still be significant that the village multi-purpose agriculture cooperative get into the marketing of agricultural produce again.

Basil drying yard was constructed in Arab El kadadeh Village in Assiut Governorate and farmers sold their basil through the village cooperative. The village cooperative bought fresh basil from farmers, and dried and processed; as a result, they succeeded to sell high quality basil at high price. From the example of Salakos village known for garlic production, it is suggested that the village cooperative play one of the distributors in terms of garlic marketing. In fact, local people in the village prefer this idea rather than organizing local traders and producers. The following summarize the future direction of cooperative involvement in distribution based on the pilot project experiences.

(1) Contract Farming

As for the activity of the specialized cooperative in Minia, namely the Agriculture Cooperative for Finance, they work with a basis of contract farming prior to cultivation. Contract farming seems important for Agriculture Cooperatives to engage in collective shipping of agriculture produce. They would need such arrangement for success as securing where to sell, i.e. contract farming. It can lead to secure the stabilized price for farmers.

Contract farming has already tried with several projects and NGOs such as AERI Project of USAID/CARE and the CEOS. The first thing to do is to learn lessons of these activities. Also, bulk amount of production is necessary for contract farming. Year around cropping pattern should be considered with the activities of collecting and dissemination market information. At the same time, promoting horticulture crops to small scale farmers is also necessary with support from public administration.

If cooperatives promote contract farming, they need capital to buy produce from farmers. One of the main constrains of this activity is a financial weakness of cooperatives. To solve this problem, financial support for village cooperatives should be considered to provide through district, governorate agriculture cooperation, and other network of cooperatives.

(2) Price Stabilization Fund

In response to the request of price stabilization, Price Stabilization Fund is possibly established within cooperatives to mitigate the production risk. Cooperatives will buy produce from farmers with the same price as the market. If selling price is higher than buying price, cooperative will reserve the surplus at the cooperative account. In fact, this price stabilization fund is mentioned in the Strategy for the Development of Agricultural Cooperative (2002-2017). Thus, interannual risk mitigation methods like price stabilization fund should also be considered.

(3) Soft Loan Facility for Small Scale Farmers

Traders lend money to small scale farmers to ensure the production, and this is quiet common in rural area. In this case, traders have an advantage in dealing. Small scale farmers have no choice, but accept the condition because most small scale farmers need financial support to cultivate crops. This situation indicates that cooperative marketing activity should bundle with financial services for small scale farmers. Cooperatives providing financial services, initial capital could be an issue. Once they start to provide loan, they can continue their activities by revolving the profits.

4.2 Post-harvest Improvement and Processing

4.2.1 Establishment and Management of Agro-processing Business

(1) Initial Cost for Business Establishment

There is also financial consideration for constructing processing facilities to produce add-value products. Operating these facilities needs not only initial investment cost, but also running cost until generating profits (running cost needs at least for three months as one crop season). As such, financial plan should be considered carefully. The MALR considers the way of financial support based on the financial plan.

(2) Operation and Supervision of the Business

The Study Team has conducted the training for business planning to responsible persons of agricultural cooperatives. Analyzing the current situations of sales, they are requested to agree among members for actions of processing and sales. The head of agricultural cooperatives and woman leaders of processing groups should understand the expected selling prices or attracting prices for consumers with calculation of the costs on raw material procurement, packages, wages, power and fuel, consumable goods and depreciation. There are cases to improve taste and diversify products by ideas and suggestions of group members. These procedures will contribute sustainability on operation.

Regarding management of the facilities, cooperatives did not much care about effective management structure due to lack of management experience. It is necessary to install equipment along with processing flow, and try to use less energy such as gas, water, and electricity. The concepts of “Making order”, “Tidying up”, and “Cleaning” are introduced during the pilot project. Processing businesses should be promoted and monitored with these perspectives.

Moreover, recording of the operation is important for proper management; however, cooperatives operation members did not record their activities properly, and they did not calculate recorded numbers to look back at their own performance. Activity record is necessary for conducing “Check-Action”. Recording activities should be promoted organizationally. Administrating authorities (District and Governorate Agricultural Offices) monitor activities of implementing organizations (cooperatives), and evaluate record of activities and suggest operational and technical aspects. In the future, cost of these activities should be budgeted. Implementing PDCA (Plan-Do-Check- Action) cycle is important to operate processing units effectively and efficiently. Market research and questionnaire survey will be helpful to respond market demand and improve quality of PDCA cycle.

(3) Upgrading of Business

The products except Basil have been sold to officers and workers through Women Development

Center in Department of Agriculture in Minia and store in Department of Agriculture in Assiut. After test sales with evaluation, the recipes of ingredients have been standardized. Now the groups are trying to sell products in the villages through cooperative networks. In order to expand selling amounts, more discussion among processing group members should be conducted to make the commodity's story, i.e. what is a differential advantage, beside price competitiveness. One of the advantages might be emphasis on food safety. Furthermore, improvement on packaging material, design and labeling is essential to sell products outside of the district.

The official registration is required for manufacturing of food products when the processing unit develop their business:

・Trade Registration for small-scale industries (Industrial Development Authority)
・Tax Card (Tax Office)
・Sanitation License (District Health Office)
・Environmental Documentation (District License Office)
・Fire Safety License (District License Office)

Also, official permission such as labor insurance is necessary for hiring permanent staff instead of part-time staff. Governorate and District offices are expected to support these procedures.

4.2.2 Use of Human Resources and Networking

Some of the counterpart members have experiences in processing businesses. In particular, there is Rural Women Development Center provided by the IFAD Project in Minia Governorate. Several trainers of agro-processing, economical study and management belong to this Center. They cooperated with the pilot project in terms of selection of suitable equipment and providing training to cooperative members. On the other hand, there is not such a facility in Assiut Governorate. Processing expert from Assiut University cooperated with the pilot project. Strengthening regional human resource network is one of the important aspects to promote processing businesses.

4.2.3 Expansion of the Project

Governorate Agriculture Offices should consider how to expand agro-processing businesses to other villages. Detailed plan is necessary to expand; human resources, capital, techniques, and information. These aspects need to be prioritized. Priority area, implementation timing and method should also be considered. The following summarize the main points of expansion:

- Not only Village Cooperatives, but also farmers' organizations or groups, and even individuals could be a target of incubation support.
- As for the Pilot Project, villages producing specialty crops were selected, and then other available crops in the villages were added to processed items to increase the operation ratio. From this experience, specialty crops or crops which are easily available should be selected to be processed.
- Location of processing facilities prefers to establish convenient and outstanding place such as near owners of facilities. Also, it is better to use their own land so that they do not need to pay rent.
- Regarding operation and management of facilities, lectures, trainings, and human resource development should be given by experts.

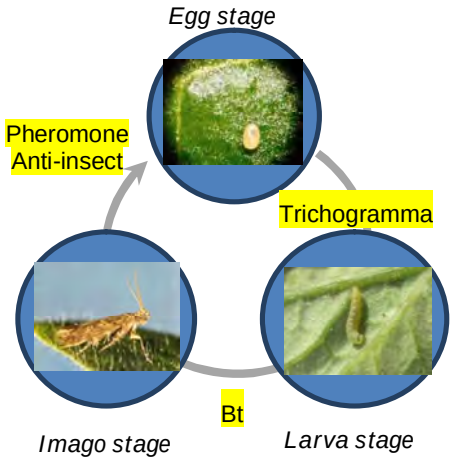
- In terms of regional expansion, a wide range of stakeholders should be involved in coordination system to promote rural development. Governorate promotion committee consists of Governorate offices, Districts offices, and technical institutions e.g. Agriculture Research Institution and Universities to facilitate coordination of the whole Governorate areas. District promotion committee consists of District offices, Village cooperatives, and individual advisers. Village promotion committee consists of Village cooperatives, cooperative members, and advisers in the villages. It is suggested that these three committees at three different levels promote expansion of the project.

4.3 Bio-fertilizers Utilization: Reducing Chemicals toward Branding Agricultural Produce

4.3.1 Creating Category of Produce: Clean Agro-products

A bio-fertilizer using microorganism is effective on its action and economic impact. Soils in both of new and old lands along Nile Valley have a nature of pH7.5-9.0, which is caused by scatter of $CaCO_3$ and its reaction with OH-. In the condition of more than pH7.5, the plants cannot absorb minerals such as KO_2, Fe, Mg and B from roots, and can be easily affected by pests due to malnutrition. The microorganisms containing in bio-fertilizer produce organic acids in rhizosphere, and help transform unavailable substances to available substances in soils.

As the results, farmer's income can be improved by bio-fertilizer and bio-control. The reasons can be summarized as below:



Bio-control at each growing stage

i) The yields of crops increase at 20% or more comparing with conventional farming methods prevailed in Upper Egypt, if proper microorganisms are dosed along with the stages of plant growth.
ii) Demands of bio products (not complete organic products) from traders and consumers increase due to good taste; tomato, potato, etc.
iii) Input volume of chemical fertilizer can be saved at 50% or more by bio-fertilizer.
iv) Input volume of chemical pesticide can be reduced by bio-fertilizer.
v) Bio-control methods developed by the Lab are very effective rather than chemical pesticide, costly advanced and safe especially for *Tuta absoluta*.

From the viewpoint of economic effectiveness, integrated fertilization of manure + chemical fertilizer + bio-fertilizer would be better than chemical fertilizer only. Complete organic farming is recommended when the farmers find specified clients such as contract farming with processing companies. But many farmers wish to start organic farming due to honor as an agricultural technologist. In some village; Ansar, Abo Hasseba, No.8 and Abo Kurkas, etc, the beneficial farmers teach application methods of bio-fertilizer and bio-control to other farmers. Some traders are continuously purchasing from the implemented farms due to high quality of products. Some farmers complain about the prices of bio-fertilizer, but the amount can be the level covered by increased incomes.

Regarding compost making, demonstrations had been conducted at 3 sites, but fermentation was

succeeded at only one site. For complete fermentation, temperature control is required by terming compost. The farmers did not follow the instruction, and abandoned. Compost emitted ammonium due to dominance of saprogen (decompost bacteria) such as Coli-aerogenes group, Proteus group, Bacillus subtilis group, Clostridium group and Pseudomonas group. The materials for making compost widely exist in rural areas of Upper Egypt such as cow manure, chicken manure, sorghum/maize residue and sludge in drain canal. It is very important measure to utilize well-fermented compost for small scale farmers.

The most dangerous pest, Tuta absoluta, has been spreading year by year from South America to South Europe, Middle East, South West Asia, North Africa and East Africa since 2009. Some countries order to ban fresh tomatoes. In this pilot project, the material such as anti-insect and Bacillus thurigiensis produced by Central Lab of Organic Agriculture, but they are costly due to transportation from Cairo. The Lab has its branch in Abnoub District, Assiut Governorate, and it is recommended to produce in Assiut. For parasite bee, trichogramma, Assiut agricultural directorate have been producing for cotton originally. All materials for bio-control should be produced in Assiut and constructed urgently under supervision of the Lab researchers. The damages of Tuta absoluta will be more serious in Upper Egypt in 2012.

Even though high quality products, only one problem is not to reflect on prices after applying bio-fertilizer and bio-control. The Study Team interviewed to after test sales of bio vegetables (none-chemical pesticide, manure + bio-fertilizer + bio-control), the agricultural officers answered 20-30% of price increase are acceptable. Demands for safe vegetables can be exploited by more campaign, advertisements and other enlightenment activities with networking of producers, retailers and urban consumers. In fact, demands of organic agro-products are increasing in supermarkets in Cairo. For Upper Egypt, organic farming is more costly and difficulty on recording by small scale farmers due to inspection and registration by organic farming certification organization.

Therefore, it is recommended to promote the category of bio or clean agro-products (less use of chemical pesticide, application of bio-fertilizer and bio-control) by Agricultural Directorates. For consumers, Agricultural Directorates officers should prepare strategies such as;

i) food safety, better taste and prolong of shelf life period as customer value,
ii) reasonable pricing as customer cost,
iii) registration and inspection of retailers' shop as convenience, and
iv) demonstration and enlightenment of food safety as communication.

The officers of agricultural affairs are requested to select model farmers and farms to implement bio-fertilizer and bio-control and extension of their applying techniques. The officers of agricultural cooperatives are also requested as distribution frontline of bio materials. These functions as government initiatives are very meaningful.

4.3.2 Setting-Up the Standard of Fertilizer Application based on Environmental Preservation

According to the effective results of bio-fertilizer application in demonstration farms, it is recommendable to set up the standard of fertilizer application for horticulture based on environmental preservation for serving useful deduction of fertilizes.

- Standard of fertilizer application to show ingredients for securing quantity and quality for major horticulture cropping

- Setting-up a detail fertilizer application plan considering crop-variety, cropping pattern, soil, climate and management of enterprises
- Establishing fertilizer application based on environmental preservation

4.3.3 Approach to Program of Good Agricultural Practice (GAP)

In order to maintain viable farming and contribute to sustainable regional livelihoods, farmers should provide safe agricultural crops and the administration requires constitute agricultural practice so as to avoid the problems such as wrong applications of pesticides or containing unexpected foreign objects. The implementation of such management strategy requires knowing, understanding, planning, measuring, monitoring, and record-keeping at step of the production process. Adoption of Good Agricultural Practice (GAP) may result in illuminating problems and instructing the appropriate measures for maintaining the quality of food.

Governorate Agricultural Directorate requires preparing the guide line of GAP based on the instruction from the CAAES, MALR and explaining to farmers after getting a consensus among related parties at the consultation with public-private-partnership. It is important that farmers should understand objectives and necessity to implement GAP. In case objectives are not clear, the implementation of GAP will not generate the great effect and not be sustainable. Forming a consensus among benefit farmers is requisite.

4.4 Distribution System of Agricultural Inputs

4.4.1 Distribution System of Materials of Bio-fertilizers and Bio-control

In order to lower the prices of materials for bio-fertilizer and bio-control, it is necessary to improve distribution system. For example, in Matai District, Minia Governorate , the district director and extension officers have established 'Bio Shop' at district level to provide information of organic farming and sell bio-fertilizer and products of safe foods. Furthermore, they coordinate distribution of bio-fertilizer with private farm-input shops at village level. This networking with district extension, bio-fertilizer producer, village dealers and farmers will be one of distribution models. In Ansar, Kosya District, Assiut Governorate, the beneficial farmer provide information of bio-control to villagers, and they are going to purchase jointly. Some farmers in other villages testify unreliable relationship with private dealers, so that they prefer to purchase through village agricultural cooperatives. In future, distribution system of bio materials can be constructed by the most efficient and reliable channels from extension officers, agricultural cooperatives, private dealers, or contracted agents.

4.4.2 Vegetable Seedling Provision by the Government

The government agricultural extension service is usually limited for major field crops only. As the marketing channel of production materials of horticultural crops is limited, small-scale farmers cannot access easily to the marketing system. In fact, many inputs for the demonstration farms were procured from reliable traders, producers or research institutes located in outside of the Governorate. Access to various farm inputs shall be improved to common farmers. Regarding vegetable seedlings, Minia Governorate Agriculture Directorate produced some amount for public but Assiut does not produce yet. As the Assiut staffs performed very well in tomato seedling preparation for the demonstration, the system of seedling production and distribution shall be established to promote horticulture in Assiut.

4.5 Implementation Set-up

4.5.1 Agriculture Extension

(1) Importance of Practical Training

It is said that farmers are conservative and do not like to change their practices, and it is often observed that common villagers easily follow an idea given by a local opinion leader without any rational judgment. In fact, the farmers in Salakos requested seed garlic of Egaseed-1 only in the village meeting, but all of them changed mind from it to Sids-40 soon after observation of those two varieties by a leader. On the other hand, the people in El Borgaya did not want to try the intercropping of potato with maize, even though they learned the technique in the classroom.

Farmers have limited information and choices, but they can learn new technology only from seeing or trying by themselves or neighbors. In the course of the Pilot Project, it was very effective to use real things, photos and illustrations for explanation to farmers, and to provide opportunities of study tours or exchange visits to them. Therefore, the practical training is very important for agricultural extension works.

(2) Coordination among Governorate, District and Village Officers

In the operation of the demonstration farms, a team work of governorate, district and village extension officers performed effectively. In Minia, monitoring has been made by the village extension officers everyday and by district extension officers almost every week. Governorate agriculture officers visited the sites at the important time, with communication with the extension officers. In Assiut, daily support has been made by village extension officers and weekly monitoring has been carried out by district extension officers and governorate counterpart as well as a researcher of Agriculture Research Center on every weekend.

These close communications among them can lead the farmers' groups to manage the demonstration farms well, though there was room to improve the communications among the extension officers, counterparts and demo-farmers in a few villages. This good experience shall be kept and expanded in further demonstration works.

(3) Two-step Agricultural Extension of New Technology

As new farming technologies always have certain risks and difficulties, they shall be demonstrated by the farmers under strong support of the extension officers. Further, the farmers involved shall be skilled and experienced at a certain level, and not be subsistent famers. The new technologies shall be adopted first by selected farmers. Small-scale farmers, who really need improvement of farming, shall learn the new techniques in the demonstration farm, and gradually adopt in their fields. After a confirmation of effectiveness of the new techniques, some financial support may help common farmers for implementation of them.

Small scale farmers have learned horticulture practices through training such as cultivation technique, countermeasure for diseases and soil and water management before implementing the pilot project. It is very meaningful for small scale farmers to verify the checking points of cultivation process as well as how to solve the problems for occurrence of diseases at the demonstration farms. However, to verify the learning at the farmer’s own field needs to the high risk decision. Most of small farmers are negative to implement the demo-farming, because they are worrying about their household

economy resulting in the worse condition in case they fail to succeed in reaching the target of production.

When related public agencies support the avoidance of the risk of new introducing horticulture, farmers are willing to provide demo-farms and engage in cultivating summer -intercropping of which they have no experience. Considering the lack of public assistance to support small scale farmers, most of demonstration farms were provided by large scale farmers who hold sufficient fields. Existence of small scale farmers who were very active to follow instruction given by extension specialist and researcher shows the validity and sustainability of the activity introducing horticulture.

(4) Scale and Management of Demonstration Farms

The Project operated demonstration farms on the intercropping method in the previous summer season, in 3 sites with an area of 2 feddan in each governorate. The agricultural engineers of the governorate agriculture directorate visited those sites almost every week to provide technical guidance and necessary inputs. As far as such operating system is employed, the number of the sites of demonstration farms shall be 3 to 5 sites only in a governorate. In case that the district agriculture offices take greater role in extension works on the demonstration farms under supervision of the governorate agriculture directorate, the each district could operate 1 to 2 demonstration sites in a season. Assuming that 2 feddan of farmland is assigned for demonstration in each site, optimum scale of demo-farms might be 6 to 10 feddan under the governorate initiative, or 20 to 40 feddan at the maximum under the district initiative. This demonstration targeting of marketing improvement is an additional works for the district agriculture office, which implements demonstration farms on major crops such as wheat and maize.

In order to improve a specific agricultural product that is produced in several hundred feddan in a village, the 2 feddan of demonstration farm might be effective for technical dissemination through farmer-to farmer extension in a season or several seasons. In case of first trial of certain technique, on the other hand, the 2 feddan of demonstration farm seems to be reasonable size in a balance of impacts and risks.

(5) Agriculture Cooperative as an Entry Point of Extension

On the forms of agriculture cooperative board members, basically the leader of each major eela (big family) in the village becomes one of the board members in principle, and there is no vote or a vote only to approve the candidates. If you check the eela of each board member belongs, you will find that there is a perfect balance in terms of eela in the village.

To implement extension activity, administrative line of extension from the Governorate to District and Village is naturally linked with the village agricultural cooperative as the village extension officer is posted at the village cooperative office. Especially in traditional village, it is likely that the board members of the cooperative represent the big families (eela) in the village. In this case, when we select farmers to participate in demo-farm, etc., through the cooperative, social balance in the village would possibly be maintained. If the case is not e.g. one major big family occupies the board members, the proactive action by the administration would be required according to the objective of the extension activity. In anyway, the village cooperative could also be an entry point to the village for extension.

4.5.2 Farmers' Organization

(1) Present Situation of the Village Agriculture Cooperative

In the Pilot Projects especially for the establishment of agro-processing unit, the village agriculture cooperative was targeted to be the management body of the unit. Historically the first agriculture cooperative in Egypt was established in 1910 as a mutual cooperation of the farmers. Then the agriculture cooperatives were restructured as an agent to control farmers in order to execute the agricultural production plan of the Government from 1950's to 1960's. Although farmers at that time could save the transaction cost by following the instruction of the cooperative and reduce the risk of marketing through the shipping of produce by the cooperative, the incentive of the farmers to make effort to increase the production was suppressed as they were totally under the control of the cooperative from production to sale.[4]

Liberalization policy for production and marketing started endorsing from late 1980's and the farmers became free to choose what to cultivate and started selling their produce to private traders. Under such policy prevalence, today the agriculture cooperatives have been circumscribed in their duty of distribution of agriculture inputs and administration of farmland (the owner of the farmland is basically the member of the agriculture cooperative).

Revitalization of the agriculture cooperatives to contribute to the welfare of the small scale farmers has been an issue under the prevalence of the global economy, which is widening the disparity between urban and rural economy. MALR has prepared "Strategy for the Development of Agriculture Cooperatives (2002-2017)" to urge the change of the cooperatives in shape and content to much the transformed economy. In the Pilot Projects, we have tried to create added value and job opportunity in rural area through activating the village agriculture cooperative. Following aspects were observed:

- Village agriculture cooperatives have assets and skilled staff and also deal with distribution of agriculture inputs. Hey have a potential to deal with the agriculture produce, as well.
- Involvement of the cooperative board members was weak (cooperative staff was mainly working). Board members are rather honorary post representing the big families in the villages and not necessarily business-oriented persons. Hence there are not much action to activate the savings of the cooperative or collecting share value from the members to invest in business.
- The revenue from the agro-processing is supposed to manage in a special account. This is due to the anxiety that if the revenue is kept in the general account of the cooperative, it would become difficult to withdraw it as it requires the approval of the board members and the board members indifferent in the business would not easily approve the withdrawal of money. That may be an obstacle to the business.
- On the other hand, the organization of board members was taken into consideration the social balance in the village, i.e. each big family in the village was represented as a member of the board.

The current village agriculture cooperatives are rather a part of the traditional side of the village livelihood. In order for the village agriculture cooperatives to be an agency of activating rural economy, the cooperative should become more business oriented organization. Following analyzes

[4] "Political and Economic Transformation in Egypt" (Yamada) 2008 JETRO / IDE in Japan

the scale of the village agriculture cooperatives in Minia and Assiut to estimate the potential of the village agriculture cooperatives to be a business driver in the village.

(2) Scale of the Village Agriculture Cooperatives

According to the data on the village agriculture cooperatives (all the 342 villages and 250 villages in Minia and Assiut Governorates), the scale of the village agriculture cooperatives is as follows. The average total area of cooperative members per cooperative in Minia and Assiut are 762fed (320ha) and 1,214fed (510ha) respectively and the smallest cooperative is 80fed (34ha) and 26fed (11ha) respectively and the largest one is 10,567fed (4,438ha) and 5,137fed (2,157ha) respectively showing big gap between the smallest and largest. The median in Minia and Assiut are 1,245fed (523ha) and 936fed (393ha) respectively. In Minia, the shares of the cooperatives with less than 1,000fed (420ha), less than 2,000fed (840ha) and less than 3,000fed (1,260ha) are 40%, 72% and 90% respectively. As for Assiut, these shares are 53%, 83% and 93% respectively. The cooperatives collect subscribed share from the members at the rate of LE2 to LE5 per feddan. In case of the cooperative in Minia at median level, its income by the subscribed share would be LE2,490 to LE6,225.

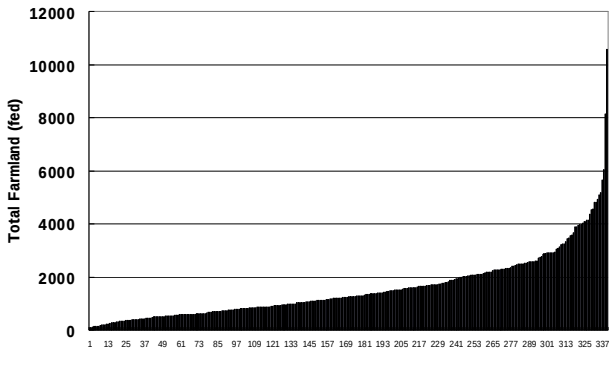


Figure 4.5.1 Farmland by Cooperative in Minia(2009/10)
(Source : Minia Agriculture Directorate)

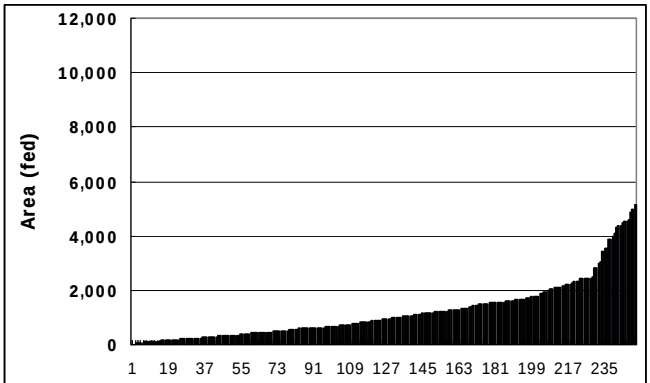


Figure 4.5.2 Farmland by Cooperative in Assiut(2011/12)
(Source : Assiut Agriculture Directorate)

The average number of the members of the village agriculture cooperative in Minia and Assiut is 835 and 882 respectively. The smallest one in number of the cooperative members in Minai and Assiut is 75 and 42 respectively and the largest one is 3,067 and 4,040 respectively. The median in Minia and Assiut is 693 and 715 respectively. The cooperatives with less than 1000 members in Minia and Assiut occupy 70% and 68% respectively and the ones with more than 2,000 members are only 6% and 7% respectively.

If the village agriculture cooperative took action, it would have a big impact to the rural economy. It is desirable that the cooperative can render services to all the village members including tenants who are not the member of the cooperative (according to the Agriculture Cooperative Law, the tenants can be a member of the cooperative though). It is possible that the cooperative raise fund from the members or also from tenants under their auspices to cover the necessary investment capital. There should be facilitating an environment to encourage the cooperative to be business oriented.

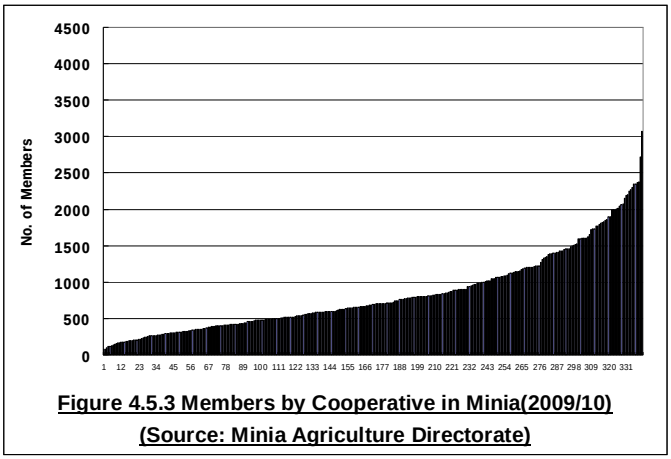


Figure 4.5.3 Members by Cooperative in Minia(2009/10)
(Source: Minia Agriculture Directorate)

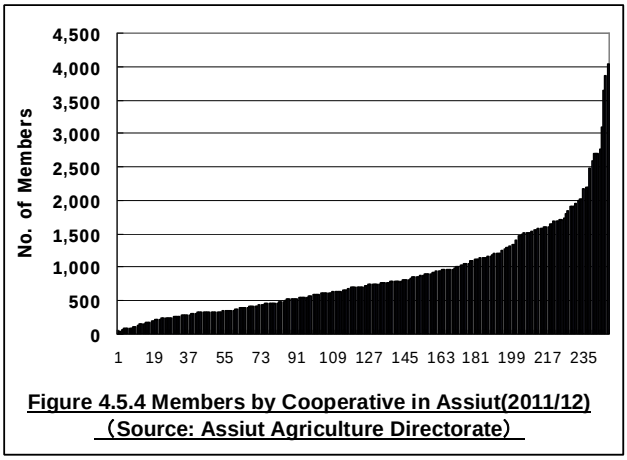


Figure 4.5.4 Members by Cooperative in Assiut(2011/12)
（Source: Assiut Agriculture Directorate）

As the financial data of the village agriculture cooperatives are not well organized. With the available financial data of Maghagha and Beni Mazar Districts in Minia, we would estimate the financial status of the cooperatives. Total number of the village agriculture cooperative in these two districts is 80. The data show the capital of the cooperatives at the end of fiscal year 2009 (June 30, 2010). The average capital is LE4,834, the smallest one is LE152 and the largest one is LE21,652 and the median is LE3,841. Among the 80 cooperatives, 60% has the capital of less than LE5,000 and 94% are with the capital of less than LE10,000. It can be said that the financial capacity of the village agriculture cooperative is generally weak.

Whereas, according to the actual performance of the village cooperatives in dealing with agricultural inputs in fiscal year 2009 in Minia, the sales of wheat seeds, chemical fertilizers and pesticides by all the village cooperatives reached to LE6.2 million, LE163 million and LE0.8 million respectively. Average dealings per village cooperative is calculated at LE18,000, LE477,000 and LE2,000 respectively. Profit ratio for these dealings seems, however, low. Following table shows the financial status of the village agriculture cooperatives of the Pilot sites:

Table 4.5.1 Financial Status of the Village Cooperative Engaged in the Processing

Cooperative	No. of Members	Farmland (fed)	Major business	Annual Income (LE)		Fertilizer Dealing (t)	Store Capacity (t)	Remark
				Gross Income	Net Income			
Rifa	2,190	4,587	Fertilizer sales, fodder sales, renting rooms		1,800 (2007)	150		New office built recently
Arab El Kadadeh	489	845	Fertilizer sales	266,046 (2008)	1,440 (2006) 2,880 (2007) 3,780 (2008)	70	75	
El Egal EL Bahary	2,081	1,616	Wheat marketing, fertilizer sales, fodder sales		1,343 (2010)	50	50-70	New office under construction
Delga	2,800	10,567	Fertilizer sales, renting rooms		44,000 (2008) 24,000 (2009)	200	200	Stopped fertilizer after 2008

The major business of the village cooperative is distribution of fertilizers, but the profitability of this business is very low. Also the storage capacity of the cooperative is not so big that it constrains the scale of the business. Hence, even relatively bigger cooperative are not making profit very much. The total annual net income of Arab El Kadadeh village cooperative with around 500 memberships is

estimated at LE1,000 to LE4,000. Rifa village cooperative has moved their office by their own expenditure in 2007. They spent LE500,000 out of their total savings of LE600,000. In 2010, they lost LE50,000 for dealing with fertilizers (there was a occasion that they had to sell fertilizers at cheaper price than cost price). Net profit ratio of sales of fertilizers and wheat seeds is around 2%. For El Egal El Bahary village cooperative, they purchased a land last year and now are constructing the new office as their old office has become narrow. This cost for new office made worse balance than Arab El Kadadeh, though their memberships are 4times bigger than Arab El Kadadeh. Delga village cooperative has a stable income from the room rent an their income is also high. Their memberships and farmland is one of the biggest in Minia Governorate and hence their income from the annual subscribed fee reaches to LE20,000.

The data on the agriculture cooperative is compiled by handwriting making it difficult to trace the records. That makes financial management of the cooperative based on numbers difficult. The financial ability of the village agriculture cooperative is not so strong, but they deal with the cash flow valued to hundreds of thousands of LE annually. As extension of such activity, it can be said that the village agriculture cooperative has enough potential to establish agri-business such as processing.

(3) Financial Sources of Village Cooperative and Establishing Financial Services to Farmers

It needs to prepare capital when the agriculture cooperative establishes business to activate rural economy. According to the Agriculture Cooperative Law (Chapter 4, Article19), there eight possible financial sources for the cooperative such as subscribed capital, capital quota, legal reserve, deposits and savings, any surplus resulting from the activity, loans, local donations, public subsidies. Among them, except for the annual subscribed capital based on the farmland, income from other sources is actually meager. It is a challenge for the cooperative whether they can manage to collect fund internally from the members. For example on the price stabilization fund as mentioned above, the key would be building trust of the farmer members to the cooperative director and management staff for raising internal fund

If the cooperative has abundant own asset, they could plan and construct the post-harvest facility by just getting the approval from the supervising agency, but if nor they would have to depend on external loans. Considering the burden to return, they would rather design the small capacity facility and that may not meet the requirement of the market in price, amount to produce and quality. Accessible low interest loan facility should have demand to the entities like the small scale village cooperative. There are two new projects: RIEEP by AfDB / SFD and PRIME by IFAD. These projects equip with low interest loan facility and they would be possible candidate for the village cooperative to access. The Agriculture Directorate should collect and disseminate such information to the agriculture cooperatives.

(4) Utilizing Assets of Agricultural Cooperative as an Entry Point of Rural Development

In the village, agricultural cooperative can be a body to run a business, which requires certain amount of capital such as agro-processing, since the cooperatives (though not all of them) have capital, assets and staff. In this Pilot Project, the processing unit was established at the agricultural cooperative as the owner and management body. Delga village cooperative has a building to have rent out and getting stable income. So does Rifa village cooperative. Because the agricultural cooperative has assets such as buildings and human resource, it is a merit that the cost sharing with the external supporting agencies or funds for establishing the unit for a certain level is possible for the cooperative, i.e. they would not necessarily depend on full support from the external agencies. Developing the

opportunity of investment of the cooperative's asset in the village should be considered to activate the rural economy.

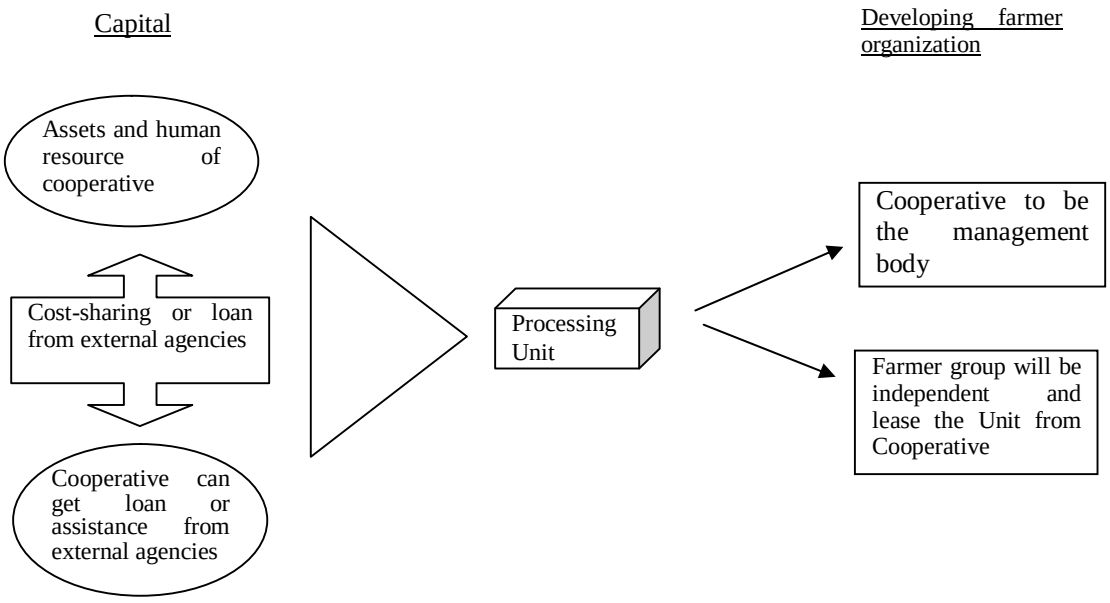


Figure 4.2.1 Cooperative as to Bear Initial Cost to Establish Processing Unit in the Village

On the other hand, in many cooperatives, their activities are limited to input supply and the cooperative board members are not much involved in the activities (in Traditional village, board members are selected to represent from the big families of the village, not necessarily as persons who are active for business). Management capacity of cooperative, more involvement of cooperative board and farmer members to the activities, and trustful relationship between members and cooperative should be strengthened in case the cooperative runs the business. Or in another way, though the cooperative becomes an entry point for promoting the agribusiness, farmer groups with high motivation would also be expected to grow independent from the cooperative as they develop the business.

(5) Farmers' Organization Other Than Cooperatives

There are other peope' organizations like CDA (Community Development Association) i.e. NGO to be registered to the Ministry of Social Solidarity. CDA is seldom established for agriculture purpose but for other social activities. Shams Project by USAID / CARE or project by CEOS (NGO) used the existing CDA adding the collective work for agriculture business, namely contract farming. As many of them have ceased the agriculture activity after the project ended, we did not target CDA for the Pilot Projects. Yet, including the new establishment of the organization, they could be a body to run business to be assisted by the external donors. Other donors tend to work with CDA. Following summarize the characteristics of the cooperative an CDA and other informal group:

Table 4.5.2 Strength / Weakness of Organization

Ca	Law	Supervisor	Strength / Weakness	
Agriculture Cooperative	Agricultural Cooperative Law (122/1980)	Ministry of Agriculture and Land Reclamation	S	• Large number of membership • They have a nation wide network • Staff get salary subsidy from the Government • They have assets like land and buildings • It is a representative organization in the village and social balance is considered for the board members • Organized in all the villages • They can apply for loan from public agency
			W	• Staff is assigned by the Government and they are not originally business oriented • Board member is rather honorary post, not business oriented • Historical background hinders the trust of farmers to the cooperative • Basically landowner is the member (tenant can be a member and receive the service based on the law)
NGO/CDA	NGO Law	Ministry of Social Solidarity	S	• Purposeful and motivated people tend to organize it • They can apply for loan from public agency • Tenant can be a decision maker in the organization
			W	• The scale of the organization is not so big • There is no regional network • Financial ability depends on the members
Informal group	-	-	S	• Purposeful and motivated people tend to organize it • There is no bound by the specific law and can act freely within the common sense
			W	• Scale is small • There is no legal status that hinders to access to public loan facilities • Restrained in business expansion

4.5.3 Possibility of Committee for Development Activities

As discussed above, the village cooperative can be an entry point to the village, but the cooperative cannot necessarily lead the development activities in the village. In the Pilot Project, we have got a case of implementation set-up. The Committee to help demo-farmers sell their produce for Manshyet El Maasra village has been activated by the active leadership of the leader, the head of the District Agriculture Office. If we target only village cooperative to enhance marketing activity, it seems very difficult to materialize as they are not used to engage in collective marketing of agriculture produce.

As the model case of Manshyet El Maasra village indicates, if we involve not only cooperative but also stakeholders of the area such as the District Agriculture Office, etc. for instance to form a committee, active movement might happen with higher possibility, because the possibility of involving active person to the activity can become higher by involving multiple organizations and stakeholders in the area in a form of committee. In case of the committee in Monshyet El Maasra, the head of the DAO appeared as an active leader.

It can be recommended to introduce the committee style implementation to involve the various stakeholders in the area in the development activities such as production improvement, agro-processing, supporting marketing. The stakeholders would be farmer group / agricultural cooperative, DAO, and if possible traders and retailers though there is no representative entity for these groups.

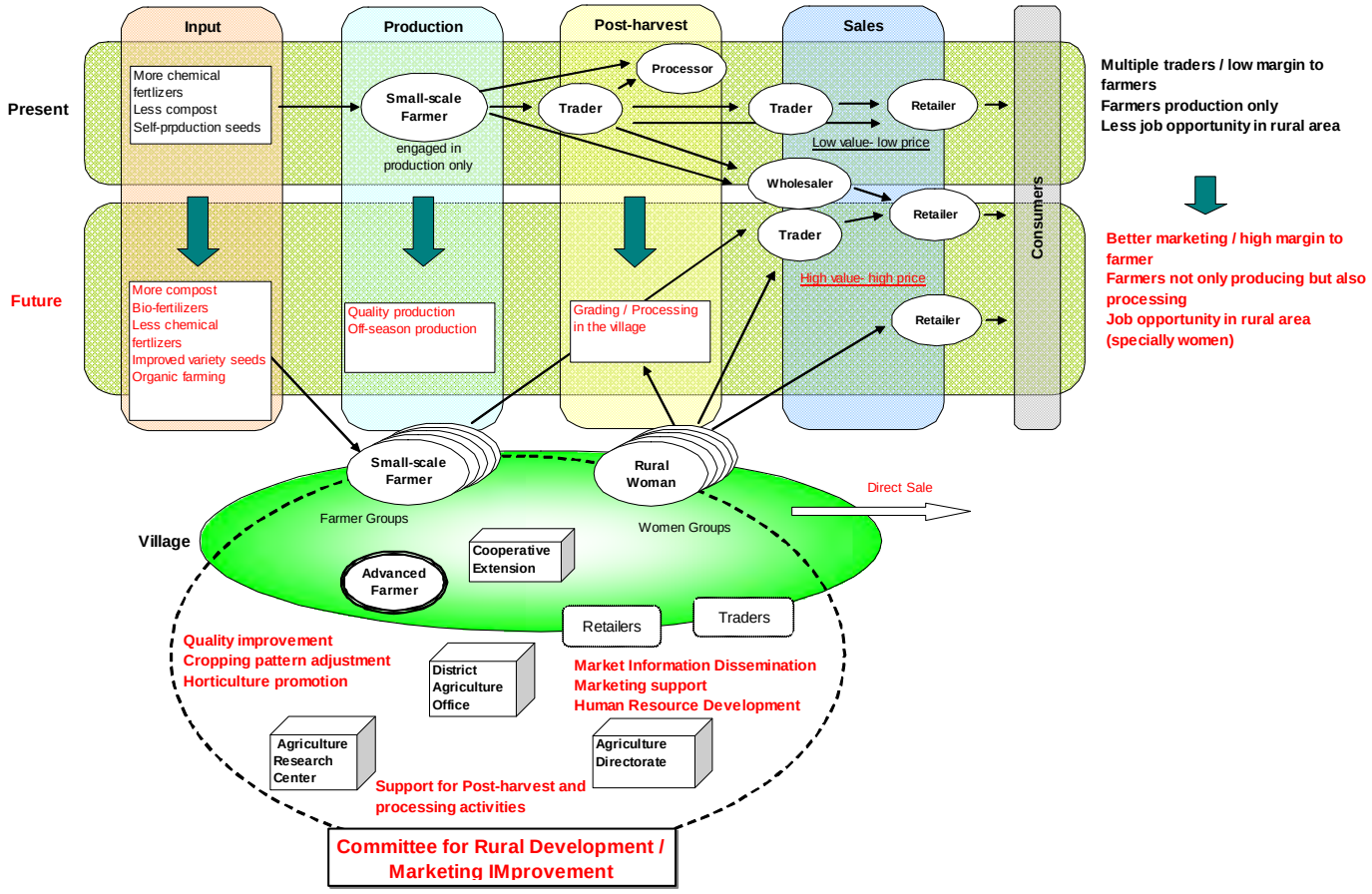


Figure 4.5.6 Participation of Stakeholders toward Implementing M/P

It is propose to organize a committee by the project to be consisted of the Master Plan, e.g. "Clean Agro-products Promotion Committee", or "xxx village agro-processing business promotion Committee". This committee can include not only the government officers but also private sector like traders and farmers as in the platform for pubic-private partnership so that the committee can work as a body to promote rural development as an area. Here it is proposed as an implementation set-up to establish a committee for regional development to work as a team of stakeholders who would be agriculture cooperative, Governorate and District Agriculture Offices, university, research center, and private sector like traders, retailers and farmers and promote the activities such as crop production, agro-processing, marketing (direct shop, matching with traders).

4.5.4 Strengthening of the Ministry Administration

To promote the project, support for agribusiness establishment in the village such as agro-processing, and public-private partnership would be required for the effective and efficient project implementation. For this reason, strengthening the function of the MALR is suggested as follows:.

- Coordination for the above proposed committee establishment
- Supporting the establishment of Agri-business (agro-processing) e.g. supporting organization, business planning, support and information provision for licensing, facility designing, loan facility, provision of technical and management trainings
- Support for making partnership among public entity, private sector and research centers for agriculture extension

- Manage direct shop at Governorate and District Offices, support matching between farmers and traders, support selling quality improved agricultural produce, processed products, making brand

On the discussion with the C/P, those activities could be covered by the activation of the exiting set-up of the Central Administration for Agriculture Cooperation (CAAC). As required a new section covering the above functions could be established under the umbrella of the CAAC. In Minia Agriculture Directorate, there is Rural Women Development Center established with the assistance of IFAD, which provides trainings for agro-processing. In Assiut Agriculture Directorate, the C/P proposes to establish a new section to support the agro-processing business.

4.5.5 Linkages with the Central Government

In the Pilot Project, it appeared that the resources within the Governorate is not enough to implement the development activities, e.g. linkage between extension in the Governorate and Agriculture Research Center in other Governorate or Cairo was necessary. Likewise, the activities such as information collection and dissemination may need to link with the Ministry's initiation with public-private partnership as mentioned above. Also distribution of inputs such as certified seeds, improved varieties, and fertilizers should be able to improve through linkage with the policy enforcement of the Central Administration in Cairo.

4.6 Social Consideration for Project Implementation

4.6.1 Women's wages

From the interviews, the Study Team found that there is an example of women in El Baragel Village, Mallawe District, Minia Governorate, where they are earning 2 or 3 L.E. in about five hours for making rope, and another example of female workers of the factories in Assiut City who are making 150 to 160 LE per month. There is also a successful case of income generation by women in Minia Governorate, where a woman started a small business of a tameya shop and earns 7 LE per day or 210 LE per month for working every morning and evening.

Men, on the other hand, can bring 500 to 600 LE per month back home if they work in Cairo. There is an example in Abo Haseeba Village, Matay District, Minia Governorate, where a man quit working in Cairo because he found a job at a government bakery and can earn 200 LE per month. 200 LE at home living with his family is better than 500 LE in Cairo for him.

From these figures, the Study Team assumed that 15 LE per day for the female workers of the pilot projects is rather high even though working hours are irregular and not enough. From the new interviews, however, the Study Team found out that the assumption might be wrong. A nursery of tomato and other seedlings at Model Village No.8 in the New Land of Minia District, Minia Governorate is paying 30 LE per day or 750 LE per month with 25 working days for its female workers. A garlic trader in Salakos Village, El Edwa District, Minia Governorate, which exports green garlic to Italy and France, is paying as high as 45 LE per day for its female workers. They say that there is labor shortage in these villages and also the work is seasonal, but the processing pilot projects are not fulltime either and no female workers are getting more than 150 LE per month salary level. The cooperative head of Delga Village, Dyre Muas District, Minia Governorate said, however, in the participatory evaluation workshop that "We are paying three times more than private factories in the village (300 LE per ton vs. 100 LE per ton)."(There was a meeting after the participatory evaluation workshop and they agreed on increasing the wage from 15 L.E. per day to 18 LE per day by 20 % where they also increase the production from 2 containers per day to 3 containers per day by

50 %. It is a win-win situation because the wage increased by 20 % and the production cost per container decreased from 37.5 LE to 30 LE by 25 %.)

Therefore women's wages can vary more than three times depending on the location of the village. There is a big difference between a village which is far away from a town and closed, in which there is no job opportunity for women, and a village which is close to a town, open, in which there are a lot of job opportunities for women. Location of processing units or other facilities to give job opportunities for women and also wage level need to be decided after careful consideration of these social factors as well as the balance of labor demand and supply.

4.6.2 Extension System and Rural Society

There are a few cases where the selection of target farmers was a little bit willful because of time constraint and also difficulty in finding willing farmers. Demonstration to the neighboring farmers was not so active either. Are cooperatives recognized fully in the rural community as organizations for agriculture and development of the villages? Are there any other organizations or associations for that purpose? Villagers probably act more as individuals, as households, as extended families and eela, not as members of organizations. It is necessary to consider the social context in the selection of target farmers and extension. Extension can be done more efficiently and equally through the heads of eela and key farmers then to small / micro-scale farmers and landless farmers, still keeping the fundamental line of Governorate – District – Sector / Cooperative. Since village headmen are the heads of the royal eela traditionally, and the board members of the cooperatives are also the heads of major eela, extension through eela is consistent with the structure of cooperatives.

4.6.3 Selection of Target Villages

It is a part of common-sense that there are three dimensions for urbanization or openness in culture in this region: 1) the distance from Cairo, 2) the distance from Minia or Assiut, and 3) the distance from the district town. If a village is closer to Cairo, Minia or Assiut and the district town, the village is more likely to be relatively urbanized and open. For example, women can work in the field in Abad Sharona and Abo Haseeba of Minia Governorate, but cannot in El Baragel and Delga in Minia Governorate and in all the villages in Assiut Governorate.

Another major factor might be the history of the villages. There tends to be more large-scale farmers from the opening of the villages in old villages, as a result, more landless farmers and few small-scale farmers in old villages. There tends to be more small-scale farmers and almost no large-scale farmers in new villagers. It looks like there are stronger ties among the farmers in old villages too.

There are also differences in diversity of people. There are more villagers originally from the south, such as Aswan and Qena Governorates living in the Old Land along the Nile. Some villages in Minia Governorate originated in the villages in Assiut Governorate or the southern villages of Minia Governorate. In the new villages in the New Land along the desert, on the other hand, there are more villagers originated in Tunisia, Libya and the countries in the Middle East. They use eela in the old villages along the Nile and kabera, which is a Bedwin's word, in the new villages along the desert.

The diversity of people correlates with landownership. There are more large-scale landowners among the old villagers, and more landless people among the new villagers. Villages in the Old Land are made of eela in general, but there are also some kabera. Careful consideration needs to be given if the communities are more complicated. To conclude, such social structures of the villages have to be understood before the selection of target villages.

4.7 Summary of Lessons and Recommendations

Following table summarize the lessons and recommendations from the Pilot Project implementation. These are summarized according to the stages from agriculture inputs to production, post-harvest / processing and sale. Each Pilot Project has a focus on the certain stage from the inputs to sale, but also each project has aspects how the small scale farmers can effectively sell their produce. To create synergy effects by comprehensive implementation of the projects will be one of the targets of the establishing practical implementation set-up, i.e. extending the new cultivation technologies introduced through the Pilot by the coordination of extension officers, especially developing the Clean Agro-products as a brand using the bio-fertilizers and bio-control, and study the possibility of off-season crop by using market information to be send by SMS, and according to the demand of thee market, expansion of the cultivation area of the crops for collective production and shipping by a bunch of farmers who agreed to use the technologies displayed by the demo-farm.

Table 4.7.1 Summary of the Lessons and Recommendations from the Pilot

Stage	Pilot Project	Lessons and Recommendations
Sales	Market information	Relevance of information should be considered, should pay attention to price trend
	Market information	Organize local wholesale market to function as fair price formation.
	Market information	Effort to reduce cost for sending services to as many farmers as possible by partnership with mobile company, using TV channel, etc.
	Cooperative marketing	Contract farming between company and cooperative in future would be effective. Need to learn from the practice of other donors and NGO.
	Cooperative marketing	Study for coop. how to source fund to buy produce from farmers at constant price.
	Cooperative marketing	Study on establishing a price stabilization fund by the cooperative.
	Agro-processing	Establish direct shops at Governorate / District, cooperative to promote sales.
	Agro-processing	Sale promotion by holding agriculture fair.
	Agro-processing	Consider public investment for infrastructure improvement for specialty crop area.
	Bio-fertilizer/control	Create a category of Clean Agro-products, which use much less chemical pesticides, though it is not perfect organic.
Post-harvest	Agro-processing	Support from material procurement, planning for marketing and technical trainings, monitoring and supervision based on the written record.
	Agro-processing	Supervise licensing, contracting with workers to upgrade the business.
Production	Market information	Refer to the price information for planning cropping pattern but cautious use is required. Support farmers to plan the annual cropping pattern in order to maximize the income.
	Cooperative marketing	Extension of horticulture technology to inexperienced small scale farmers.
	Bio-fertilizer/control	Extension of bio-materials application (capacity building of extension workers).
	Bio-fertilizer/control	Required to establish the standard of bio-materials application.
	Bio-fertilizer/control	Capacity development of extension officers for GAP.
Inputs	Cooperative marketing	Require soft loan to promote horticulture crop to the small scale farmers.
	Agro-processing	Support to make financial plan including operation cost as well as investment cost.
	Bio-fertilizer/control	Improve the distribution system of bio-materials: cooperative, private dealer, government direct shop.
	Horticulture promotion	Strengthen seedling supply by the government)especially Assiut).
Extension (Cultivation improvement, Horticulture promotion)		Importance of practical training.
		Coordination among Governorate, District and Village offices, and research center is effective.
		New technology should be transferred firstly to the experienced farmers and diffused to the subsistence farmers around (Two-step Agricultural Extension).
		Scale of demonstration farm (6-10fed led by Governorate, 20-40fed led by District).
Farmers' organization		Village cooperative can be a body to establish agribusiness (agro-processing) as they can use their assets namely land and buildings, and they also have human resources.
		Support the village cooperative through the cooperative structure (Governorate and District federations) to get internal fund raising or accessing to external loans.
		Organization like CDA can be a body for support other than village cooperative
Implementation set-up		To promote establishing a committee joined by the stakeholders in the region to implement projects By this way, the possibility of involving active person can become higher. Also this can make network of human resources in the region and the committee can be a recipient of the support.
		Strengthen the function of MALR (coordination for committee, support agribusiness establishment in the village, promote public-private partnership for production improvement,, managing direct shops and matching between farmers and traders.
		Required to make linkage between the Central Administration and Local Administration
Social consideration		The wage of women can vary widely depending on the local women labor supply due to the difference of openness of the local society. This should be considered to establish business.
		In the village, people opt to follow the bond of big family (eela). This should be considered for extension activity. When the board members of cooperative represents the big families of the village, this could help maintain social balance when we go thorough the cooperative.
		The characteristics of the village differs by the distance from cities, historical background, tribal diversity, etc. The social structure of the village should be understood prior to implementation.

5 MODIFICATION OF THE DRAFT MASTER PLAN

5.1 Feedback of Lessons from the Pilot Projects

The Master Plan (M/P) will be finalized by reflecting the lessons and recommendation obtained from the implementation of the Pilot Projects. The whole story of the Pilot Projects will be attached to the ANNEX of the final report and the way of reflecting the lessons and recommendations from the Pilot Project implementation will be incorporated into the M/P as illustrated in the figure below. M/P will consist of "PART I Overview", "Part II The Project Governorates", and Part III Master Plan (M/P)" and the lessons from the Pilot will be mainly inserted to the M/P by establishing a Chapter provisionally titled "Implementation Disciplines" in the contents of PART III as the lessons and recommendations are mainly concerned about the practical methods for implementing projects. In this Chapter, the comprehensive feedback from the experience of the Pilot Project implementation will be incorporated into the M/P as well as the feedback will be put into other Chapters such as "Constraints and Potentials" in PART II, "Development Projects" and "Implementation Set-up" in PART III. Following explain about the major part of the M/P to be modified.

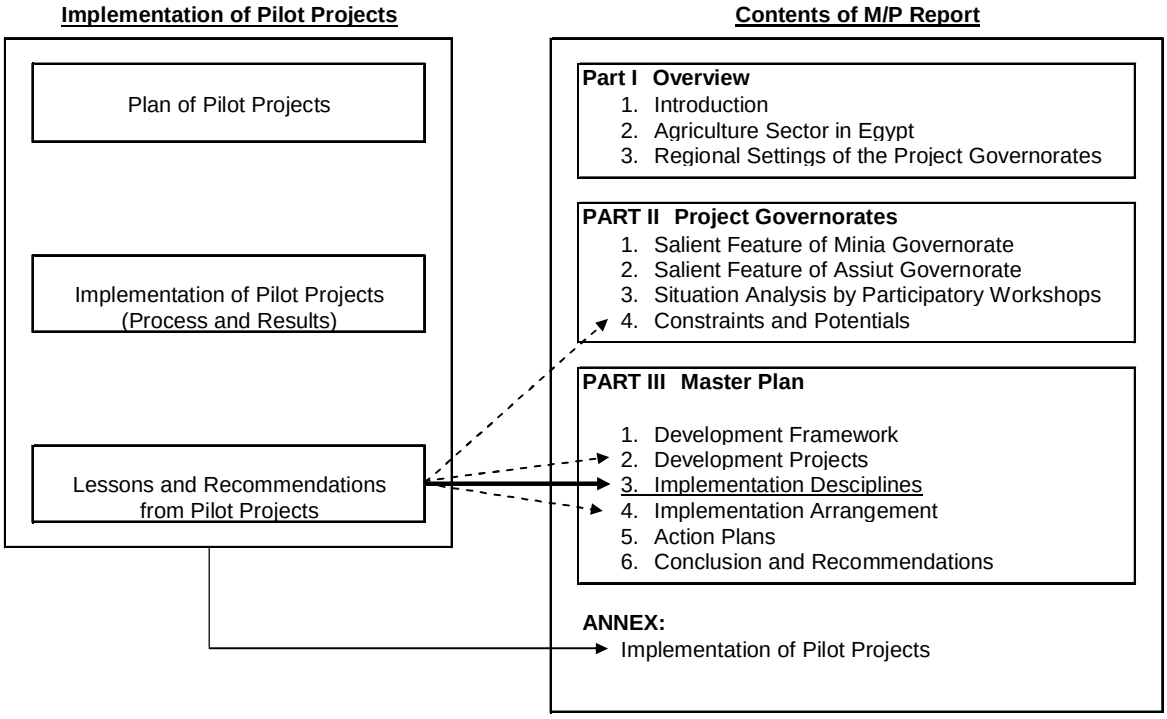


図 5.1.1 Feedback the Lessons and Recommendation from the Pilot into the Master Plan

5.2 Development Framework

The basic framework of this Master Plan will be formulated in order to contribute to realizing the vision of "Sustainable Agricultural Development Strategy towards 2030 (SADS)" of the MALR. There are six strategic goals under the vision of SADS and among them this M/P will contribute to the strategic goals of "Increasing the competitiveness of agricultural products in local and international markets", and "Improving the living standards of the rural inhabitants, and reducing poverty rates in the rural areas".

Considering the situation of the small-scale farmers and future projection, it would be required to increase the profitability per land to face the tight land resources. It is, therefore, required to promote agriculture with higher value production to meet the needs of markets, namely promoting horticulture crop, quality improvement, crop diversification, agro-processing etc. would be required. With these backgrounds, we would set the development strategy to increase the income of small scale farmers through improving marketing of agricultural produce as: "Small scale farmers producing, processing and selling agricultural produce at high value according to the needs of markets in cooperation with their peers". This M/P will contribute to SADS by this strategy.

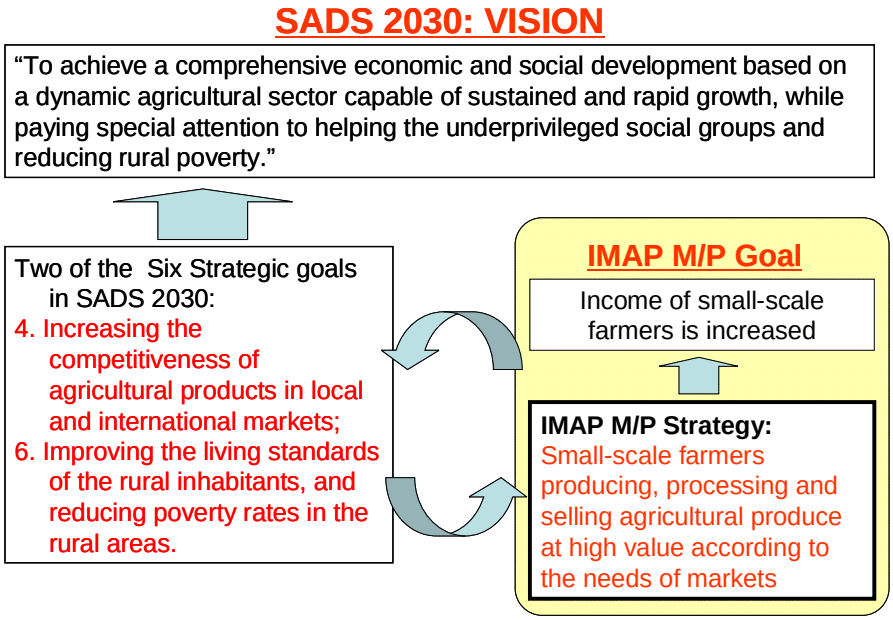


Figure 5.2.1 The Target and Strategy of IMAP and the Relation with te Upper Plan

Under the strategy, following tactics are set according to the stage of value chain, namely sales, post-harvest, and input / production.

Sales: acquire market information to utilize for farming and sales / expanding market channel
Post-harvest: adding value to produce / improving quality of produce
Input/Production: improving quality of produce / harvesting in off-season / promoting profitable crops

It is proposed that the Government administration will assist the farmers in awareness creation (production for sale), cooperation, technology improvement (extension), improving access to finance, etc.

Under the above development strategies, development projects are formulated. The development projects are the countermeasures to the issues on present situation categorized according to the stages of input / production, post-harvest and sales.

5.3 Development Projects

The contents of the Development Projects will not basically be changed, but following points will be put into modification: 1) planning the combination of price information dissemination with the Mobile Extension Service, which are starting as the public-private partnership with the mobile companies and

the ARC and CAAE of the Ministry, and 2) including the contents of “improvement of technological extension and efficient distribution of bio-fertilizer” and “bio-control management of agricultural crops”, as their outcomes were favorable at the Pilot.

Also the action plans of the development projects will be elaborated based on the results of the Pilot Projects. The action plan includes implementation agency, contents of the activity, timeframe (short term and mid & long Term), and the estimate of the required project cost.

5.4 Plan of Implementation

For the implementation set-up of the Draft Master Plan, it has been proposed that the project will be implemented in collaboration with the Departments of Agriculture Cooperation and Agriculture Affair in the Governorate Agriculture Directorate. Now based on the experiences of the Pilot Project implementation, it is proposed to establish a committee joined by various stakeholders including private sector to prevail the project implementation. It is also proposed to strengthen the function of the Department of Agriculture Cooperation or establish a new section to play a role of the coordination of the committee, promoting the agro-processing business in the villages and public-private partnership.

The committee will be established together with the both public and private stakeholders in the area to implement a development project or rationally combined ones (package of projects) proposed in this M/P and the committee is also assumed to be the body to receive the external assistance.

SUPPLEMENTARY 1: Record of Promoting Organic Materials Utilization

1. Economical Comparison of Incomes and Reactions of farmers, by site, by feddan

Site1 Minia	Cost Item	Last Season (LE)	This Season (LE)	Reactions of Beneficial Farmer
Site : Abo Kurkas Dist. Abyoha Vila. Target Crop : Irish Potato, Perma var. Cultivated Area : 1 feddan Total harvest : 12ton	Land lease	1500	2000	➢ Plant growth distinguishes my product from others. ➢ The yield increased at 20% plus. ➢ Any pest was not affected. ➢ Fertilizer Prices (LE)
	Tractor	200	250	
	Seed/seeding	4250	4250	
	Fertilizer	1400	760	
	Pesticide	500	100	
	Pump	400	400	
	Labor	2520	2520	
	Total cost	10770	10280	
	Sales	12000	15600	
	Gross income	1230	5320	

Per 50kg	BDAC	Market
Urea	80	160
SuperPhosphate	40	50
Nitrate	75	150

Site2 Minia	Cost Item	Last Season (LE)	This Season (LE)	Reactions of Beneficial Farmer
SIte : Abo Kurkas Dist. Bany Ebeed Villa. Target Crop : Garlic, Spanish var. Cultivated Area : 1 feddan Total harvest : 23ton	Land lease	3000	4000	➢ Bulb formation was promoted at 30% plus. ➢ Chemical fertilizer was used only 50% of normal year. ➢ There was profit due to increase of yield despite sharp fall of farm gate prices from 800LE/ton to 500LE/ton. ➢ Fertilizer Prices (LE)
	Tractor	500	500	
	Seed/seeding	500	500	
	Fertilizer	3600	1800	
	Pesticide	300	200	
	Pump	500	500	
	Labor	2060	2060	
	Total cost	10460	9560	
	Sales	12000	11500	
	Gross income	1540	1940	

Per 50kg	BDAC	Market
Urea	80	160
SuperPhosphate	40	100
Nitrate	75	150

Site3 Minia	Cost Item	Last Season (LE)	This Season (LE)	Reactions of Beneficial Farmer
SIte : Abo Kurkas Dist. Bany Ebeed Villa. Target Crop : Irish potato, Rozetta var. Cultivated Area : 1 feddan Total harvest : 12ton	Land lease	1500	2000	➢ None chemical pesticide is essential due to requirement from Chips Factory. ➢ Any pest was not affected. ➢ The yield increased at 20% plus. ➢ High income was achieved.
	Tractor	200	250	
	Seed/seeding	4250	4250	
	Fertilizer	1400	720	
	Pesticide	1500	0	
	Pump	480	480	
	Labor	1270	1270	
	Total cost	10600	8970	
	Sales	12000	15600	
	Gross income	1400	6630	

Site4 Minia	Cost Item	Last Season (LE)	This Season (LE)	Reactions of Beneficial Farmer
SIte : Abo Kurkas Dist. Bany Ebeed Villa. Target Crop : Onion, local var. Cultivated Area : 1 feddan Total harvest : 20ton	Land lease	1500	2000	➢ There was no profit due to fall of farm gate prices from 1000LE/ton to 300LE/ton. ➢ The yield increased at 33% plus. ➢ Bulb formation was promoted ➢ Fertilizer Prices (LE)
	Tractor	300	350	
	Seed/seeding	1500	1500	
	Fertilizer	800	400	
	Pesticide	300	100	
	Pump	300	300	
	Labor	2400	2400	
	Total cost	7100	7050	
	Sales	15000	6000	
	Gross income	7910	-1950	

Per 50kg	BDAC	Market
Urea	80	160
SuperPhosphate	40	50
Nitrate	75	150

Site5 Minia	Cost Item	Last Season (LE)	This Season (LE)	Reactions of Beneficial Farmer
Site : Matay Dist. Abo Haseeba Villa. Target Crop : Irish potato, Kara var. Cultivated Area : 0.5 feddan Total harvest : 5ton	Land lease	900	1000	➢ Plant growth was accelerated. ➢ The yield increased at 25% plus. ➢ Chemical pesticide was dramatically reduced.
	Tractor	75	75	
	Seed/seeding	1300	1300	
	Fertilizer	Manure 150 Chem. 600	Manure 150 Chem. 450	
	Pesticide	250	50	
	Pump	50	50	
	Labor	370	370	
	Total cost	3695	3445	
	Sales	4000	5000	
	Gross income	305	1555	
Site6 Minia	Cost Item	Last Season (LE)	This Season (LE)	Reactions of Beneficial Farmer
Site : Matay Dist. Abo Haseeba Villa. Target Crop : Irish potato, Rozetta var. Cultivated Area : 1 feddan Total harvest : 11ton	Land lease	1800	2000	➢ The quality of potato was improved. ➢ Chemical fertilizer is used only 50% of normal year. ➢ The yield increased at 35% plus. ➢ Any pest was not affected. ➢ High income was achieved.
	Tractor	130	150	
	Seed/seeding	2800	3000	
	Fertilizer	Manure 300 Chem. 1500	Manure 300 Chem. 900	
	Pesticide	250	0	
	Pump	150	200	
	Labor	900	900	
	Total cost	7830	7450	
	Sales	9600	17600	
	Gross income	1170	10150	
Site7 Minia	Cost Item	Last Season (LE)	This Season (LE)	Reactions of Beneficial Farmer
Site : Matay Dist. Abo Haseeba Villa. Target Crop : Irish potato, Perma var. Cultivated Area : 1 feddan Total harvest : 15ton	Land lease	1800	2000	➢ Plant growth was improved. ➢ The yield increased at 25% plus. ➢ Chemical pesticide was dramatically reduced.
	Tractor	150	200	
	Seed/seeding	3000	3500	
	Fertilizer	Manure300 Chem.1800	Manure300 Chem.600	
	Pesticide	250	50	
	Pump	150	200	
	Labor	960	960	
	Total cost	8410	7810	
	Sales	12000	18000	
	Gross income	3590	11190	
Site8 Minia	Cost Item	Last Season (LE)	This Season (LE)	Reactions of Beneficial Farmer
Site : Matay Dist. Abo Haseeba Villa. Target Crop : Irish potato, Rozetta var. Cultivated Area : 1 feddan Total harvest : 11ton	Land lease	1800	2000	➢ Plant growth was improved. ➢ The yield increased at 33% plus. ➢ Chemical pesticide was dramatically reduced. ➢ High income was achieved.
	Tractor	130	200	
	Seed/seeding	2800	3000	
	Fertilizer	Manure 300 Chem.1620	Manure 300 Chem.900	
	Pesticide	250	50	
	Pump	150	200	
	Labor	680	680	
	Total cost	7730	7330	
	Sales	9600	17600	
	Gross income	1870	11270	

Site9 Minia	Cost Item	Last Season (LE)	This Season (LE)	Reactions of Beneficial Farmer
Site : Matay Dist. Abo Haseeba Villa. Target Crop : Irish potato, Kara var. Cultivated Area : 1.7feddan Total harvest : 20ton	Land lease	1200	1500	➢ Plant growth was improved. ➢ The yield increased at 75% plus. ➢ In the last season, many pests were affected such as Brown Ro, and seed potatoes had exposure by pathogens. ➢ Chemical pesticide was reduced, and used for Red Blight once. ➢ Better income was achieved compering with the last season.
	Tractor	200	200	
	Seed/seeding	5000	5000	
	Fertilizer	Manure 700 Chem.1100	Manure 700 Chem.550	
	Pesticide	250	50	
	Pump	240	240	
	Labor	1260	1895	
	Total cost	9950	10135	
	Sales	6650	17400	
	Gross income	-3300	7265	
Site10 Minia	Cost Item	Last Season (LE)	This Season (LE)	Reactions of Beneficial Farmer
Site : Minia Dist. Borgoya Villa. Target Crop : Irish potato, LadyBalfer var. Cultivated Area : 0.8feddan Total harvest : 13.5ton	Land lease	1800	1800	➢ Plant growth was extremely improved. ➢ The yield increased at 35% plus. ➢ Chemical pesticide was dramatically reduced. ➢ Soils are naturally improved for the next crop. ➢ Harvested potatoes were sold to agricultural officers, and the tastes of potatoes were evaluated as favorable.
	Tractor	200	200	
	Seed/seeding	4000	4000	
	Fertilizer	Manure 0 Chem.1500	Manure 300 Chem.750	
	Pesticide	400	0	
	Pump	480	480	
	Labor	950	950	
	Total cost	7830	8380	
	Sales	12000	18900	
	Gross income	4170	10520	
Site11 Minia	Cost Item	Last Season (LE)	This Season (LE)	Reactions of Beneficial Farmer
Site : Minia Dist. No.8 Villa. Target Crop : Tomato, Rotana, 3059, 3019 var. Cultivated Area : 1.8feddan Total harvest : 22.5ton	Land lease	2000	2000	➢ The financial balance was deficit in the last season, but changed over in this season. ➢ Shape and color of tomato using bio-fertilizers are better than conventional methods. ➢ The yield increases at 20% plus. ➢ Chemical fertilizer was used only 50% of normal year. ➢ Chemical pesticide was used only 50% of normal year. ➢ Harvested tomatoes were sold to agricultural officers, and the tastes of tomato were evaluated as favorable. ➢ Bio-fertilizer should be available in villages.
	Tractor	1000	1000	
	Seed/seeding	2100	2100	
	Fertilizer	Manure800 Chem.750	Manure800 Chem.380	
	Pesticide	700	400	
	Pump	1000	1000	
	Labor	2040	2040	
	Total cost	10390	9720	
	Sales	7000	13500	
	Gross income	-3390	3780	
Site12 Minia	Cost Item	Last Season (LE)	This Season (LE)	Reactions of Beneficial Farmer
Site : Der Mawas Dist. Delga Villa. Target Crop : Onion, Giza20 var. Cultivated Area : 0.5feddan Total harvest (expected) : 12ton	Land lease	6000	6000	➢ New variety was introduced by the Study Team. ➢ The farm gate prices of onions were dropped significantly, the farmer will plant other crops. ➢ The compost was not fermented very well.
	Tractor	3000	3000	
	Seed/seeding	2000	2000	
	Fertilizer	3000	3000	
	Pesticide	3250	2800	
	Pump	500	500	
	Labor	3750	3750	
	Total cost	23900	22950	
	Sales	24000	6000	
	Gross income	100	-17950	

Site13 Minia	Cost Item	Last Season (LE)	This Season (LE)	Reactions of Beneficial Farmer
Site： Mallawi Dist. El Barageel 村 Target Crop： Wheat, Giza var. Cultivated Area： 3feddan Total harvest (expected)： 75 ardab＝11.25ton	Land lease	3000	3000	➢ Plant growth was good in spite of using 1/6 volume of chemical fertilizer, even at tomato cultivated land in the previous season,. ➢ Rhizosphere of plant roots was obviously developed. ➢ Numbers of matured grains increased and are bigger. ➢ 3 farmers implemented experimentally, and wheat grew in good conditions at all sites. ➢ Farmers expect yield at 20% plus.
	Tractor	300	300	
	Seed/seeding	250	250	
	Fertilizer	Manure 100 Chem. 575	Manure 0 Chem. 80	
	Pesticide	0	0	
	Pump	300	300	
	Labor	1000	1000	
	Total cost	200	200	
	Sales	5725	5230	
	Gross income	9700	11575	
	Land lease	3975	6345	
Site14 Assiut	Cost Item	Last Season (LE)	This Season (LE)	Reactions of Beneficial Farmer
Site： Assiut Dist. El Zawaya Villa. Target Crop： Garlic, SETS40 var. Cultivated Area： 1.8feddan Total harvest (expected)： 15ton (for storing) 25ton (for selling)	Land lease	3500	4000	➢ New variety was introduced by the Study Team. ➢ Bulbs were very large never seen before. ➢ The yield increased at 30% plus. ➢ The farmer wishes to continue bio-control. ➢ Inputs of Ca and K solutions helped promoting plant growth. ➢ The prices of garlic are dropped drastically (in April 2012).
	Tractor	200	200	
	Seed/seeding	7000	4500	
	Fertilizer	Manure 800 Chem. 3170	Manure 800 Chem. 3670	
	Pesticide	3000	BioCtrl.2178	
	Pump	500	500	
	Labor	2620	2620	
	Total cost	20790	18468	
	Sales	All stored		
	Gross income	Not sold		
Site15 Assiut	Cost Item	Last Season (LE)	This Season (LE)	Reactions of Beneficial Farmer
Site： Abnoub Dist. El Hamam Villa. Target Crop： Tomato, Rotana var. Cultivated Area： 1feddan Total harvest： 7.5ton (to be continued)	Land lease	4000	4000	➢ Initially, the crops were damaged by *Tuta absoluta*. After applying bio-fertilizer and bio-control, the plants were recovered to grow. ➢ The farmer expanded another 1 feddan of tomato using bio-fertilizer and bio-control, which are very effective. ➢ Chemical pesticide was not used completely. ➢ The tied trader recognizes the difference of tastes, and the farmer continuously supplies to the trader. ➢ Frost in winter was damaged and made the yield reduce.
	Tractor	250	250	
	Seed/seeding	2400	IFAD assisted 1200	
	Fertilizer	Manure 200 Chem. 5445	Manure 200 Chem. 3456	
	Pesticide	5000	Bio-ctrl. 2718	
	Pump	500	500	
	Labor	3000	2560	
	Total cost	20795	14384	
	Sales	40000	Continued	
	Gross income	19205		
Site16 Assiut	Cost Item	Last Season (LE)	This Season (LE)	Reactions of Beneficial Farmer
Site： Manfloot Dist. Beni Adi Villa. (New Land) Target Crop： Tomato, 09, 448, 08, Rotana var. Cultivated Area： 4.18feddan Total harvest： 120ton	Land lease	3500	4000	➢ Synthesis by crop leaves was promoted and coloring of tomatoes was improved. ➢ The yield increased at 33% plus. ➢ Chemical pesticide was drastically reduced. ➢ Neighbor farmers sprayed once/week for White Fly, once/5days for Blights and once/4days for *Tuta absoluta*, but the farmer rarely used chemical pesticide. ➢ Harvested tomatoes had quite large sizes and good-looking shapes.
	Tractor	50	50	
	Seed/seeding	1800	1800	
	Fertilizer	Manure2000 Chem. 5445	Manure 2000 Chem. 2450	
	Pesticide	5000	Bio-ctrl.3205	
	Pump	0	0	
	Labor	2800	2800	
	Total cost	16800	14505	
	Sales	30000	40000	
	Gross income	13200	25495	

Site17 Assiut	Cost Item	Last Season (LE)	This Season (LE)	Reactions of Beneficial Farmer
Site : Koseiya Dist. El Ansar Villa. (New Land) Target Crop : Tomato, 09, Tolbter var. Cultivated Area : 1.36feddan Total harvest : 60ton	Land lease	3500	4000	➢ Resistance of plant was strengthened. ➢ Frost was affected, but the yield was extremely high at 44 ton/feddan, which had not been experienced in the village. ➢ Chemical fertilizer was reduced at 67%. ➢ Neighboring farmers can get the yield at half or less due to pest damages by *Tuta absoluta*, but the farmer did not use chemical pesticide. ➢ Tastes of tomatoes were wonderful. ➢ The second generation of plants is propagated with flowering as of April 2012, therefore, more harvest is expected.
	Tractor	300	300	
	Seed/seeding	2400	IFAD assisted 1200	
	Fertilizer	Manure 600 Chem. 1795	Manure 600 Chem. 1355	
	Pesticide	3000	Bio-cntl.3431	
	Pump	500	500	
	Labor	1550	1550	
	Total cost	13825	12936	
	Sales	40000	48000	
	Gross income	26175	35064	
Site18 Assiut	Cost Item	Last Season (LE)	This Season (LE)	Reactions of Beneficial Farmer
Site : Koseiya Dist. El Ansar Villa. (Old Land) Target Crop : Onion Cultivated Area : 1feddan Total harvest (expected) : 20ton	Land lease	1200	1200	➢ New variety was introduced by the Study Team. ➢ Plant growth was good. ➢ Chemical fertilizer was reduced at 50%. ➢ Chemical pesticide was not used. ➢ The prices of onion are dropped drastically at 25% of the last season (in April 2012).
	Tractor	200	200	
	Seed/seeding	1500	1800	
	Fertilizer	Chem.3200	Chem.1600	
	Pesticide	3000	Bio-control	
	Pump	175	175	
	Labor	1020	1020	
	Total cost	10295	5995	
	Sales	For storing	Expected 1000	
	Gross income	-10295	-4995	
Site18 Assiut	Cost Item	Last Season (LE)	This Season (LE)	Reactions of Beneficial Farmer
Site : El Fath Dist. El Masara Villa. Target Crop : Tomato, Cabbage, Lettuce, Carrot, etc. Cultivated Area : 0.83 feddan Total harvest : (to be continued)	Land lease		4500	➢ The farmer begins cultivation at the site. ➢ Intercropping of tomato and onion was initially introduced by IFAD program, and the farmer conducts little production but several crops currently to avoid any risk. ➢ Tomatoes were not harvested due to frost, but the second generation is propagated. ➢ Other crops grow without problem. ➢ Chemical pesticide is not used. ➢ The traders like the organic crops, and there is no problem in marketing.
	Tractor		200	
	Seed/seeding		IFAD assisted	
	Fertilizer		Manure 800 Chem. 1000	
	Pesticide		Bio-cntl.2945	
	Pump		0	
	Labor		320	
	Total cost		9765	
	Sales		By Apr 1500	
	Gross income		continued	

Remarks: Manure in the table means mixture of animal wastes and sorghum byproducts in dry conditions without fermentation.

2. Details of Input under Bio-Control in Assiut by Site

Materials	Site14		Site15		Site16		Site17		Site19	
	Qty	Amount (LE)	Qty	Amount (LE)	Qty	Amount (LE)	Qty	Amount (LE)	Qty	Amount (LE)
Bio-Control										
Microorganisms, 4kinds (EM, Nitrogena, Phosphorena, and Potassina)	4 bottle	376	4 bottle	300	8 bottle	695	20 bottle	3076	4 bottle	347
Anti-insect (plant extracts)	36lit	720	24lit	480	82lit	1640	120lit	2400	28lit	560
Bacillus thurigiensis	30lit	600	33lit	660	82lit	1640	195lit	3900	34lit	680
Pheromone with Trap	small	0	small	0	2 bottle	240	5 bottle	600		
Trichogramma (parasitic bee)	small	0	small	0			small	0		
Trichoderma			12lit	240	24lit	480	90lit	1800	14lit	280
Minerals and Growth Accelerator										
Ca solution (foliar application)	10lit	200	11lit	220	24lit	480	45lit	600	13lit	260
Gebran (anti-oxidant)			375g	113	0.75kg	225	1kg	300	375g	113
NPK (10:10:10)	4kg	40	5.5kg	55	12kg	120	-	-	5.5kg	55
K solution (fruit formation)	7lit	140	4lit	80	10lit	200	-	-	4lit	80
Nitrogen liquid	-	-	1/3 bottle	25	2 bottle	150	-	-	1/3 bottle	25
Siko (plant growth nutrient)	-	-	30cc	60	60cc	180	-	-	30cc	60
Brliks (Gibberellin GA3)	-	-	3pill	30	6pill	60	-	-	3pill	30
Anti-frost (Cyanamide)	-	-	6lit	120	12lt	240	30lit	600	6lit	120
Aktlik (plant growth nutrient)	-	-	1pack	35	-	-	-	-	1pack	35
Humic acid liquid (soil pH adjust)	1lit	12	2.5lit	30	6lit	72	5lit	60		
Amino acid liquid	2lit	50	3lit	75	6lit	150	4lit	100	3lit	75
Beurleux(plant growth nutrient)	-	-	-	-	-	-	5pill	50		
FiliuBack (pheromone)	-	-	2 bottle	130	4 bottle	260	5 bottle	300	2 bottle	130
Nitrate liquid	1/3 bottle	25	2/3 bottle	50	-	-	4 bottle	300	2/3 bottle	50
Mg powder	-	-	-	-	-	-	5kg	50		
Mineral liquid (Fe, Mg, Mn, B, Cu)	1/2lit	15	1/2lit	15	1lit	30			1/2lit	15
PlantStop (Copper)							15lit	300		
Cost (per feddan)		2178 2178		2718 2718		6862 3431		13398 3205		2945 2945

SUPPLEMENTARY 2: The Results of Participatory Evaluation Workshops

(1) Potato demo-farm with bio-fertilizers at Abo Haseeba Village, Matay District, Minia Governorate

Table 3.1.3 Record of Particiatory Evaluation Workshop at Abo Haseeba Village (Potato)

	Activities	Objectives	Evaluation (Effectiveness)	Why?	How can we improve the project?	Relevance	Sustainability	Questions and answers
Farmers' Evaluation Farmers' Evaluation (Total M:9, Demo-farmers M:5)	- We applied 3 types of bio-fertilizers (nitrogena, potassina and phosphonina) at 3 irrigation times.	1. To increase productivity	**Good**	- To save chemical fertilizer cost by 50%.	- Instruction is necessary to farmers at least 15 days before cultivation.	- **Good**, I will use it again.	- **Good**, I will continue to use bio-fertilizer.	**Q1.** Does bio-fertilizer reduce the P.H and treat the soil and diseases.
		2. To save the cost		- The difference of cost between chemical and bio fertilizers is not big.	- To supply bio-fertilizer on time.	- I have to know the future effect to the soil to decide if I can use it again or not.	- I will use if the price of bio-fertilizer is lower.	**Q2.** What is the effect bio-fertilizer on the soil in the future?
		3. To have products with good quality		- Productivity improved from 8t in 120 days with chemical fertilizer to 12t in 90 days with bio-fertilizer.	- Only five farmers know bio-fertilizer. We need extension so that other farmers know also.			
		4. To change soil treatment and to compare chemical fertilizer and bio-fertilizer.		- Resistance to diseases increased.	- We need to use bio-fertilizer and we need to tell other farmers not to use yeast by themselves.			
				- Production with bio-fertilizer is 25% more than that with chemical fertilizer.	- We need monitoring from extension and advertising of the produce.			
					- To decrease the price of bio-fertilizer so that all the farmers can use it.			
					- We need to select good seeds.			
					- We need to apply bio-fertilizer at the suitable time.			
District Extension Officer's Evaluation (Head of extension [M], District extension [M])	- To supply bio-fertilizer to 5 potato farmers.	- To produce safe and green products.	**Excellent**	- Bio-fertilizer improved the quality of the product.	- Farmers need more fertilizer per area.		- Other farmers need to see by themselves in the future.	**A.** Bio-fertilizer with chemical fertilizer makes the balance of the soil.
				- Production with bio-fertilizer is better than that with chemical fertilizer.	- Seminars and symposiums for farmers are necessary.		- We need to purchase bio-fertilizer easier and at lower price in the future.	
				- 30% of the villagers (neighbors and labors) now know the project and bio-fertilizer.			- We need more shops in the district to sell bio-fertilizer.	

Table 3.1.4 Record of Participatory Evaluation Workshop at Abo Haseeba Village (Pot planting)

	Activities	Objectives	Evaluation (Effectiveness)	Why?	How can we improve the project?	Relevance	Sustainability
Farmers' Evaluation (Total M:3 F:6, Demo-farmers F:4)	- We got tomato and cabbage seedlings from JICA study team for free.	- We wanted to try a new thing.	**Good**	- Because we did not use any chemicals and it saves costs and time.	- Nothing to improve because Everything is ok.	**Good**	- **Yes**, also we want to try fruits.
	- We got the soil for the pots from the JICA study team for free also.	- We wanted to cover our home consumption so that we would not buy from the markets.		- We do not need to buy from the market because production is enough for us.			- About 6 persons of my relatives and 10 of my neighbors started to plant in pots after seeing the project. (One woman said)
	- We have finished harvesting.	-We wanted to gain much experience.					- About 6 persons of my neighbors started to plant in pots. (Another woman said).
	- We are about 20 women who joined the project and got the free seedling and the soil.						- About10 persons of my neighbors started to plant in pots. (Another woman said).
							- About 6 persons of my relatives including my sister and her children started to plant in pots. (Another woman said)
District Extension Officer' Evaluation (Head of extension sector [M])	- I advised the women to buy a new seeds of another Crops (expand the activity).	- We wanted to save the family economy.	**Very Good**	- It saves the cost because we do not need to buy.	- To provide cheap nets to the pot system to protect it from the birds.	**Good**	- **Yes**, we want to extend to other villages and also to implement this system on the roofs of governmental associations and schools.
	- I provided bio fertilizers and bio pesticide for free for the women.	- We wanted to provide a safe product for the families.		- It is good to have a product at home.	- By holding seminars for many villages.		- There is an idea of putting several pots vertically on a stainless base to intensify production. Then 100 meter of these pots equal to the production of half feddan of farm.

Note: With Governorate Officers (Head of Intensification Project [M] and Head of Rural Woman Center [M])

Table 3.1.5 Record of Participatory Evaluation Workshop at El Baragel Village (Wheat)

	Activities	Objectives	Evaluation (Effectiveness)	Why?	How can we improve the project?	Relevance	Sustainability	Questions and answers
Farmers' Evaluation Farmers' Evaluation (Total M:4, Demo-farmers M:3)	- We applied 2 bottles of bio-fertilizer per farm.	- To get high production and quality.	**Good** (all the 3 farmers)	- It's still temporary because we have not harvested yet.	- Nothing to improve because we did everything ok.	**Good**	- **Yes**, we will continue	**Q1.** Where can we get the containers of bio-fertilizer after the project?
	- We added 2 bottles at 1st and 2nd irrigation.	- To get experience of bio-fertilizer.						
	- I added 1 package of chemical fertilizer because wheat was yellow. (1 farmer)	-To compare bio-fertilizer and chemical fertilizer.						
	- We are removing grass and plowing land.							
	- We did not use pesticide.							
Cooperative Officers' Evaluation (Head of cooperative [M], Village extension [M])	- We are monitoring farmers activities.	- To practice green cultivation.	**Good**	- The appearance of plants is very good.		**Good**	- **Yes**, we will extend to other villages.	
	- Extensions officers give advices to the farmers.							
District Extension Officers' Evaluation (District extension M:2)	- We did monitoring.		**Good**	- Resistance of plants increased.		**Good**	- If farmers use bio for three years, they will not need any chemical fertilizer anymore	
				- Farmers didn't use any pesticides.			- Farmers to farmers (1 to 10, 3 to 30) is possible.	
Counterparts' Evaluation (Counterpart M:3)	- We provided bottles of bio-fertilizer before cultivation.	- To Reduce farming cost.	**Good**			**Good**	- It has a **good** impact because farmers say they continue.	**A1.** The intensification project will continue sending bio-fertilizer. (production capacity: 1,000 bottles, Minimum order: 20 bottles)
		-to protect consumers by green production.						
		- Farmers' awareness of 3 kinds of bio-fertilizer P.N.K.						
	- We did monitoring.	- To reduce using chemical fertilizer.						

Table 3.1.6 Record of Participatory Evaluation Workshop at Bany Abeed Village (Various Crops)

	Activities	Objectives	Evaluation (Effectiveness)	Why?	How can we improve the project?	Relevance	Sustainability	Questions and Answers
Farmers' Evaluation (Total M:25, Demo-farmers M:5)	- The officers came and told us about the project and gave us 4 bottles to be applied in four stages.	- To compare bio-fertilizers and chemical fertilizers.	**Good**	- Because the plant shape is very good.	- Nothing to improve because everything is ok.	**Good**	- **Yes**, if we can find bio-fertilizers easier.	**Q1.** When is the suitable time to add bio fertilizers?
	- Four crops, onion, garlic, potato and caraway, were selected.	- To save the cost of chemical fertilizers.		- Because we get the same production despite of using a half chemical fertilizers.			- We would buy from the cooperative/district not at private shops because traders might increase the price.	**Q2.** What kind of crops can we apply bio-fertilizers for ?
	- We followed all the instructions given by agriculture officers.	- To improve the quality of the products.						**Q3.** What is the benefit of the evaluation workshop?
	- We decreased chemicals up to a half.							
Village Extension Officers' Evaluation (Village extension [M] Head of cooperative [M] Head of Agriculture sector [M])	- We visited farmers and taught them about the importance of bio-fertilizers.	- To get safe food.	**Very Good**	- We can see high production.		**Good**	- **Yes**, we want to extend to other villages.	**A1.** At the timing for using chemical fertilizers.
		- To protect the general health.		- Usually farmers do not use chemical fertilizers containing potassium, but they can fertilize the soil integratedly by using Potassina.				**A1**. Do not mix chemical and bio-fertilizers together.
								A1. Use bio-fertilizers only in the shade so that the organisms would not die.
District officers' Evaluation (Head of extension sector [M], Head of technical office [M] Head of District Agriculture office [M])	- We selected the sites and decided the crops.	- To reduce human diseases resulted from using chemicals.	**Very Good**	- High production quality.	- To increase the number of seminars.	**Good**	- It is better to supply bio-fertilizers at certified shops in the future.	**A2.** it suitable for all crops and same amount for all crops.
	- We provided the bottles of bio-fertilizers to the farmers.	- To reduce chemical fertilizers.		- Some demo farmers are buying and applying bio-fertilizers in their private farms.	- To provide bio-fertilizers on time.		- To increase the number of the demo farms.	**A3.** To extend bio-fertilizers more efficiently and effectively. (JICA Study Team)
	- We gave technical advices and instructions to the farmers.	- To expand the awareness among farmers about bio-fertilizers.					- Applying bio-fertilizers in more villages.	**A3.** This is a demonstration, and we expect bio-fertilizers to be extended in full scale in future. (JICA Study Team)
	- We do monitoring weekly with JICA Study Team.	- To increase production and to improve the quality.						
		- To increase the dissolving of the soil elements and to keep soil fertility.						

(5) Various crops with bio-fertilizers at Delga Village, Dayr Muas District, Minia Governorate

Table 3.1.7 Record of Participatory Evaluation Workshop at Delga Village (Various Crops)

	Activities	Objectives	Evaluation (Effectiveness)	Why?	How can we improve the project?	Validity	Relevance	Others
Farmers' Evaluation (Total M:25, Demo-farmers M:1)	- We received 3 bottles / feddan.	- To save chemical fertilizers costs.	**Good**	- To protect human health.	- To provide bio-fertilizers through cooperatives, so that we can get bio-fertilizers easier.	**Good**	- **Yes**, we will continue to use only if we can get bio-fertilizers.	- We want to export Onion.
	- Used the bio-fertilizers at 3 stages in 1/2 feddan of onion and 1/2 feddan farm of wheat for one farmer and 1Feddan of potato farm of another farmer.	- To have bio-product by reducing chemicals.		- To reduce the cost of chemical fertilizers.				
		- To deal with bio company as bio association's member.		- Productivity of potato did not change.				
	- Harvested potato but not onion and wheat yet.	- To increase production by using chemical.						
Village Extension Officer's Evaluation (Village extension M:1)	- Select another farmer	- To increase awareness of bio farming.	**Very Good**	- To increase awareness of using potassium.	- To increase the number of demo-farmers.	**Good**	- **Yes**, I will continue extending if the harvest is good.	
	- Give that farmer 3 bottles / Fed.	- To reduce using chemical fertilizers.			- To have seminars.			

Note: The demo farmers of bio-fertilizers are the village extension officer and his brother.
With a Governorate Officer (Head of Intensification Project [M])

Table 3.1.8 Record of Participatory Evaluation Workshop at Beni Adi Village (Tomato)

	Activities	Objectives	Evaluation (Effectiveness)	Why?	How can we improve the project?	Relevance	Sustainability
Farmers' Evaluation (Total M:7, One demo-farmer and six neighboring farmers)	The landowner joined the project through Governorate Extension Officer, and the owner chose the demo-farmer.	**5.** To get more profit.	**Good** (Demo-Farmer) **Very Good** (Other farmers)	Because there are infections found still. (Demo-farmer)	It is better to increase the frequency of visits of the team till twice / week.	**Good**, we will continue to use the same system.	We will advice our brothers and neighbors to use the same system.
	The demo-farmer got instruction and advices on bio-fertilizers and bio-control from Governorate Extension Officer.	**1.** To get more experience especially for bio-fertilizers and bio-control.		Because the production increased. (Other farmers)	It is better to increase the number of pheromone traps to 2 or 3 from 1per fedden because it is too few.		They will advice brothers and neighbors.
	The demo-farmer applied bio-control.	**2.** To expand the harvest period of tomato.		Because it decreased the diseases comparing with other fields. (Other farmers)			
	The demo-farmer applied bio-fertilizers.	**4.** To decrease chemical cost (chemical fertilizers and pesticides).		Because the demo-farmer received bio-control for free. (Other farmers)			
	The demo-farmer started harvesting from one month ago.	**3.** To get safe and healthy production.					
	The demo-farmer will continue harvesting for one more month.	**6.** To decrease the infection percentage for the plant (plant disease).					
Governorate Officers' Evaluation (Total M:5, three Extensions, Head of Info. and a Horticulture Specialist)	They will advice to continue with bio- fertilizers and bio-control.	To train farmers how to expand the harvest season of tomato.	**Excellent**	Because the demo-farmer could control Tuta-absolouta.	Using bio-control from the beginning of cultivation to get pure organic production.	**Good**	We need to offer bio-control materials and bio-fertilizers at the places where farmers can access easily.
					Direct contact with the advisor and the Study Team.		

Note: Many farmers are renting 5 feddan each for tomato from the same landowner.

One of those farmers was selected as the demo-farmer and all the participants of the evaluation workshop are the renters from the same landowner.

Table 3.1.9 Record of Participatory Evaluation Workshop at El Ansar Village (Tomato)

	Activities	Objectives	Evaluation (Effectiveness)	Why?	How can we improve the project?	Relevance	Sustainability	Remarks
Demo-farmer's Evaluation (Total M:1, One demo-farmer)	I started to apply bio-fertilizers and the bio-control.	To get more experience especially in bio-fertilizers and bio-control.	**Excellent**	I got very good result in controlling the diseases.	We need more visits.	**Good**, (Still effective)	I want to continue if I can get bio-control.	I want to Know where I can buy the bio-control.
	I followed the instruction from the officers one by one in the field.	To control most of the diseases.		I got very good result in increasing production.				
		To expand the harvesting time and increase production.		I got healthy products.				
Neighboring farmers' Evaluation (Total M:3, 3 neighboring farmers)		To get more experience especially in bio-fertilizers and bio-control.	**More than Excellent**	The amount of production is very high.	We need bigger demo-farm.	**Good**, (Still effective)	We will start the same system.	We want to join if the project will expand.
		To control most of the diseases.		The cost for Bio-system is less than the Chemicals.				
District and Governorate Officers' Evaluation (Total M:4)	We supervise the farmers at the demo-farm.	The same objectives with the farmers.	**More than Excellent**	Because the demo-farmer controlled Tuta-absluta.	We need more visits.	**Good**, (Still effective)	We will expand the system and work with new farmers.	Establish a laboratory for the bio-control to supply bio-control to farmers.

Table 3.1.10 Record of Participatory Evaluation Workshop at El Zawya Village (Garlic)

	Activities	Objectives	Evaluation (Effectiveness)	Why?	How can we improve the project?	Relevance	Sustainability	Remarks
Demo-farmer's Evaluation (Total M:1, One demo-farmer)	We applied bio-control.	To get a new experience.	**More than Excellent**	Because I got high production.	Seeds should be well prepared.	**Good**, still working effictienty	Yes, I will continue.	We need a place to buy bio-control / bio fertilizer materials nearby.
	We applied bio-fertilizers.	To save costs.						
	We got instructions about the bio-control / fertilizer system.	To get high production.						
Neighboring farmers' Evaluation (Total M:5, 5 neighboring farmers)	No activities.	No objectives.	**Very Good**	Because the demo-farmer got high production.	No opinions.	**Good,** still working effictienty	Yes, we will do bio-control / fertilizer system.	
Cooperative Officers' Evaluation (Total M:2)	We supervise the farming system.	To get healthy production.	**Very Good**	Because no infections.	Seeds should be well prepared.	**Good,** still working effictienty	Yes, we will continue advising about the bio-control / fertilizer system.	We want the Governorate to offer variety of garlic seeds.
District and Governorate Officers' Evaluation (Total M:5, 1 District Officer and 4 Governorate Officers)	No activities. (District)	No objectives. (District)	**Excellent** (District)	Because farmers have an experience.	Seeds should be well prepared.	**Good,** still working effictiently (District)	Yes, we will advise about the bio-control / fertilizer system. (District)	
	We give farmers advices step by step. (Governorate)	To extend bio-control / fertilizer system. (Governorate)	**Excellent** (Governorate)	Because the field is in typical. (Governorate)	Seeds should be well prepared.	**Good,** still working effictiently (Governorate)	Yes, we will continue and spread the bio-control / fertilizer system to the whole governorate. (Governorate)	
	We supply the materials of bio-control and bio-fertilizer.	To get healthy production. (Governorate)						

Table 3.1.11 Record of Participatory Evaluation Workshop at Delga Village (Onion)

Improved Onion	Activities	Objectives	Evaluation (Effectiveness)	Why?	How can we improve the project?	Validity	Sustainability	Others
Farmers' Evaluation (Total M:25, Demo-farmers M:5)	- We received the improved onion seeds.	**1.** High quality of produce for exporting.	**Not yet**	- We shall evaluate after harvesting.	- We need more instruction.	**Good**	- **Yes**, if the variety is good.	- We want to export onion.
	- We planted the seeds in the nursery bed.	**2.** To increase productivity.			- We need more seminars.			
	- We transplanted the seedlings after 60 days.	**3.** To use a new variety which is resistant to diseases cost.						
	- We did irrigation, fertilizers, etc (Not yet harvested).	**4.** To increase the price and get more income by the new variety.						
		5. To produce equal size of Onions for better market and good price.						
Village Extension Officer's Evaluation (Village extension M:1)	- I received the seeds and distributed the seeds to the farmers .	- To introduce a new variety.	**Not yet**	- We shall evaluate after harvesting.	- To plant more seedlings in a line (intensify).	**Good**	- **Yes**, I will extend to all villagers in the village.	
	- I explained the project to the farmers .				- Intercropping of onion and other crops.			
	- Monitoring and supervision .							

Table 3.1.12 Record of Participatory Evaluation Workshop at Salakos Village (Garlic)

	Activities	Objectives	Evaluation (Effectiveness)	Why?	How can we improve the project?	Relevance	Sustainability	Questions	Others
Farmers' Evaluation (Total M:7, Demo-farmers M:7)	- Head of cooperative and supervisors came and invited us (10 farmers) to join the project, each one provide only 1/2 Feddan.	**1.** For high production.	**Good**	- It helped us to know a new garlic variety.	- Nothing to improve because everything is ok.	**Good**	**Yes**, we will continue.	**Q1**: Will the project continue next year?	Main problem of garlic is marketing.
	- Supervisors said that we will receive the seeds for free.	**2.** To have good quality.		- Egaseed variety is better than Sets 40.				**A1**: No, this project will end soon, but your activities will continue as you said.	- traders can not take all the product.
	- We went to SETS ARC center in Beni Suef, to Dr. Abbas who showed us the kinds of garlic seeds.	**3.** To change variety to compare.						**Q2**: Why JAPAN doesn't import our garlic?	- Traders make grading and take only 1 ton from 3 ton.
	- We agreed that each farmer should take 180 kg Sets 40 variety, 20 kg Egaseed variety.							**A2**: Maybe because we import a lot from China already.	- Exporters control traders and traders control farmers.
	- We prepared the land for cultivation and planted.								
	- JICA team visited our demo-farms three times.								
	- Harvesting will be from first of March until first of April.								
Village Extension Officer's Evaluation (Head of cooperative [M])	- I selected farmers and sites.	- To choose the best variety.	**Excellent**	- Introduced a new variety.	- Nothing because everything is good and activities are so good.	**Good**	**Yes**, we will continue.		- The problem is marketing.
	- I selected garlic varieties.						- We will apply this experience to other crops not only garlic.		- Exporters control traders and traders control farmers.
	- I give technical advise .						- We will extend to other villages.		
District / Governorate officers' Evaluation (District extension [M], Governorate counterpart [M])	- I selected the village famous for garlic. (District)	- To have high production. (District)	**Good** (District)	- To have a new variety. (District)	- Nothing. (District)	**Good**	**Yes**, we will continue. (District)	**Q3**: The project is a marketing project but why did you deal with variety of seeds? (District)	- In march, too much production and exporters decrease the price. (District)
	- I selected farms and farmers with the cooperative. (District)	- To increase income. (District)		- To have an experience. (District)	- Establish a cooperative or an association for exporting. (District)		- We will select other villages. (District)	**A3:** Because quality and productivity are analyzed as indirect but major causes for making marketing difficult.	
	- I monitor the demo-farms. (District)	- To connect scientific research and experience. (District)	**Excellent** (Governorate)	- Change the attitude of farmers to buy new technologies. (Governorate)	- To use bio-fertilizers for garlic. (Governorate)				
	- I gave field visits (Governorate).			- To help cooperating between district and cooperative and farmers. (Governorate)					

Table 3.1.13 Record of Participatory Evaluation Workshop at Delga Village (vegetable)

	Activities	Objectives	Evaluation (Effectiveness)	Why?	How can we improve the project?	Relevance	Sustainability
Female Workers' Evaluation (Total F:4, Workers F:4)	- We took training for pickles and drying.	- To get experience in pickles making.	**So So**	- We are getting money and experience.	- We need big built-in basin.	- We will choose milk processing rather than vegetable processing.	- **Good**, we will continue but with better conditions.
	- We are processing lemon, olive, carrot, cucumber, turnip and pepper.			- We get tired of cutting and cleaning.	- We need a cutting machine.	- We originally thought it's a milk processing project.	
	- We started to sell pickles.			- We don't get daily wage sometime.	- We need a better work plan. We need to know when we need to work beforehand.	- The guy who ask the girls to join said it might be milk processing project.	
						- We prefer milk processing to make cheese and yoghurt.	
Cooperative Officers' Evaluation (Head of cooperative [M], cooperative worker [M])	- We did training.	- To process local produce in the village.	**Not Good**	- Labor cost is high, transportation cost is high (no truck).		- Only God knows.	- **Not Good**, we will stop if the labor cost does not become lower as the private sector.
	- We are buying row materials.			- There is no profit for the cooperative.		- We want milk processing more.	
	- We are marketing and packaging the products.			- We are paying three times more them factories. (300 L.E./ton vs. 100 L.E./ton)			
				- Female workers demand daily wage and refuse to take 70% of the profit.			
				- Officers are not getting any wage for packaging and marketing.			
Counterparts' Evaluation (Counterpart M:3)	- We established the lab.	- To improve the income and livelihood of village women.	**Very Good**	- The quality of the product is high.	- We need cutting equipment.		**Not Good**, they can't continue according to what the cooperative officers say.
	- We provided equipment.	- To create job opportunity.	**Good** in training for producing, but **Not Good** as a processing unit.	- It is easy to get row materials.	- We'd better involve associations to give training.		
	- We started pickles processing from August 2011.	- To improve young women's skills.		- Understanding of young female workers is good.	- We need a pickup for transportation.		
	- We did training for young women.						
	- We are monitoring and supervising the processing.						
	- We give training for the cooperative officers.						

Table 3.1.14 Record of Participatory Evaluation Workshop at El Egal El Bahary Village (pomegranate)

	Activities		Objectives	Evaluation (Effectiveness)	Why?	How can we improve the project?	Relevance / Sustainability
Female workers' Evaluation (Total F:4)	We clean the workplace and the equipment.	We took training (about 10 days in total).	To improve the living standard.	**Good,** but not very good	Because we can work only few days.	We don't know because we just follow the orders.	**Good,** we will work good.
	We do processing.	We get the order from the manager and complete work.	To get experiences.				We want to continue with a new way reflecting the experiences we have had.
	We pack the products and we clean the workplace.	We work 10 days / month in busy months and 0-3 days / month in non-busy months.	To get job opportunities.				
Cooperative's Evaluation (Total M: 6)	We selected the workplace.	We selected the female workers.	To develop the village.	**Not good**	We don't have cash working capital.	We need to store many pomegranate seeds.	**Good,** we want to continue with a new way reflecting the lessons learned.
	We schedule the work weekly.	We supervise the work.	To help small scale farmers to market their products.		The Study Team promised to help exporting the products, but it has not happened yet.	We need to find more market to sell.	
	We supervised construction.	We pay wages to the female workers.	To give job opportunities to young females.		The economic situation of Egypt is not good after the revolution.	I want to be the decision maker with no rules and conditions.	We can see bright future.
			To make income for the cooperative.			I want to have cash working capital.	
						We need to be flexible and to work on any fruits other than pomegranate and orange.	
District Officers' Evaluation (Total M: 1)	We supervise bookkeeping.		To give job opportunities to young females.	**Good**	Because it was not much possible to market outside of the village.	We need to have a special cold storage for pomegranate seeds.	**Good,** we want to continue with a new way reflecting the lessons learned.
			To develop the village.		We cannot work with pomegranate all year round because there is no cold storage.	We need to find market in the village if possible.	
						We need to be flexible and to work on any fruits other than pomegranate and orange.	We can see bright future.
Governorate Officers' Evaluation (Total M: 3)	We discussed with the cooperative what products they are going to make.	We supervise the work.	To improve marketing of agricultural products.	**Good / Not Good**	Good because pomegranate seeds are a new product in Assiut.	We need to work on varieties of products: not only natural pomegranate but preserved in sugary solution.	**Good,** we want to continue with a new way reflecting the lessons learned.
	We discussed with the cooperative where to construct the workplace.	We solved the problems of squeezer and wages with the cooperative.	To get income from low quality fruits.		Not good because we started at the end of the season and the price of pomegranate was high.		
	We help the cooperative to market the product.				The workplace is a rented one (300 L.E. / month) not the cooperative's property.		We can see bright future.
					There is no bathroom in the workplace.		

Table 3.1.15 Record of Participatory Evaluation Workshop at Arab El Kadadeh Village (basil)

	Activities		Objectives	Evaluation (Effectiveness)	Why?	How can we improve the project?	Relevance / Sustainability	Remarks
Cooperative's Evaluation (Total M:4)	We selected the location of the factory.	We processed and packaged basil.	To encourage small scale farmers.	**Very Good,** but not excellent.	Because there is no water, no bathroom and no storage at the factory.	It is better to have storage in the factory.	**Good,** we will continue.	
	We followed up and supervised the construction of the factory.	We stored the processed basil in the cooperative storage.	To increase the selling price of farmers.			It is better to have a weighing machine to weigh with a truck.		
	We gave advices where to buy the machinery.	We marketed the product at good price.	To produce high quality basil.					
	We bought basil from the farmers.		To reduce the loss during drying and processing.					
	We dried the basil in the kafas.		To sell basil at higher price to the traders from Cairo.					
Workers' Evaluation (Total M:5, one guard and 4 workers)	I guarded the yard and supplied water from my house. (Guard)		To get job opportunities.	**Very Good**			**Good,** we will continue.	
	We dried and processed basil.							
Farmers' Evaluation (Total M:11)	We sold basil to the cooperative.		To sell basil at higher price.		Because we could sell at once.		**Good,** we will continue selling basil.	We need to improve the road condition from the village to the factory.
			To sell basil at once and at the same price.		Because we could sell at good and fixed price through the season.			
			To reduce the loss during drying and processing.					
Traders' Evaluation (Total M:1, a trader)				**Good**	Because I used to sell to exporter so If the factory will export directly I will sell to it	It is better to export directly from local traders.		
District Officers' Evaluation (Total M:3)	We selected the location.	We supervised the construction of the factory.	To help small scale farmers.	**Very Good**	Because the factory created job opportunities.		**Good,** we will continue supporting and supervising.	We need to expand the factory.
Governorate Officers' Evaluation (Total M:5)	We facilitated to get a license and electric connection.	We gave supervision on drying and processing.	To help small scale farmers in marketing.	**Excellent**	Because the factory produced high quality product.	It is better to start from the beginning of the season, not at the end of the season.	**Good,** we will continue supporting and supervising.	We need to work with other varieties such as fennel, marjoram and babong …..

(14) Promoting Horticulture Crop at Abad Sharona Village, Maghagha District, Minia Governorate (Tomato& Maize Intercrop)

Table 3.1.16 Record of Participatory Evaluation Workshop at Abad Sharona Village (Tomato& Maize Intercrop)

	Question 1. What did we do?	Question 3. Evaluation (Selecting from Very good, Good, or Not good)	Question 4. Why? The reason of evaluation	Question 5. Do you want to use intercropping method in the next season? Surround farmers are interested in the intercropping methods?	Question 6. Do you want to try cultivating horticulture crops? Surround farmers are interested in horticulture crops?
Demo-members	- Cultivating two crops, because crop prices in summer are low - Reducing the tomato production costs, because tomato production costs are high	Group1: Good Group 2: Not good, but intercropping method is a great experiment	Group 1: Taking care of Tomato & Maize cultivation well, Variety of tomato was fine Group 2: Tomato was damaged by insects. The demo-farm had high humidity, because the farm located near the Nile river.	Group 1: We want to try the intercropping of medical and aromatic plants with Wheat. Group 2: We want to try to cultivate other important crops by using intercropping methods	We want to try to cultivating tomato, eggplant, and pepper, by intercropping.
Village Extension	- Maize makes shade on tomato. #NAME?	Not good		We don't want to use intercropping method.	Because of high costs of tomato
District Extension (Absent)					

*Question 2. Costs & Benefit are summarized in the other table.
Discussion session
(1) Farmers' opinions
Intercropping with other vegetables, except of tomato and maize.
Irrigation development
Trying new varieties being able to resist diseases.
(2) Village extension
We know intercroppping of soybean and maize 2 years.
This village is the famous for medical and aromatic production.
Medical and aromatic plants are so profitable crops
Medical and aromatic plants give high income and low costs with constant price.

Table 3.1.17 Record of Participatory Evaluation Workshop at Abo Hasseba Village (Tomato& Maize Intercrop)

	Question 1. What did we do?	Question 3. Evaluation (Selecting from Very good, Good, or Not good)	Question 4. Why? The reason of evaluation	Question 5. Do you want to use intercropping method in the next season? Surround farmers are interested in the intercropping methods?	Question 6. Do you want to try cultivating horticulture crops? Surround farmers are interested in horticulture crops?
Demo-members	- Extend the age of tomato - Save area - Increase the product - Increase the income -Save fertilizers and cultivation two crops at the same time	-The intercropping idea itself is very good -Tomato with maize is acceptable	-No shade during the noon -The top of maize plant fell on tomato and cause damaged for it -Maize hinder the agricultural process	- we will cultivate tomato with maize but with less percentage of maize - We want to try to cultivate other crops by using intercropping methods - we want to extend the intercropping to other villages	We want to cultivate vegetables and continue with it
Village Extension	- Save water and costs, increase the income -To have two crops at the same time - Save fertilizers costs	-Good	-Save costs, efforts and increase the income	- Yes we will use intercropping methods -we don't want intercropping with tomato - we want to use intercropping methods but not tomato with maize	We want to cultivate other crops and vegetables
District Extension	-To have two crops to increase the farmer income -using same land for two crops	-It will be excellent if the distance between plants be suitable - It will be excellent if we make the intercropping for several times not for once	-After this trial the farmers will select another crops to make intercropping	- Some farmers will apply this idea	

*Question 2. Costs & Benefit are summarized in the other table.
Discussion session
- Cultivate maize at its time no delay, - Select two crops, which are suitable to each other, - Make a program before cultivation,
- Choose fields away from each, only two fields are close, - Choose seven fields to be close to each other, - Respect the farmer's selection of crops, which they want
- Provide the farmers with all agricultural needs, - Select the farmer who has intercropping information, - Select a field with good ventilation, - Attention to the age of each crop

Table 3.1.18 Record of Participatory Evaluation Workshop at El Balagele Village (Tomato& Maize Intercrop)

	Question 1. What did we do?	Question 3. Evaluation (Selecting from Very good, Good, or Not good)	Question 4. Why? The reason of evaluation	Question 5. Do you want to use intercropping method in the next season? Surround farmers are interested in the intercropping methods?	Question 6. Do you want to try cultivating horticulture crops? Surround farmers are interested in horticulture crops?
Demo-members	- Group 2:High production of maize -Group 4:Increase the maize income - Cultivation two crops at the same time -Save efforts -Extend the intercropping period, so the price get high	-Group 1: good - Group 4: good - Group 3: good	- Group 1:Increase the income -Group 4: Each of them covered the cost of the other - Group 3: have two good crops	- Group 4: Yes, I want to recurrence -If I have good seeds and seedlings I will recurrence - Group 3: Yes, I want to Recurrence but the tomato product was low - Yes, I want to recurrence - Group 1:Yes, I want to recurrence - Group 2: intercropping other crops	- Group 4: Yes, I try - Group 3: Yes, I try -Group 2: many farmers want to try -Group 1: I want to try intercropping maize with other vegetables
Village Extension	- Save water and costs, increase the income -Cultivate two crops at the same time - Save labors and increase the benefit	-Good	- Lack of farmers experience	- Yes the farmers will use it next season - Encourage farmers to cultivate	Vegetables cultivation
District Extension	- Increase the income -Cultivate two crops in same land -Save some of agricultural process - Prevention of risks of environmental conditions for one of crops	-Very good if the farmers have trained before	-It will be very good if we try it with experience	- We will encourage intercropping in other places - Some villages had hoped to have this trail -Intercropping will lead to the vertical expansion	-Encourage vegetables crops -After intercropping some farmers will try cultivating vegetables

*Question 2. Costs & Benefit are summarized in the other table.
Discussion session
- Cultivate tomato early , -Have seedlings from reliable source, -To get treatment for tota absluta,, -Bad planning for distance, -Select right location far from sugarcane
-Intercropping: bean with sugarcane, Sugar beet with sugarcane, Wheat with sugarcane, - Using organic fertilizer
-Extension seminars for farmers

Table 3.1.19 Record of Participatory Evaluation Workshop at El Kosya Village (Tomato& Maize Intercrop)

	Question 1. What did we do? Why did we do?	Question 3. Evaluation (Selecting from Very good, Good, or Not good)	Question 4. Why? The reason of evaluation	Question 5. Do you want to use intercropping method in the next season? Surround farmers are interested in the intercropping methods?	Question 6. Do you want to try cultivating horticulture crops? Surround farmers are interested in horticulture crops?
Demo-members	- To save the costs, fertilizer, labor, and irrigation	Good	(Why not very good?) - Delaying the time of cultivation - Low production	- We want to repeat the experiment by ourselves - Some farmers are ready to experiment. - Many farmers asked the intercropping method	- Use intercropping by tomato and maize. - Try intercropping by other combination, if they can learn those methods. - More horticulture corps, especially fruits - Training course for intercropping - Taking soil samples before cultivation for determining the type of crops
Village Extension	- increase the production and area - Decrease the costs - Providing high quality production	Very good	- Increasing income and saving the cost - Giving experience to farmers	- Demo-farm Members want to repeat the experience. - Large number of farmers want to make intercropping	- We want to increase fruit production
District Extension	- Increase the crops vertically - Intercrop provide good condition for tomato - Cultivating 2 crops at the same time - Good income and low cost	Good	(Why not very good?) - This summer is hotter than usual year - The time of cultivation was not suitable	- Demo-farm members want to repeat the experience in other places - Many farmers want to repeat the experience by themselves after seeing the demo-farm - We want to repeat the experience by using bio-control.	- Many farmers wish to cultivate horticulture crops.

*Question 2. Costs & Benefit are summarized in the other table.
Discussion session
(1) Improvement of the intercropping
Involving the farmers who have experience in cultivating vegetables, Selecting good seedlings, Make a decision early which type of crops
(2) Bio-control
Bio control method is the safety for human, cheap, and making good results.
But it is difficult for them to get it. The plant providing the bio-control material is needed close to the village.

Table 3.1.20 Record of Participatory Evaluation Workshop at El Azwya Village (Tomato& Maize Intercrop)

	Question 1. What did we do? Why did we do?	Question 3. Evaluation (Selecting from Very good, Good, or Not good)	Question 4. Why? The reason of evaluation	Question 5. Do you want to use intercropping method in the next season? Surround farmers are interested in the intercropping methods?	Question 6. Do you want to try cultivating horticulture crops? Surround farmers are interested in horticulture crops?
Demo-members	- To save the costs of irrigation - To increase income - To save fertilizer - To enhance good condition to get a good tomato yield	Good	This is the first experience of cultivating tomato. We hope to get better outcomes in the next trial.	- Repeating this trial again. - There are some farmers already used intercropping. Those farmers did intercropping with wrong method. After seeing the demo-farm, they applied the correct method. - The neighbors farmers opinions: some of them find intercropping is good and some opinion was that its cost a lot.	We want to try another horticulture crops. There are a lot of farmers cultivating horticulture.
Village Extension	- To increase the crop intensity - To save the labor cost	Good		- We surely try it in the next season. - A lot of farmers will repeat the experience.	We want to try vegetables. A lot of farmers have already cultivate vegetables.
District Extension	- To give farmers the experience	Very good	Spreading the cultivation to use bio control	- We will disseminate the experience. - In the village, there are a lot of farmers use intercropping.	We want to cultivate vegetable, because it is profitable.

*Question 2. Costs & Benefit are summarized in the other table.

Discussion session

- Increasing the space between maize and tomato
- Good preparation to the land before cultivation
- Offering the place providing bio control material near to the village
- May we try okura intercropping with maize, because this combination is suitable for bio control?

SUPPLEMENTARY 3: Summary of the Pilot Project Implementation

1. Progress of the Pilot Projects

Implementation Schedule and Progress of Each Pilot Project (As of Mid April 2012)

Project	Pilot Area: Governorate	Pilot Area: Village	Activities	Progress	Schedule: 2011 3	4	5	6	7	8	9	10	11	12	2012 1	2	3	4	5
1. Supporting Marketing of Agricultural Produce																			
Information Collection and Dissemination	Governorate Agricultural Office		1-1 Identifying useful information	wholesale prices of Obour, Hadra, Minia and Assiut, List of wholesalers have been identified.															
			1-2 Designing data collection method	Price in Obour and Hadra from Homepage Price in Minia and Assiut from wholesalers															
			1-3 Procuring equipment	PC and Mobile for Directorate and Billboard at cooperative offices have been procured.															
			1-4 Making information database	Started collecting tomato and other vegetables wholesale price data in the wholesale markets.															
			1-5 Disseminating information	Sending SMS started from August (Price of tomato to demo farm villages)															
			1-6 Monitoring and evaluation of information dissemination	Done questionnaire survey in end August. 84% says it is useful.															
Marketing by Cooperative	Minia	1 village for production improvement	2-1 Selection of cooperative	Has been done. 1 village coop in Assiut and 1 Specialized coope in Minia will be involved.															
			2-2 Cooperative is to make agreement with farmers for selling produce	In Assiut, the Committee to help farmers sell tomato was established in Maasra village. Specialized cooperative made agreement with demo-farmers.															
	Minia, Assiut	Delga, Rifa	2-3 Collection of produce and shipping by cooperative	In Assiut, the Committee started helping farmers to sell tomato at the direct shop of District Agriculture Office. In Minia, farmers prefer to sell tomato in the village or nearby market.															
	(Processing)	El Egal El bahry	2-4 Cooperative is to sell processed products	Started selling products in the village and governorate direct shop as trial basis.															
2. Post-harvest Improvement and Processing																			
Pomegranate (harvest: Aug—Oct)	Assiut	El Egal El Bahry	1-1 Assessment of present situation	Done. Target processing products have been identified.															
Winter Tomato (harvest: Nov—Apr)	Assiut	Rifa	1-2 Establishment of farmer group	Done. Basically the cooperative is to manage.															
Onion and Vegetables	Minia	Delga	1-3 Selection of place to install unit	Done.															
			1-4 Furnishing the unit and equipment procurement	Done. 3-phase electricity has not been connected in Delga village.															
			1-5 Preparing operation methods and rules	Done. the cooperative is to manage.															
			1-6 Training to farmer group	Most of the trainings have been done.															
			1-7 Operation	Trial operation started and preparering for full operation.											Trial operation will be done initially, and full operation will start from harvest season.				
			1-8 Monitoring and evaluation	On-going															
Basil (harvest: Jun—Nov)	Assiut	Arab El Kadadeh	1-1 Establish farmer group	The cooperative is to manage.															
			1-2 Identification of the site to lay drying yard	Done., but the permisson to use the land delayed until 5th July.															
			1-3Construction of drying yard	Expected to complete in late September															
			1-4 Preparing operation rules	In progress. Basically the cooperative is to manage.															
			1-5 Trial by farmer group	Partly tried (only using *kafas*) in July. All the operation starts after the drying yard completes.															
			1-6 Operation of the facility	It will be from October.															
			1-7Monitroing and evaluation																

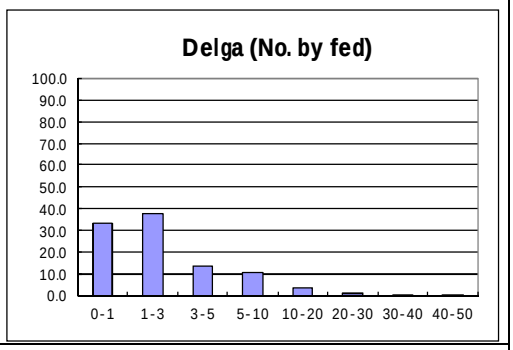
Implementation Schedule and Progress of Each Pilot Project (As of Mid April 2012)

Project	Pilot Area		Activities	Progress	Schedule
	Governorate	Village			2011: 3 4 5 6 7 8 9 10 11 12 / 2012: 1 2 3 4 5
3. Production Improvement			1-1 Selection of farmers and farmland for FFS	Done in March	
			1-2 Training for field extension workers (FEW)	Done in April.	
			1-3 Procurement and supply of necessary materials	Done	
Quality Improvement (Garlic)	Minia	Salakos	1-4 Preparation of demonstration farm	Done	Planting; Harvest
			1-5 Training for farmers by FEW (cultivation, bio-fertilizer)	Done	
			1-6 Monitoring and evaluation		
Quality Improvement (Onion)	Minia	Delga	1-4 Preparation of demonstration farm	Done	Sowing; Transplanting; Harvest
			1-5 Training for farmers by FEW (cultivation, bio-fertilizer)	Done	
			1-6 Monitoring and evaluation		
Off-season (Tomato + Maize Intercrop)	Assiut	El Ansar	1-4 Preparation of demonstration farm	Done.	Tomato Plant; Maize sow; Harvest (tomato)
			1-5 Training for farmers by FEW (cultivation, bio-fertilizer)	Done.	
			1-6 Monitoring and evaluation	On-going	
4. Promoting Horticulture Crop and Marketing					
Maize and Vegetables (Intercrop)	Minia	Abad Sharona	1-1 Selection of farmers and farmland for FFS	Done.	Tomato plant; Maize sow; Harvest (tomato)
		Abo Haseeba	1-2 Training for field extension workers (FEW)	Done.	(Vegetables will be selected by site. Here shows in case of tomato)
		El Balagele	1-3 Procurement and supply of necessary materials	Done.	
	Assiut	Manshyet El Maasra	1-4 Preparation of demonstration farm	Done.	
		El Zawya	1-5 Training for farmers by FEW (cultivation, bio-fertilizer)	Done.	
			1-6 Monitoring and evaluation	On-going	
Bio-fertilizer demonstration	Minia	Abo Hasseba, Borgaya, Village No.8, Abo Kurkas, Balagele	1-1 Selection of farmers and farmland for demo	Done.	
			1-2 Training for field extension workers	Done.	
			1-3 Procurement and supply of necessary materials	Done.	
	Assiut	El Ansar(New Land & Old Land), Beni Adi, El Masaraa, El Hamam, Zawya, Abnoub	1-4 Preparation of demo-farm	Done.	
			1-5 Training for farmers on demo-farm	Done.	
			1-6 Monitoring and evaluation	On-going	
					mid evaluation; PR/2; Final evaluation; PR/3
		Month			3 4 5 6 7 8 9 10 11 12 1 2 3 4 5

2. Summary of the Pilot Project Implementation

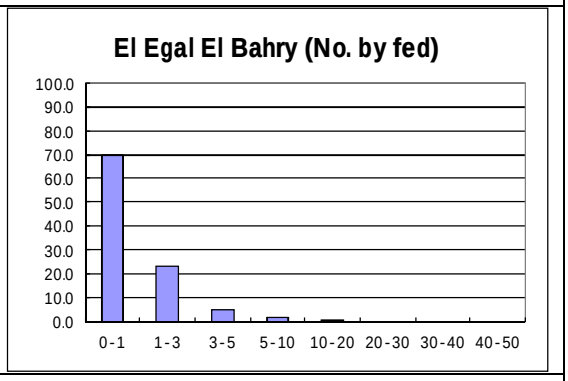
Project	**Supporting Agricultural Marketing (Market Price Information Collection and Dissemination)**
Area	Minia and Assiut Governorate (This Prject is based in Governorate Agriculture Directorate in cooperation with District Agriculture Offices and Village Cooperatives in the Pilot Sites.)
Stakeholder	Governorate Agriculture Directorate, Village Cooperatives, District Agriculture Offices
Purpose/ Verification	Improving price bargaining power of small scale farmers, market information and lists of traders are provided through mobile SMS and installing bulletin board in Agriculture Cooperatives. Also, administration capacity for agricultural marketing at the Governorate, Districts, and Cooperatives levels are reinforced.
Activity	Designing data collection method, Procuring equipment, Disseminating information, Monitoring and Evaluation
Inputs	Computers, Mobile phone, Bulletin boards
Results of the Project	The Project was effective for the farmers in a way that they can know the going rate of the market price prior to choose which market to sell or negotiate with the traders. There is necessary to improve cost performance.
Lessons Learned / Suggestion	It would be considered to send information only to cooperative to display there or collaborate with the mobile company to make it a part of their business strategy. For this consultation with IT specialists and public-private partnership as the Ministry would be require

Project	**Supporting Agricultural Marketing (Market Price Information Collection and Dissemination)**
Area	Minia and Assiut Governorate (This Project is based in Governorate Agriculture Directorate in cooperation with District Agriculture Offices and Village Cooperatives in the Pilot Sites.)
Stakeholder	Governorate Agriculture Directorate, Village Cooperatives, District Agriculture Offices, Specialized Cooperative
Purpose/ Verification	Supporting agriculture cooperatives to try to collect produce and processed products from farmers and sell to the market to revitalize cooperatives and expand market channel of the farmers. Means and structure of administrative support for agriculture marketing improvement are verified.
Activity	Selection of cooperative, Agreement between cooperative and farmers for conditions to sell produce, Collection of produce and shipping by cooperative
Inputs	Boxes for collecting and shipping Agriculture produce, Scale
Results of the Project	The Project indicates an example of activity, namely not focusing on the agriculture cooperative only but establishing a committee by the stakeholders to support the farmers for marketing.
Lessons Learned / Suggestion	Establishing committee seems to play a role of platform to promote local coordination, and it is possible to get various local people involved in rural development.

<table>
<tr><td>Project</td><td colspan="5">Processing and Marketing of Excessive and Low Grade Produce</td></tr>
<tr><td>Area</td><td colspan="5">Delga Village, Dayr District, Minia Governorate</td></tr>
<tr><td>Outline of the Site</td><td colspan="5">Population：120,000 (24,000 households)
Farmland：10,000fed（7,000 fed in old land, 3,000 fed in new land）
Major Crops：Wheat, Maize, Onion, Medical and Aromatic Plants, Vegetables
Ave farmland/ households：1.25fed
 
</td></tr>
<tr><td>Stakeholder</td><td colspan="5">Governorate Agriculture Directorate, Village Cooperatives (Farmers' Group), District Agriculture Offices, Women's Center</td></tr>
<tr><td>Purpose/ Verification</td><td colspan="5">Processing machines are introduced to agriculture cooperatives, and they manage these machines. It is expected that small scale farmers use these machines to process unmarketable production and sell processed products to the local market.

The role of governmental administration for managing processing machines, organizing farmers, and supporting small scale processing business will be verified.</td></tr>
<tr><td>Activity</td><td colspan="5">Establishment of farmer group, Selection of place to install unit, Furnishing the unit and equipment procurement, Preparing operation methods and rules, Training to farmer group, Operation, Monitoring and Evaluation</td></tr>
<tr><td>Inputs</td><td colspan="5">Processing machines, place for machine installation, plastic bags, training materials</td></tr>
<tr><td>Results of the Project</td><td colspan="5">- Processing facilities are operated actively by village cooperatives. This is because they have educated staff, experiences cooperative management; thus, village cooperatives are suitable for processing facilities.
- It is important to diversify the products by seasons to increase the operation ratio of the processing facilities.</td></tr>
<tr><td rowspan="4">Evaluation Work Shop</td><td>Stakeholder</td><td>Effectiveness</td><td>Relevance</td><td>Sustainability</td><td>Remarks</td></tr>
<tr><td>Farmers</td><td>So So</td><td>So So</td><td>Yes</td><td rowspan="3">Cooperatives evaluated "Not Good". This is because that they are the one who embraced the real difficulty of establishing business.</td></tr>
<tr><td>Cooperatives/ Extension</td><td>Not Good</td><td>—</td><td>—</td></tr>
<tr><td>Governorate</td><td>Very Good</td><td>Very Good</td><td>No</td></tr>
<tr><td>Lessons Learned / Suggestion</td><td colspan="5">- It should be registered for unit operation (trade register, tax card), safety hygiene unit (health license, environmental document, fire safety license), labor insurance, etc.
- Village cooperative should create the wider and various marketing routes, and the district and governorate offices should support it such as instructing the marketing methods and holding agricultural faresIt
- It is expected to set-up the M&E organization consisting of C/P, as a main member, who has already had experiences during the pilot project.</td></tr>
</table>

<table>
<tr><td>Project</td><td colspan="5">Processing and Marketing of Excessive and Low Grade Produce</td></tr>
<tr><td>Area</td><td colspan="5">Rifa Village, Assiut District, Assiut Governorate</td></tr>
<tr><td>Outline of the Site</td><td colspan="5">Population：15,355 (3,000 households)
Farmland：4,602fed（4,587 fed in old land, 15 fed in new land）
Major Crops：Wheat, Maize, Sorghum, Berseem</td></tr>
<tr><td>Stakeholder</td><td colspan="5">Governorate Agriculture Directorate, Village Cooperatives (Farmers' Group), District Agriculture Offices</td></tr>
<tr><td>Purpose/ Verification</td><td colspan="5">- Processing machines are introduced to agriculture cooperatives, and they manage these machines. It is expected that small scale farmers use these machines to process unmarketable production and sell processed products to the local market.
- The role of governmental administration for managing processing machines, organizing farmers, and supporting small scale processing business will be verified.</td></tr>
<tr><td>Activity</td><td colspan="5">Establishment of farmer group, Selection of place to install unit, Furnishing the unit and equipment procurement, Preparing operation methods and rules, Training to farmer group, Operation, Monitoring and Evaluation</td></tr>
<tr><td>Inputs</td><td colspan="5">Processing machines, place for machine installation, plastic bags, training materials</td></tr>
<tr><td>Results of the Project</td><td colspan="5">- Not only tomato paste, but also fig jam was produced to enhance operation ratio of processing facility. They also produce frozen okra and carrot jam to diversify their products. It is expected to expand production amount of these varieties in the future.
- It should be taken enough time for assessing low materials' variety, volume, price, acquired in and around village, harvesting period, etc. in cooperation with the village, district and governorate cooperative and farmers, specialist and related agencies.</td></tr>
<tr><td rowspan="4">Evaluation Work Shop</td><td>Stakeholder</td><td>Effectiveness</td><td>Relevance</td><td>Sustainability</td><td>Remarks</td></tr>
<tr><td>Farmers</td><td>—</td><td>—</td><td>—</td><td rowspan="3">Evaluation workshop is not conducted.</td></tr>
<tr><td>DisExtension</td><td>—</td><td>—</td><td>—</td></tr>
<tr><td>Governorate</td><td>—</td><td>—</td><td>—</td></tr>
<tr><td>Lessons Learned / Suggestion</td><td colspan="5">- Village cooperative should create the wider and various marketing routes, and the district and governorate offices should support it such as instructing the marketing methods and holding agricultural fares.
- It is expected to set-up the M&E organization consisting of C/P, as a main member, who has already had experiences during the pilot project.</td></tr>
</table>

<table>
<tr><td>Project</td><td colspan="5">Processing and Marketing of Excessive and Low Grade Produce</td></tr>
<tr><td>Area</td><td colspan="5">El Egal El Bahry Village, El Badary District, Assiut Governorate</td></tr>
<tr><td>Outline of the Site</td><td colspan="5">Population：23,733 (4,000 households)
Farmland：1,810fed（1,616fed in old land, 194 fed in new land）
Major Crops：Pomegranate, Wheat, Maize, Sorghum, Berseem
Ave farmland：0.54 fed/ household
 
</td></tr>
<tr><td>Stakeholder</td><td colspan="5">Governorate Agriculture Directorate, Village Cooperatives (Farmers' Group), District Agriculture Offices</td></tr>
<tr><td>Purpose/ Verification</td><td colspan="5">Processing machines are introduced to agriculture cooperatives, and they manage these machines. It is expected that small scale farmers use these machines to process unmarketable production and sell processed products to the local market.

The role of governmental administration for managing processing machines, organizing farmers, and supporting small scale processing business will be verified.</td></tr>
<tr><td>Activity</td><td colspan="5">Establishment of farmer group, Selection of place to install unit, Furnishing the unit and equipment procurement, Preparing operation methods and rules, Training to farmer group, Operation, Monitoring and Evaluation</td></tr>
<tr><td>Inputs</td><td colspan="5">Processing machines, place for machine installation, plastic bags, training materials</td></tr>
<tr><td>Results of the Project</td><td colspan="5">- It is necessary to diversify processing items according to the availability of low materials.
- It should be taken enough time for assessing low materials' variety, volume, price, acquired in and around village, harvesting period, etc. in cooperation with the village, district and governorate cooperative and farmers, specialist and related agencies.</td></tr>
<tr><td rowspan="4">Evaluation Work Shop</td><td>Stakeholder</td><td>Effectiveness</td><td>Relevance</td><td>Sustainability</td><td>Remarks</td></tr>
<tr><td>Farmers</td><td>Good</td><td>Good</td><td>Yes</td><td rowspan="3">Cooperatives evaluated "Not Good". This is because that they are the one who embraced the real difficulty of establishing business.</td></tr>
<tr><td>Cooperatives/ Extension</td><td>Good</td><td>Good/Not Good</td><td>Yes</td></tr>
<tr><td>Governorate</td><td>Good</td><td>Good</td><td>Yes</td></tr>
<tr><td>Lessons Learned / Suggestion</td><td colspan="5">- Village cooperative should create the wider and various marketing routes, and the district and governorate offices should support it such as instructing the marketing methods and holding agricultural fares.
- It is expected to set-up the M&E organization consisting of C/P, as a main member, who has already had experiences during the pilot project.</td></tr>
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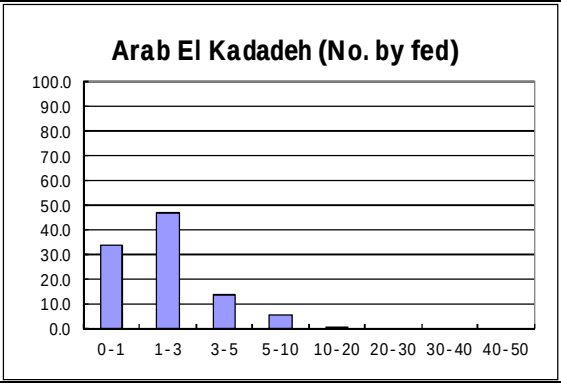
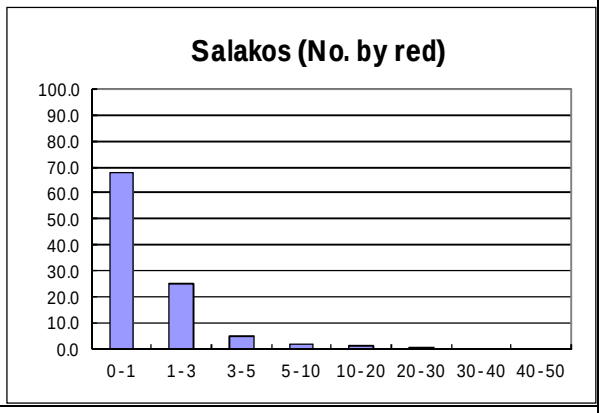
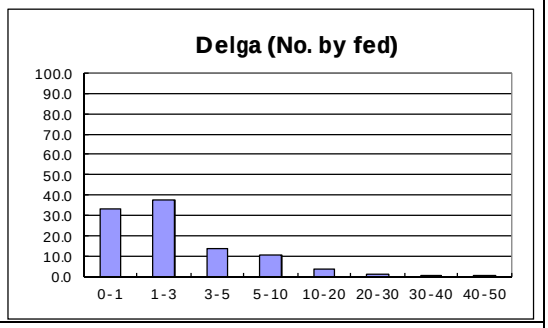
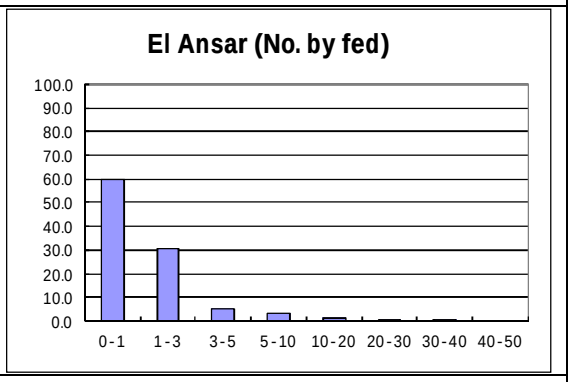
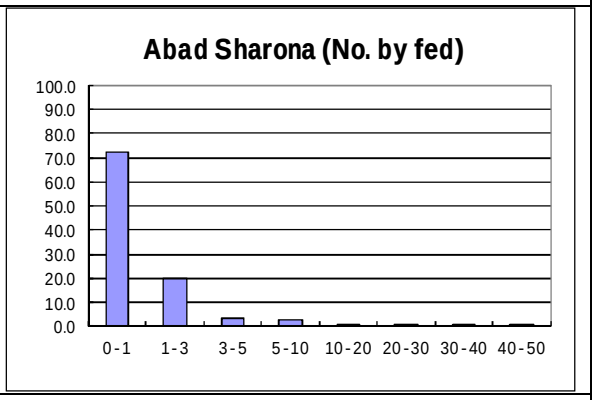
<table>
<tr><td>Project</td><td colspan="5">Reducing Post-harvest Loss and Quality Improvement</td></tr>
<tr><td>Area</td><td colspan="5">Arab el Kadadeh Village, Abnoub District, Assiut Governorate</td></tr>
<tr><td>Outline of the Site</td><td colspan="5">Population：14,433 (2,500 households)
Farmland：845 fed（570 fed in old land, 275 fed in new land）
Major Crops：Maize, Sorghum, Berseem, Basil
Ave farmland：0.84 fed
No. of Basil farmer：70 households (ave: 2.2 fed)
 
</td></tr>
<tr><td>Stakeholder</td><td colspan="5">Governorate Agriculture Directorate, Village Cooperatives, District Agriculture Offices</td></tr>
<tr><td>Purpose/ Verification</td><td colspan="5">The Project tries to increase profitability and quality of basil by improving drying process. Also, equipment to remove leaves from stem will be introduced to operate by farmers so that they can sell basil at value added price.

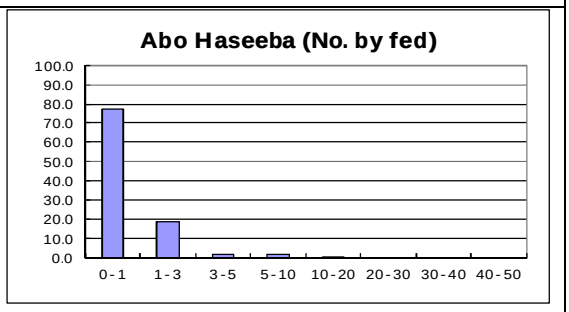
Concrete will be laid on the public dry yard (desert), and this dry yard will be a common drying place for basil farmers. Farmers will be able to produce same quality dried basil through collective drying process, and sell it to first processors collectively.</td></tr>
<tr><td>Activity</td><td colspan="5">Establishing farmer group, Identification of the site to lay drying yard, Construction of drying yard, Preparing operation rules, Trial by farmer group, Operation of the facility, Monitoring and Evaluation</td></tr>
<tr><td>Inputs</td><td colspan="5">Concrete dry yard, machines (kafas, stand fork, separator)</td></tr>
<tr><td>Results of the Project</td><td colspan="5">- As for small scale farmers, the facility by the Project created new marketing channel for them to get benefit and for the cooperative, they could compartmentalize the market from the local traders rather than competing with them.
- The cooperative considered not only the price but also the credibility of the traders and eventually they decided to sell the product to the exporter in Alexandria</td></tr>
<tr><td rowspan="4">Evaluation Work Shop</td><td>Stakeholder</td><td>Effectiveness</td><td>Relevance</td><td>Sustainability</td><td>Remarks</td></tr>
<tr><td>Farmers</td><td>Very Good</td><td>Good</td><td>Yes</td><td rowspan="3">The high rating on the improving basil drying could have been attributed by the fact that the there has already been established value-chain of the dried basil and there was a market to accept the high grade of the product.</td></tr>
<tr><td>Cooperatives/ Extension</td><td>Very Good</td><td>Good</td><td>Yes</td></tr>
<tr><td>Governorate</td><td>Excellent</td><td>Good</td><td>Yes</td></tr>
<tr><td>Lessons Learned / Suggestion</td><td colspan="5">- The village cooperative will continues to operate the unit. If it is necessary to reduce the O&M cost in future, farmer group might be able to operate. In such case, roles of the village cooperative are of management and support for O&M and product selling.
- It is expected in future, to firmly contact to the exporter as well as create various marketing routes.</td></tr>
</table>

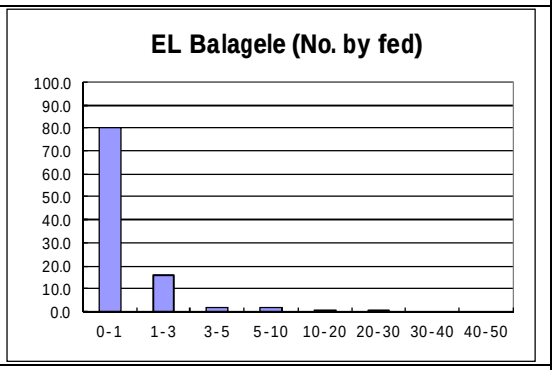
<table>
<tr><td>Project</td><td colspan="5">Improving Profitability of Specialty Crops through Production Improvement
(Garlic)</td></tr>
<tr><td>Area</td><td colspan="5">Salakos Village, El Edwa District, Minia Governorate</td></tr>
<tr><td>Outline of the Site</td><td colspan="5">Population：20,000 (6,000 households)
Farmland：1,542 fed（all in old land）
Major Crop：Wheat, Maize, Garlic, Soybean, Berseem
Ave farmland：0.3 fed/ household
 
</td></tr>
<tr><td>Stakeholder</td><td colspan="5">Governorate Agriculture Directorate, Village Cooperatives, District Agriculture Offices</td></tr>
<tr><td>Purpose/ Verification</td><td colspan="5">- New variety (Sids-40) which can produce large and high quality garlic will be introduced. Also, appropriate technical training will be conducted such as using organic fertilizers and fertilization methods, and the result of quality improvement activities will be shared with other farmers.
- The Project is to verify the new technical adaptation process implemented by research institutions extension services, and farmers' participation with examining effectiveness of the project.</td></tr>
<tr><td>Activity</td><td colspan="5">Selection of farmers and farmland for demo, Training for field extension workers, Procurement and supply of necessary materials, Preparation of demo-farm, Training for farmers on demo-farm, Monitoring and evaluation</td></tr>
<tr><td>Inputs</td><td colspan="5">Technical training, support for demo-farm establishment (provide new variety and materials), materials for demo-farm (measuring devices, etc.)</td></tr>
<tr><td>Results of the Project</td><td colspan="5">- The demo farm operated by the head of village cooperative produced 12 ton/feddan of Sids-40, which was higher than common Chinese garlic at 8 - 10 ton/feddan. Also, the bulb size of Sids-40 was larger than the common ones.
- As the price of garlic is extremely low in this year, the economic evaluation of this demonstration might be very difficult.</td></tr>
<tr><td rowspan="4">Evaluation Work Shop</td><td>Stakeholder</td><td>Effectiveness</td><td>Relevance</td><td>Sustainability</td><td>Remarks</td></tr>
<tr><td>Farmers</td><td>Good</td><td>Good</td><td>Yes</td><td rowspan="3">Advantages of new variety reflected to the good result of evaluation.</td></tr>
<tr><td>Cooperatives/ Extension</td><td>Good/ Excellent</td><td>Good</td><td>Yes</td></tr>
<tr><td>Governorate</td><td>Excellent</td><td>Good</td><td>Yes</td></tr>
<tr><td>Lessons Learned / Suggestion</td><td colspan="5">- The higher quality garlic might have higher priority in the market. Some measures for marketing support shall be considered for stabilization of the prices.</td></tr>
</table>

<table>
<tr><td>Project</td><td colspan="7">Improving Profitability of Specialty Crops through Production Improvement (Onion)
Promoting Organic Materials Utilization (Onion)</td></tr>
<tr><td>Area</td><td colspan="7">Delga Village, Dayr Muas District, Minia Governorate</td></tr>
<tr><td>Outline of the Site</td><td colspan="7">Population：120,000 (24,000 households)
Farmland：10,000fed（7,000 fed in old land, 3,000 fed in new land）
Major Crop：Wheat, Maize, Onion, Medical and Aromatic Plants, Vegetables
Ave farmland：1.25fed/ household
  </td></tr>
<tr><td>Stakeholder</td><td colspan="7">Governorate Agriculture Directorate, Village Cooperatives, District Agriculture Offices</td></tr>
<tr><td>Purpose/ Verification</td><td colspan="7">- New onion variety will be introduced. Also, appropriate technical training will be conducted such as using organic fertilizers and fertilization methods, and the result of quality improvement activities will be shared with other farmers.
- The Project is to verify the new technical adaptation process implemented by research institutions extension services, and farmers' participation with examining effectiveness of the project.
- Applying organic materials are to reduce the production cost by reducing the chemicals instead using organic materials and also to upgrade the quality of produce with fewer chemicals aiming to sell them at higher price.</td></tr>
<tr><td>Activity</td><td colspan="7">Selection of farmers and farmland for demo, Training for field extension workers, Procurement and supply of necessary materials, Preparation of demo-farm, Training for farmers on demo-farm, Monitoring and evaluation</td></tr>
<tr><td>Inputs</td><td colspan="7">Technical training, support for demo-farm establishment (provide new variety and materials), materials for demo-farm (measuring devices, etc.)</td></tr>
<tr><td>Results of the Project</td><td colspan="7">- The results of production and marketing shall be obtained after the harvest in May 2012. The advantage of the certified seeds is higher price of products due to unified quality and size, and higher yield due to the unified timing of harvest.
- As the price of onion is extremely low in this year, the economic evaluation of this demonstration might be very difficult.
- It is also difficult to evaluate economic aspect of introducing organic materials. At least, farmers came to pay more attention to green products.</td></tr>
<tr><td rowspan="5">Evaluation Work Shop</td><td></td><td colspan="3">Production Improvement</td><td colspan="3">Promoting Organic Materials</td></tr>
<tr><td>Stakeholder</td><td>Effectiveness</td><td>Relevance</td><td>Sustainability</td><td>Effectiveness</td><td>Relevance</td><td>Sustainability</td></tr>
<tr><td>Farmers</td><td>Not yet</td><td>Good</td><td>Yes</td><td>Good</td><td>Good</td><td>Yes</td></tr>
<tr><td>Cooperatives/ Extension</td><td>Not yet</td><td>—</td><td>—</td><td>Very Good</td><td>Good</td><td>Yes</td></tr>
<tr><td>Governorate</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td></tr>
<tr><td>Remarks</td><td colspan="3">Effectiveness is “Not yet” because harvest has not started yet.</td><td colspan="3"></td></tr>
<tr><td>Lessons Learned / Suggestion</td><td colspan="7">- Production cost and benefits are examined carefully because introducing certified seeds will lead high production cost.
- Demands of organic agro-products have increased only for high-end consumers in Cairo, while conscious on food safety has not been penetrated to local urban inhabitants. Thus, it is important to create demands of this kind of products.</td></tr>
</table>

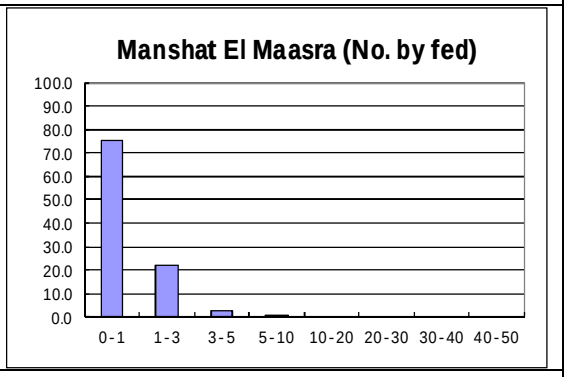
<table>
<tr><td>Project</td><td colspan="6">Increasing Profitability through Adjustment for Harvest Season (Intercrop: Tomato & Maize)
Promoting Organic Materials Utilization (Onion)</td></tr>
<tr><td>Area</td><td colspan="6">El Ansar Village, El Kosya District, Assiut Governorate</td></tr>
<tr><td>Outline of the Site</td><td colspan="6">Population：14,000 (households)
Farmland：3,560 fed（2,130 fed in old land, 1,430 fed in new land）
Major Crop：Wheat, Maize, Berseem, Tomato
Ave farmland：1.42fed/ household
 
</td></tr>
<tr><td>Stakeholder</td><td colspan="6">Governorate Agriculture Directorate, Village Cooperatives, District Agriculture Offices</td></tr>
<tr><td>Purpose/ Verification</td><td colspan="6">- Introducing intercropping maize and tomato make tomato harvest period longer so farmers are able to ship more tomato at high price season. This is because maize becomes a shade for tomato and prevents wilt.
- The Project is to verify the adaptation process of harvest adjustment implemented by research institutions, extension services, and farmers' participation with examining the effectiveness of the project.
- Applying organic materials are to reduce the production cost by reducing the chemicals instead using organic materials and also to upgrade the quality of produce with fewer chemicals aiming to sell them at higher price.</td></tr>
<tr><td>Activity</td><td colspan="6">Selection of farmers and farmland for demo, Training for field extension workers, Procurement and supply of necessary materials, Preparation of demo-farm, Training for farmers on demo-farm, Monitoring and evaluation</td></tr>
<tr><td>Inputs</td><td colspan="6">Technical training, support for demo-farm establishment (provide new variety and materials), materials for demo-farm (measuring devices, etc.), organic materials</td></tr>
<tr><td>Results of the Project</td><td colspan="6">- A farm had produced tomatoes until February. During this harvest period, the price of tomato was relatively high in mid to late September and early November to early December. The farmers who could harvest tomato in those times got some high return.
- Quality of tomato was improved by introducing organic materials. Also, cash flow of farmers was improved by selling vegetables continually.</td></tr>
<tr><td rowspan="6">Evaluation Work Shop</td><td></td><td colspan="3">Intercropping</td><td colspan="3">Promoting Organic Materials</td></tr>
<tr><td>Stakeholder</td><td>Effectiveness</td><td>Relevance</td><td>Sustainability</td><td>Effectiveness</td><td>Relevance</td><td>Sustainability</td></tr>
<tr><td>Farmers</td><td>Good</td><td>—</td><td>—</td><td>Excellent</td><td>Good</td><td>Yes</td></tr>
<tr><td>Cooperatives/ Extension</td><td>Very Good</td><td>—</td><td>—</td><td>Excellent</td><td>Good</td><td>Yes</td></tr>
<tr><td>Governorate</td><td>—</td><td>—</td><td>—</td><td>Excellent</td><td>Good</td><td>Yes</td></tr>
<tr><td>Remarks</td><td colspan="3">See the detailed results of "relevance" and "sustainability".</td><td colspan="3">Main reason of this result is to improve farmers' cash flow by producing different variety of vegetables.</td></tr>
<tr><td>Lessons Learned / Suggestion</td><td colspan="6">- Existing relationship between farmers and traders should be taken into consideration for introducing harvest adjustment because wholesale price is not always interrelated to shipping price.
- Demands of organic agro-products have increased only for high-end consumers in Cairo, while conscious on food safety has not been penetrated to local urban inhabitants. Thus, it is important to create demands of this kind of products.</td></tr>
</table>

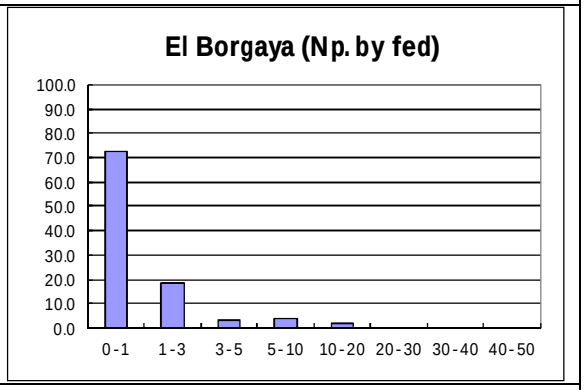
<table>
<tr><td>Project</td><td colspan="5">Promotion of Horticulture (Intercrop: Tomato & Maize)</td></tr>
<tr><td>Area</td><td colspan="5">Abad Sharona Village, Maghagha District, Minia Governorate</td></tr>
<tr><td>Outline of the Site</td><td colspan="5">Population：13,000
Farmland：1,089 fed（all in old land）
Major Crop：Wheat, Maize, Majoram, Berseem
  </td></tr>
<tr><td>Stakeholder</td><td colspan="5">Governorate Agriculture Directorate, Village Cooperatives, District Agriculture Offices</td></tr>
<tr><td>Purpose/ Verification</td><td colspan="5">Demonstration farm will be established to provide technical training for framers (organic fertilizers, cultivation techniques). Intercropping with maize and tomato will be introduced to mitigate cultivation risks of small scale farmers.</td></tr>
<tr><td>Activity</td><td colspan="5">Selection of farmers and farmland for demo, Training for field extension workers, Procurement and supply of necessary materials, Preparation of demo-farm, Training for farmers on demo-farm, Monitoring and evaluation</td></tr>
<tr><td>Inputs</td><td colspan="5">Technical training, support for demo-farm establishment (provide new variety and materials), materials for demo-farm (measuring devices, etc.)</td></tr>
<tr><td>Results of the Project</td><td colspan="5">- Although some of the demo farms did not achieve target tomato production amount, some farmers without any experience of tomato cultivation achieved target production amount.
- As some surrounding tomato producers inquired the intercropping techniques as well as bio-control techniques, the demonstration was effectively worked in these villages.</td></tr>
<tr><td rowspan="4">Evaluation Work Shop</td><td>Stakeholder</td><td>Effectiveness</td><td>Relevance</td><td>Sustainability</td><td>Remarks</td></tr>
<tr><td>Farmers</td><td>Good</td><td>—</td><td>—</td><td rowspan="3">See the detailed results of “relevance” and “sustainability”.</td></tr>
<tr><td>Extension</td><td>Not Good</td><td>—</td><td>—</td></tr>
<tr><td>Governorate</td><td>—</td><td>—</td><td>—</td></tr>
<tr><td>Lessons Learned / Suggestion</td><td colspan="5">- The continuous demonstration could promote horticultural crop production and intercropping techniques through farmer-to-farmer extension. The intercropping systems other than tomato and maize shall be disseminated in trainings to extension officers and demonstration to farmers in future.
- In case of long harvest of tomato until December or more, the wheat cropping has to be laid aside and change their cropping pattern drastically; therefore, introducing intercropping should concerned about yearly cropping pattern.</td></tr>
</table>

<table>
<tr><td>Project</td><td colspan="7">Promotion of Horticulture (Intercrop: Tomato & Maize)
Promoting Organic Materials Utilization (Potato & Pot cultivation system)</td></tr>
<tr><td>Area</td><td colspan="7">Abo Haseeba Village, Matai District, Minia Governorate</td></tr>
<tr><td>Outline of the Site</td><td colspan="7">Population：4,968 (542 households)
Farmland：470 fed（all in old land）
Major Crop：Wheat, Maize, Soybean
 
</td></tr>
<tr><td>Stakeholder</td><td colspan="7">Governorate Agriculture Directorate, Village Cooperatives, District Agriculture Offices</td></tr>
<tr><td>Purpose/ Verification</td><td colspan="7">- Demonstration farm will be established to provide technical training for farmers (organic fertilizers, cultivation techniques). Intercropping with maize and tomato will be introduced to mitigate cultivation risks of small scale farmers.
- Applying organic materials are to reduce the production cost by reducing the chemicals instead using organic materials and also to upgrade the quality of produce with fewer chemicals aiming to sell them at higher price.</td></tr>
<tr><td>Activity</td><td colspan="7">Selection of farmers and farmland for demo, Training for field extension workers, Procurement and supply of necessary materials, Preparation of demo-farm, Training for farmers on demo-farm, Monitoring and evaluation</td></tr>
<tr><td>Inputs</td><td colspan="7">Technical training, support for demo-farm establishment (provide new variety and materials), materials for demo-farm (measuring devices, etc.), organic materials, materials for pot system</td></tr>
<tr><td>Results of the Project</td><td colspan="7">- Although some of the demo farms did not achieve target tomato production amount, some farmers without any experience of tomato cultivation achieved target production amount.
- As some surrounding tomato producers inquired the intercropping techniques as well as bio-control techniques, the demonstration was effectively worked in these villages.
- Chemical inputs reduced; besides, potato grew well and their quality was enhanced.
- Vegetable production of pot cultivation system was not enough to sell, but it contributed to saving food expenses.</td></tr>
<tr><td rowspan="5">Evaluation Work Shop</td><td></td><td colspan="3">Intercropping</td><td colspan="3">Promoting Organic Materials</td></tr>
<tr><td>Stakeholder</td><td>Effectiveness</td><td>Relevance</td><td>Sustainability</td><td>Effectiveness</td><td>Relevance</td><td>Sustainability</td></tr>
<tr><td>Farmers</td><td>Very Good</td><td>—</td><td>—</td><td>Good</td><td>Good</td><td>Yes</td></tr>
<tr><td>Cooperatives/ Extension</td><td>Good</td><td>—</td><td>—</td><td>Excellent</td><td>Good</td><td>—</td></tr>
<tr><td>Governorate</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td></tr>
<tr><td>Remarks</td><td colspan="3">See the detailed results of “relevance” and “sustainability”.</td><td colspan="3">The reason for this result is that farmers could reduce chemicals by applying organic materials</td></tr>
<tr><td>Lessons Learned / Suggestion</td><td colspan="7">- The continuous demonstration could promote horticultural crop production and intercropping techniques through farmer-to-farmer extension. The intercropping systems other than tomato and maize shall be disseminated in trainings to extension officers and demonstration to farmers in future.
- In case of long harvest of tomato until December or more, the wheat cropping has to be laid aside and change their cropping pattern drastically; therefore, introducing intercropping should concerned about yearly cropping pattern.
- Demands of organic agro-products have increased only for high-end consumers in Cairo, while conscious on food safety has not been penetrated to local urban inhabitants. Thus, it is important to create demands of this kind of products.</td></tr>
</table>

<table>
<tr><td>Project</td><td colspan="7">Promotion of Horticulture (Intercrop: Tomato & Maize)
Promoting Organic Materials Utilization (Wheat)</td></tr>
<tr><td>Area</td><td colspan="7">Baragel Village, Mallawe District, Minia Governorate</td></tr>
<tr><td>Outline of the Site</td><td colspan="7">Population：5,952 (1,335 households)
Farm Land：588 fed（545 fed in old land, 43 fed in new land）
Major Crop：Sugarcane, Maize, Berseem, Wheat, Sugar beat
Ave farmland：0.73 fed/ household
  </td></tr>
<tr><td>Stakeholder</td><td colspan="7">Governorate Agriculture Directorate, Village Cooperatives, District Agriculture Offices</td></tr>
<tr><td>Purpose/ Verification</td><td colspan="7">- Demonstration farm will be established to provide technical training for farmers (organic fertilizers, cultivation techniques). Intercropping wih maize and tomato will be introduced to mitigate cultivation risks of small scale farmers.
- Applying organic materials are to reduce the production cost by reducing the chemicals instead using organic materials and also to upgrade the quality of produce with fewer chemicals aiming to sell them at higher price.</td></tr>
<tr><td>Activity</td><td colspan="7">Selection of farmers and farmland for demo, Training for field extension workers, Procurement and supply of necessary materials, Preparation of demo-farm, Training for farmers on demo-farm, Monitoring and evaluation</td></tr>
<tr><td>Inputs</td><td colspan="7">Technical training, support for demo-farm establishment (provide new variety and materials), materials for demo-farm (measuring devices, etc.), organic materials</td></tr>
<tr><td>Results of the Project</td><td colspan="7">- Although some of the demo farms did not achieve target tomato production amount, some farmers without any experience of tomato cultivation achieved target production amount.
- As some surrounding tomato producers inquired the intercropping techniques as well as bio-control techniques, the demonstration was effectively worked in these villages.
- Production cost was reduced by applying organic materials, and it also contributed to increasing production.</td></tr>
<tr><td rowspan="6">Evaluation Work Shop</td><td></td><td colspan="3">Intercropping</td><td colspan="3">Promoting Organic Materials</td></tr>
<tr><td>Stakeholder</td><td>Effectiveness</td><td>Relevance</td><td>Sustainability</td><td>Effectiveness</td><td>Relevance</td><td>Sustainability</td></tr>
<tr><td>Farmers</td><td>Good</td><td>—</td><td>—</td><td>Good</td><td>Good</td><td>Yes</td></tr>
<tr><td>Cooperatives/ Extension</td><td>Very Good</td><td>—</td><td>—</td><td>Good</td><td>Good</td><td>Yes</td></tr>
<tr><td>Governorate</td><td>—</td><td>—</td><td>—</td><td>Good</td><td>Good</td><td>—</td></tr>
<tr><td>Remarks</td><td colspan="3">See the detailed results of “relevance” and “sustainability”.</td><td colspan="3">The reason for this result is that farmers could reduce chemicals by applying organic materials</td></tr>
<tr><td>Lessons Learned / Suggestion</td><td colspan="7">- The continuous demonstration could promote horticultural crop production and intercropping techniques through farmer-to-farmer extension. The intercropping systems other than tomato and maize shall be disseminated in trainings to extension officers and demonstration to farmers in future.
- In case of long harvest of tomato until December or more, the wheat cropping has to be laid aside and change their cropping pattern drastically; therefore, introducing intercropping should concerned about yearly cropping pattern.
- Demands of organic agro-products have increased only for high-end consumers in Cairo, while conscious on food safety has not been penetrated to local urban inhabitants. Thus, it is important to create demands of this kind of products.</td></tr>
</table>

<table>
<tr><td>Project</td><td colspan="7">Promotion of Horticulture (Intercrop: Tomato & Maize)
Promoting Organic Materials Utilization (Garlic)</td></tr>
<tr><td>Area</td><td colspan="7">El Zawya Village, Assiut District, Assiut Governorate</td></tr>
<tr><td>Stakeholder</td><td colspan="7">Governorate Agriculture Directorate, Village Cooperatives, District Agriculture Offices</td></tr>
<tr><td>Purpose/ Verification</td><td colspan="7">- Demonstration farm will be established to provide technical training for farmers (organic fertilizers, cultivation techniques). Intercropping with maize and tomato will be introduced to mitigate cultivation risks of small scale farmers.
- Applying organic materials are to reduce the production cost by reducing the chemicals instead using organic materials and also to upgrade the quality of produce with fewer chemicals aiming to sell them at higher price.</td></tr>
<tr><td>Activity</td><td colspan="7">Selection of farmers and farmland for demo, Training for field extension workers, Procurement and supply of necessary materials, Preparation of demo-farm, Training for farmers on demo-farm, Monitoring and evaluation</td></tr>
<tr><td>Inputs</td><td colspan="7">Technical training, support for demo-farm establishment (provide new variety and materials), materials for demo-farm (measuring devices, etc.), organic materials</td></tr>
<tr><td>Results of the Project</td><td colspan="7">- Although some of the demo farms did not achieve target tomato production amount, some farmers without any experience of tomato cultivation achieved target production amount.
- As some surrounding tomato producers inquired the intercropping techniques as well as bio-control techniques, the demonstration was effectively worked in these villages.
- Production cost was reduced by applying organic materials, and it also contributed to increasing production.</td></tr>
<tr><td rowspan="6">Evaluation Work Shop</td><td></td><td colspan="3">Intercropping</td><td colspan="3">Promoting Organic Materials</td></tr>
<tr><td>Stakeholder</td><td>Effectiveness</td><td>Relevance</td><td>Sustainability</td><td>Effectiveness</td><td>Relevance</td><td>Sustainability</td></tr>
<tr><td>Farmers</td><td>Good</td><td>—</td><td>—</td><td>Excellent</td><td>Good</td><td>Yes</td></tr>
<tr><td>Cooperatives/ Extension</td><td>Good</td><td>—</td><td>—</td><td>Excellent</td><td>Good</td><td>Yes</td></tr>
<tr><td>Governorate</td><td>—</td><td>—</td><td>—</td><td>Excellent</td><td>Good</td><td>Yes</td></tr>
<tr><td>Remarks</td><td colspan="3">See the detailed results of “relevance” and “sustainability”.</td><td colspan="3">Farmers recognized the advantages of organic materials such as reduction of input cost and quality improvement.</td></tr>
<tr><td>Lessons Learned / Suggestion</td><td colspan="7">- The continuous demonstration could promote horticultural crop production and intercropping techniques through farmer-to-farmer extension. The intercropping systems other than tomato and maize shall be disseminated in trainings to extension officers and demonstration to farmers in future.
- In case of long harvest of tomato until December or more, the wheat cropping has to be laid aside and change their cropping pattern drastically; therefore, introducing intercropping should concerned about yearly cropping pattern.
- Demands of organic agro-products have increased only for high-end consumers in Cairo, while conscious on food safety has not been penetrated to local urban inhabitants. Thus, it is important to create demands of this kind of products.</td></tr>
</table>

<table>
<tr><td>Project</td><td colspan="7">Promotion of Horticulture (Intercrop: Tomato & Maize)
Promoting Organic Materials Utilization (different variety of vegetables)</td></tr>
<tr><td>Area</td><td colspan="7">El Maasra Viilage, El Fath District, Assiut Governorate</td></tr>
<tr><td>Outline of the Site</td><td colspan="7">Population：3,800 (350 households)
Farmland：430 fed（all in old land）
Major Crop：Wheat, Maize, Berseem, Grape, Citrus
Ave farmland：0.73 fed/ household
 
</td></tr>
<tr><td>Stakeholder</td><td colspan="7">Governorate Agriculture Directorate, Village Cooperatives, District Agriculture Offices</td></tr>
<tr><td>Purpose/ Verification</td><td colspan="7">- Demonstration farm will be established to provide technical training for farmers (organic fertilizers, cultivation techniques). Intercropping with maize and tomato will be introduced to mitigate cultivation risks of small scale farmers.
- Applying organic materials are to reduce the production cost by reducing the chemicals instead using organic materials and also to upgrade the quality of produce with fewer chemicals aiming to sell them at higher price.</td></tr>
<tr><td>Activity</td><td colspan="7">Selection of farmers and farmland for demo, Training for field extension workers, Procurement and supply of necessary materials, Preparation of demo-farm, Training for farmers on demo-farm, Monitoring and evaluation</td></tr>
<tr><td>Inputs</td><td colspan="7">Technical training, support for demo-farm establishment (provide new variety and materials), materials for demo-farm (measuring devices, etc.), organic materials</td></tr>
<tr><td>Results of the Project</td><td colspan="7">- Although some of the demo farms did not achieve target tomato production amount, some farmers without any experience of tomato cultivation achieved target production amount.
- As some surrounding tomato producers inquired the intercropping techniques as well as bio-control techniques, the demonstration was effectively worked in these villages.
- Farmers' cash flow was improved by selling different kinds of vegetables at different timing. As such, farmers earned cash income continuously</td></tr>
<tr><td rowspan="5">Evaluation Work Shop</td><td></td><td colspan="3">Intercropping</td><td colspan="3">Promoting Organic Materials</td></tr>
<tr><td>Stakeholder</td><td>Effectiveness</td><td>Relevance</td><td>Sustainability</td><td>Effectiveness</td><td>Relevance</td><td>Sustainability</td></tr>
<tr><td>Farmers</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td></tr>
<tr><td>Cooperatives/ Extension</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td></tr>
<tr><td>Governorate</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td></tr>
<tr><td>Remarks</td><td colspan="3">Evaluation workshop is not conducted.</td><td colspan="3">Evaluation workshop is not conducted.</td></tr>
<tr><td>Lessons Learned / Suggestion</td><td colspan="7">- The continuous demonstration could promote horticultural crop production and intercropping techniques through farmer-to-farmer extension. The intercropping systems other than tomato and maize shall be disseminated in trainings to extension officers and demonstration to farmers in future.
- In case of long harvest of tomato until December or more, the wheat cropping has to be laid aside and change their cropping pattern drastically; therefore, introducing intercropping should concerned about yearly cropping pattern.
- Demands of organic agro-products have increased only for high-end consumers in Cairo, while conscious on food safety has not been penetrated to local urban inhabitants. Thus, it is important to create demands of this kind of products.</td></tr>
</table>

<table>
<tr><td>Project</td><td colspan="5">Promoting Organic Materials Utilization (Potato)</td></tr>
<tr><td>Area</td><td colspan="5">Borgaya Village, Minia District, Minia Governorate</td></tr>
<tr><td>Outline of the Site</td><td colspan="5">Population：18,000 (3,500 households)
Farmland：2,664 fed（all in old land）
Major Crop：Wheat, Maize, Berseem, Potato
Ave farmland：1.3 fed/ household
 
</td></tr>
<tr><td>Stakeholder</td><td colspan="5">Governorate Agriculture Directorate, Village Cooperatives, District Agriculture Offices</td></tr>
<tr><td>Purpose/ Verification</td><td colspan="5">Applying organic materials are to reduce the production cost by reducing the chemicals instead using organic materials and also to upgrade the quality of produce with fewer chemicals aiming to sell them at higher price.</td></tr>
<tr><td>Activity</td><td colspan="5">Selection of farmers and farmland for demo, Training for field extension workers, Procurement and supply of necessary materials, Preparation of demo-farm, Training for farmers on demo-farm, Monitoring and evaluation</td></tr>
<tr><td>Inputs</td><td colspan="5">Technical training, support for demo-farm establishment (provide new variety and materials), materials for demo-farm (measuring devices, etc.), organic materials</td></tr>
<tr><td>Results of the Project</td><td colspan="5">- Amount of chemical inputs was reduced; besides, potato grew well and its quality was enhanced.
- Freshness of potato applied organic materials kept longer than that of normal potato. This could be one of the advantages of marketing.</td></tr>
<tr><td rowspan="4">Evaluation Work Shop</td><td>Stakeholder</td><td>Effectiveness</td><td>Relevance</td><td>Sustainability</td><td>Remarks</td></tr>
<tr><td>Farmers</td><td>—</td><td>—</td><td>—</td><td rowspan="3">Evaluation workshop is not conducted.</td></tr>
<tr><td>Cooperatives/ Extension</td><td>—</td><td>—</td><td>—</td></tr>
<tr><td>Governorate</td><td>—</td><td>—</td><td>—</td></tr>
<tr><td>Lessons Learned / Suggestion</td><td colspan="5">Demands of organic agro-products have increased only for high-end consumers in Cairo, while conscious on food safety has not been penetrated to local urban inhabitants. Thus, it is important to create demands of this kind of products.</td></tr>
</table>

Project	**Promoting Organic Materials Utilization (Onion, Garlic, Potato)**				
Area	Bany Abeed Village, Abo Kurkas District, Minia Governorate				
Stakeholder	Governorate Agriculture Directorate, Village Cooperatives, District Agriculture Offices				
Purpose/ Verification	Applying organic materials are to reduce the production cost by reducing the chemicals instead using organic materials and also to upgrade the quality of produce with fewer chemicals aiming to sell them at higher price.				
Activity	Selection of farmers and farmland for demo, Training for field extension workers, Procurement and supply of necessary materials, Preparation of demo-farm, Training for farmers on demo-farm, Monitoring and evaluation				
Inputs	Technical training, support for demo-farm establishment (provide new variety and materials), materials for demo-farm (measuring devices, etc.), organic materials				
Results of the Project	- Amount of chemical inputs was reduced; besides, potato grew well and its quality was enhanced. - Freshness of potato applied organic materials kept longer than that of normal potato. This could be one of the advantages of marketing.				
Evaluation Work Shop	Stakeholder	Effectiveness	Relevance	Sustainability	Remarks
	Farmers	Good	Good	Yes	Effectiveness of organic materials was confirmed in the demo farms.
	Cooperatives/ Extension	Very Good	Good	—	
	Governorate	—	—	—	
Lessons Learned / Suggestion	Demands of organic agro-products have increased only for high-end consumers in Cairo, while conscious on food safety has not been penetrated to local urban inhabitants. Thus, it is important to create demands of this kind of products.				

Project	**Promoting Organic Materials Utilization (Tomato, Eggplant, Wheat)**				
Area	Village No. 8, Minia District, Minia Governorate				
Stakeholder	Governorate Agriculture Directorate, Village Cooperatives, District Agriculture Offices				
Purpose/ Verification	Applying organic materials are to reduce the production cost by reducing the chemicals instead using organic materials and also to upgrade the quality of produce with fewer chemicals aiming to sell them at higher price.				
Activity	Selection of farmers and farmland for demo, Training for field extension workers, Procurement and supply of necessary materials, Preparation of demo-farm, Training for farmers on demo-farm, Monitoring and evaluation				
Inputs	Technical training, support for demo-farm establishment (provide new variety and materials), materials for demo-farm (measuring devices, etc.), organic materials				
Results of the Project	Winter tomato which applied organic materials has clearly advantage of growth compare to growth of normal tomato.				
Evaluation Work Shop	Stakeholder	Effectiveness	Relevance	Sustainability	Remarks
	Farmers	—	—	—	Evaluation workshop is not conducted.
	Cooperatives/ Extension	—	—	—	
	Governorate	—	—	—	
Lessons Learned / Suggestion	Demands of organic agro-products have increased only for high-end consumers in Cairo, while conscious on food safety has not been penetrated to local urban inhabitants. Thus, it is important to create demands of this kind of products.				

<table>
<tr><td>Project</td><td colspan="5">Promoting Organic Materials Utilization (Tomato)</td></tr>
<tr><td>Area</td><td colspan="5">Beni Adi Village, Manfoot District, Assiut Governorate</td></tr>
<tr><td>Stakeholder</td><td colspan="5">Governorate Agriculture Directorate, Village Cooperatives, District Agriculture Offices</td></tr>
<tr><td>Purpose/ Verification</td><td colspan="5">Applying organic materials are to reduce the production cost by reducing the chemicals instead using organic materials and also to upgrade the quality of produce with fewer chemicals aiming to sell them at higher price.</td></tr>
<tr><td>Acitivity</td><td colspan="5">Selection of farmers and farmland for demo, Training for field extension workers, Procurement and supply of necessary materials, Preparation of demo-farm, Training for farmers on demo-farm, Monitoring and evaluation</td></tr>
<tr><td>Inputs</td><td colspan="5">Technical training, support for demo-farm establishment (provide new variety and materials), materials for demo-farm (measuring devices, etc.), organic materials</td></tr>
<tr><td>Results of the Project</td><td colspan="5">Amount of chemical inputs was reduced; besides, tomato grew well and its quality was enhanced.</td></tr>
<tr><td rowspan="5">Evaluation Work Shop</td><td>Stakeholder</td><td>Effectiveness</td><td>Relevance</td><td>Sustainability</td><td>Remarks</td></tr>
<tr><td>Farmers</td><td>Good</td><td>Good</td><td>Yes</td><td rowspan="4">Effectiveness of organic materials was confirmed in the demo farms.</td></tr>
<tr><td>Cooperatives/ Extension</td><td>—</td><td>—</td><td>—</td></tr>
<tr><td>Governorate</td><td>Excellent</td><td>Good</td><td>Yes</td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td>Lessons Learned / Suggestion</td><td colspan="5">Demands of organic agro-products have increased only for high-end consumers in Cairo, while conscious on food safety has not been penetrated to local urban inhabitants. Thus, it is important to create demands of this kind of products.</td></tr>
</table>