

終了時評価調査結果要約表（英文）

I. Outline of the Project	
Country : Palestine	Project title : Strengthening support system focusing on sustainable agriculture in the Jordan River Rift Valley
Issue/Sector : Agriculture	Cooperation scheme : Technical Cooperation
Division in charge : Rural Development Dept.	Total cost : 430 million yen
Period of Cooperation (R/D): February 2007 (Extension): March , 2007 – February, 2010	Partner Country's Implementing Organization : Ministry of Agriculture, Palestinian National Authority
	Supporting Organization in Japan :
Related Cooperation :	
<p>1. Background of the Project</p> <p>The Jordan River Rift Valley is located in the eastern part of the West Bank with an area of approximately 1,000 km² and a population of 89,000. Agriculture, as a main industry in this area, has been playing an important role in the regional economy, accounting for 70% of the working population and producing 12% of the gross domestic product (GDP) in the West Bank. Agricultural land in the Jordan River Rift Valley is about 13,500 ha, 4,000 ha (cropping area) of which is under irrigation in Jericho. The main problems of the agriculture in this area are: (1) poor farming technology, (2) poor water management, (3) salinization of farm land, (4) shortage of fertilizers and chemicals (and the effect of inflation on the cost of these inputs) and (5) limited access to the market due to the control by Israel. However, effective measures to address mentioned problems have not been sufficient. Under these circumstances, based on the integrated agricultural development plan proposed in “the Study on Jericho Regional Development Master Plan”, the Project Formulation Mission for Agriculture and Agribusiness Development Program was dispatched by JICA in November 2006 and ideas were exchanged with Palestinian National Authority (PNA). In response to the official request of PNA, the Project to establish an effective research and extension system was discussed and agreed upon by both parties. The Project started in March 2007 based on the Record of Discussions (R/D) signed on February 27, 2007.</p> <p>2. Project Overview</p> <p>(1) Overall Goal To improve agricultural productivity of peasants/small farmers in order to realize “the Corridor for Peace and Prosperity</p> <p>(2) Project Purpose To establish a basis for the effective agricultural extension system through direct linkage between research and extension</p> <p>(3) Outputs</p> <ol style="list-style-type: none"> 1) The research for cycle-oriented agriculture, water saving agriculture and soil conservation are practiced in consideration of the technology suitable for indigenous conditions. 2) The extension activity by Extension Subject Matter Specialist (ESMS) and Extension Agents brisk up. 3) The peasants/small farmers in the project sites start executing cycle-oriented agriculture, water saving agriculture and soil conservation. <p>(4) Inputs</p> <p>Japanese side :</p>	

Expert: 12 (108.4MM), Equipment: 30,841,000 Yen, Local cost (Estimation): 34,897,000 Yen Trainees received (Third Country Trainings courses): 39 Palestinian side : Counterpart: 36, Land and Facilities: the office space at the Arab Society facility in Jericho Local Cost:299,388 US\$		
II. Evaluation Team		
Members of Evaluation Team	Ms. Michiko UMEZAKI Mr. Hiroaki KUNIHIRO Mr. Shingo FURUICHI Mr. Harumi IIDA	Team Leader Soil Conservation/Water Saving Agriculture Farming Improvement and Extension Evaluation Analysis
Period of Evaluation	December 1, 2009 ~ December 22, 2009	Type of Evaluation : Terminal evaluation
III. Results of Evaluation		
1. Result of Achievements		
(1) Achievement of Outputs		
<div style="border: 1px solid black; padding: 5px;"> Output 1: The research for cycle-oriented agriculture, water saving agriculture and soil conservation are practiced in consideration of the technology suitable for indigenous conditions. </div>		
<p>National Agricultural Research Center (NARC) which established in Ministry of Agriculture (MoA) in 1994 was expected to work in collaboration with extension staff at district level experimental farms managed by respective Department of Agriculture (DoA). However, its activities were greatly constrained due to limited operational funds, and there was no functional linking mechanism that coordinated research and extension activities. In addition, researchers in NARC and Subject Matter Specialists (SMSs) in the General Directorate of Extension and Rural Development (GDERD), both of them have weak relationship to cooperate in agricultural extension issues, therefore, there was little or no applicable innovations generating as well as technology transfer and feedback to extension agents and extension agents to farmers.</p> <p>The Project targeted achievement of close work relations and coordination among researchers, SMSs, extension agents and farmers, all working together towards a common goal by applying a participatory approach. For this purpose, five Demonstration and Agricultural Research Farms (DARFs) were established in Jericho, Ein el Beida, Jiftlec, An Nassariya and Auja to serve as platforms to build up the expected cooperation among the stakeholders. Throughout the Project activities, researchers in NARC have participated actively in discussions on field issues and have been visiting the DARFs regularly on a weekly basis along with the SMSs as members of the taskforce.</p>		
<Indicator 1-1>: The number of research themes which are carried out by MoA and NARC increases.		
<p>The detailed work plan of DARFs for 2008/9 was developed in which 10 themes were selected such as 1) Eradication of misuse of pesticides, 2) Control of soil born disease in watermelon cultivation, 3) Improvement of efficiency of water and fertilizers use, 4) Alternatives use to Methyl Bromide as chemical fumigants, 5) Physical control of insects and viruses, 6) Comparisons of different cucumber cultivars, 7) Weed control in Jews mallow cultivation, 8) Mix cropping for feed preparation (Study of the productivity behavior in sheep production by using different feed mixes), 9) Hormone use in sheep livestock and 10) Silage preparation techniques . Researches covering all of the 10 themes were carried out through activities on DARFs.</p>		
<Indicator1-2>: The number of research reports and papers published by MoA and NARC increases.		
The workshops on “Preparing the report and the plan for activities of 2008/2009” were held with		

participation of all taskforce members, a draft annual activity report of DARF was prepared. Final version of the report will be completed by the termination of the Project.

<Indicator1-3>: The number and quality of technology based on the research results of MoA and NARC, which are applicable for agricultural extension are improved.

Recommendable technologies and new applicable technologies for testing and/or demonstration were proposed by extension staff of GDERD and DoA, and researchers of NARC. Those were reflected in the detailed work plan of DARFs for 2008/2009 and adopted in DARFs. And, the results of activities in each DARF were utilized in the detailed work plan of DARFs for 2009/2010.

Output 2: The extension activity by ESMS and Extension Agents brisk up

According to the result of SWOT analysis workshop in the Project, the following problems about SMS and extension staff were identified; 1) Capacity building of the extension staff, as facilitators of technology transfer, was not undertaken in a systematic manner, 2) Mobility of the extension agents was poor due to several reasons, 3) SMSs, in their capacity of technical advisors of MoA, failed to transfer the technical information to extension agents, and 4) SMSs and extent agents had weak relations.

Provided with new knowledge and skills acquired by participating in the training programs and accumulated experiences through the Project activities, SMSs were able to communicate more effectively with the extension agents to provide them with training and advisory services for management of DARFs. SMSs also conducted training sessions to farmers on farmer's field days. SMSs have become advisors to farmers. On the other hand, Extension agents were also trained to enhance communication skills and technical know-how on several aspects. They have been provided with OJT on several agricultural skills and knowledge such as variety selection, crop adaptation, land preparation, soil solarization, soil analysis, use of tensiometer, fertigation and pest management. They started extending acquired skills and knowledge to farmers, they are confident that they are able to communicate with farmers effectively.

< Indicator2-1>: The frequency of extension activities increases.

Extension activities have been implemented regularly through supporting DARFs as well as in field visits, workshops and field days. Amongst them, farmer's field days in DARFs were effectively utilized to promote participation of neighboring farmers. Total number of field days organized up to this evaluation is 47 with the total participation of 864 farmers.

< Indicator2-2>: The number of extension agents who can extend the results of research increases.

Due to the results of adaptive research in DARF, trainings of recommended technologies for extension agents were organized. And then, extension agents implemented recommended technologies in the farms through the demonstration activities in the DARFs. Extension agents who trained in the Project made presentation to other extension staff from the whole West Bank during "Feeding Ruminants Feed with Inexpensive Farm Materials" training, that they disseminated their DARF experiences on the advantages of producing self-sufficient inexpensive feed in the farm as well as the merit of improved Awasi sheep.

Output 3: The peasants/small farmers in the project sites start executing cycle-oriented agriculture, water saving agriculture and soil conservation

The Demo- and Key-farmers at DARFs and some surrounding farmers have already started practicing new promising varieties, recommended technologies relating to cycle-oriented agriculture and water saving

agriculture, soil conservation. Watermelon is produced by most of the Key-farmers by using grafted watermelon seedlings. Tensiometers are used by all the Demo- and Key-farmers and the devices indicate proper timing for irrigation. Water use is saved from 10% up to 40% depending on the conditions, according to extension agents. Soil solarization is practiced by most of the Key farmers. Its adoption to eradicate soil born pest and diseases, without resorting to use of chemicals, is one of important soil conservation technologies. Training and pruning of tomato and paprika are picked up by the Demo and Key farmers because of its advantages of minimized pest and diseases incidence and ability to give better yield than conventional cultivation methods. Moreover, introduction of bumble bee colonies is also practiced by the farmers for promoting pollination and high fruit set in some vegetables grown in green houses. Compost and silage making is promising technology for cycle-oriented agriculture.

< Indicator3-1>: Evaluation for the ability of peasants/small farmers improves.

In DARFs, Demo- and Key-farmers have recognized the following good outputs; (1) A variety of squash is identified as the best variety of squash in the 4 DARFs due to its resistance against diseases, high yield, and good in shape and color, (2) A variety of cluster tomato gives high yield with proper training and pruning practice, (3) Most of the vegetables in DARFs are cultivated in greenhouses or net-houses to control environment and protect them from pest damage confirming their advantages over open-field cultivation, and (4) The improved Awasi sheep is expected to give high efficiency in milk production even in hot summer conditions in the Jordan River Rift Valley.

< Indicator3-2>: The number of technologies applied by peasants/small farmers increase, and they are applied properly.

In each DARFs, more than 7 new promising varieties have been introduced to each Demo-farmer under new technologies; 9 crops in Jericho, 10 crops in Ein el Beida, 9 crops in Jiftlec, 7 crops in An Nassariya and 10 crops in Auja.

< Indicator3-3>: The ratio of peasants/small farmers who introduce recommended technologies increases.

The Project intended that technologies which introduced in DARFs would be extended through conducting the field days. A total of more than 800 farmers have participated in the field days.

In addition to those activities, other activities for supporting farmers were implemented as follows; (1) In order to assist the decision process of farmers for production planning and sale of products, broadcasting market information through a local radio network and on the web site commenced on a pilot basis from November 2008, (2) a pilot program of food processing was implemented with two selected women's cooperatives from Jericho and Jiftlec trained to improve their food processing and managing skills to introduce a business orientation to the enterprises, and (3) a baseline surveys was conducted in 6 villages in the Project area in order to study and develop means for livelihood improvement in rural community.

(2) Achievement of Project Purpose

To establish a basis for the effective agricultural extension system through direct linkage between research and extension.

The Project developed and encouraged the effective agricultural extension system based on the participatory research and extension. Such an extension system, seeking to strengthen the links between research and extension, has been materialized through establishment of DARFs in five locations. In each DARF, researchers, SMSs, extension agents and farmers began to cooperate in the taskforce to discuss and

develop a detailed plan of activities consisting of trials and demonstrations, to implement the plans, to learn from the experiences collectively and to adopt applicable technologies for improvement of farming conditions in the Project area. The capacity building of researchers, SMSs and extension agents as well as farmers has been carried out in and around the DARFs as well as off DARF locations. The process is mainly concentrated on training activities composed of Field Days, Lectures, Technical Training Programs, Workshop, Seminars, and Site Visit.

Presently, more than 7 crops have been introduced to each Demo-farmer in DARFs which has utilized new technology. And, more than 70% of Key-farmers in total have adopted at least one of those crops with the technology package.

< Indicator1-1>:

Adaptive research and farming practice have been demonstrated in DARFs in Jericho, Ein el Beida, Jiftlec, An Nassariya, and Auja, in accordance with the detailed work plan for 2008/2009 prepared by the taskforces. The taskforces consisting of researchers, SMSs extension agents, Demo- farmers and Key-farmers have managed activities of DARFs.

< Indicator1-2>:

Activity for improved extension commenced with the first farmer's field day held through the collaboration between research and extension. Information leaflets were distributed to the participants of the field days. They were prepared as extension materials for farmers and intended to be filed in a binder.

2.Summary of Evaluation Results

(1) Relevance

The aim of the Project has coincided with Policy of Ministry of Agriculture in Palestinian National Authority, local needs in target area, and Japanese development policy and program, as explained bellow. Therefore, the relevance of the Project is high.

- 1) According to "Palestinian Reform and Development Plan (PRDP) 2008-2010", MoA continues to focus on agriculture/agro-industry development, which contribute economic recovery in the short term as well as enhancing food security. And, "Agricultural Medium Term Development Plan 2006-2008" has dealt with improvement of agricultural production in West Bank.
- 2) Farmers in the Project area had received very poor extension services. They are well come to accept extension services o improve farming techniques to increase production.
- 3) In year 2006, Government of Japan proposed the concept "the Corridor for Peace and Prosperity" in cooperation with Palestinians, Israelis and Jordanians. And, JICA has made "the Jericho Regional Development Program", The Project is prepared under above concept and program.

(2) Effectiveness

Through the Project activities, five DARFs have been established as platform to strengthen linkages and centers of efficient extension service. In each DARF, newly introduced varieties by efficient use of water have been demonstrated by farmers. The role and the function of stakeholders to organize efficient and effective extension service have been realized. In this point of view, the effectiveness of the Project is high. On the other hand, the platform established to realize the objectives is still on the trial stage. Therefore, official arrangement to maintain continuance of participatory research and extension should be sought within MoA.

(3) Efficiency

Inputs for the Project provided by both the Palestinian and the Japanese sides have been generally appropriate and well utilized in order to accomplish the expected Outputs, particularly on the activities at DARFs. In this context, the Project was efficiently implemented. It is also noted that activities on supportive technical fields for farm management produced considerable results, which can provide important information for improving agricultural production. Although they have not been fully utilized yet within the Project, it is hoped that the results will be referred to in the future efforts.

(4) Impact

The Overall Goal described in the PDM is placed on a very high level, and thus it would be rather difficult to achieve it within a few years after the Project Purpose is attained. It will be pursued from now on by the Palestinian side, but is expected to take further time. Nevertheless, some positive impacts of the Project shown below were found, but no negative impact was identified.

<Positive impact>: 1) Growing of watermelon using grafted seedlings has high potential for adoption because of its resistance against soil born diseases and a possible reduction in cost by using of local cucurbit root stock, 2) Farmers have improved their market options and bargaining power when selling their products as result of the Project sponsored radio program, 3) Some technical know-how such as hygienic cheese making was expanded to several districts in the West Bank due to the result of training course, and 4) A women's cooperative in Jiftlec succeeded to sell their products that they got inquiries from a super market in Ramallah and a retailer in Hebron.

(5) Sustainability

Through operating DARFs by researchers, SMSs, extension agents and farmers, an effective agricultural extension system has emerged at present. However, the practices of DARFs have not yet become an established official operational mechanism in MoA. Therefore, appropriate arrangement by MoA is still expected to sustain continuing role and function of the effective agricultural extension system.

3. Conclusion

Since the Project has introduced the DARF as a platform for participatory research and extension, the stakeholders concerned with extension system such as researchers from NARC, SMSs from GDERD, extension agents from DoA, Demo-farmers and Key-farmers have been given opportunities to work together and learn from each other in a cooperative manner in order to find out solutions of actual obstacles on the farms. Constant communications have drastically changed their behaviors and relationships among them in agricultural extension. Series of their practices at DARFs to be characterized by group approach as well as bottom up approach have already resulted in some promising improvements of agricultural techniques. From these view points, it is concluded that the Project Purpose is expected to be achieved by the end of the cooperation period. However, to sustain and intensify such direct linkage between research and extension for effective extension system and to make it help improvement of livelihood of farmers in the Project area are further challenges. Capacities of the concerned stakeholders need to be more developed and a realistic and workable system of extension needs to be elaborated and institutionalized as a policy measure of MoA.

4. Recommendations

(1) Recommendation for Actions to be Made by the End of the Project

1) The know-how of management for the series of training should be transferred to counterpart organization in efficient manner to sustain continuous capacity development of research and extension.

2) Farm record is regarded as an effective tool to focus more on stabilizing farmers' economic condition and their well being. However, the format should be scrutinized and unnecessary parts should be excluded for its simplification.

3) For sustaining the result of the experience by stakeholders, the guidelines for managing participatory research and extension are necessary.

4) Organizing dissemination seminar to share the experience with other concerned stakeholders.

5) The Farmers Information Leaflets needed to be distributed to farmers immediately in the Project activities.

(2) Further Organizational Arrangement for Strengthening Relation between Research and Extension

1) Adaptive research is necessary before dissemination of technology to the farmers. Encouraging and evaluating the role of researchers for maximizing NARC's contribution to extension are necessary.

2) In case that MoA cannot afford to maintain DARFs approach, another kind of feasible mechanism should be sought out and institutionalized in MoA. It should be stressed that firm commitment of all the concerned stakeholders within MoA, including General Directorate of Technical Issues and thoughtful tactics are needed in the process of designing such a mechanism.

3) The Project has touched upon such issues which can multiply effects of improved extension system as market information dissemination, livelihood improvement and micro-credit. Taking appropriate measures to follow those issues by fully utilizing experiences and reports of the Project is necessary.

(3) Consideration for Future Support to Follow up the Project by Japanese Side

To develop that basis and to elaborate useful devices for effective extension system so that recommended technologies can reach end farmers still remains a substantial challenge. Improved extension services have not been widely distributed yet. Therefore, further technical cooperation will be seriously considered by the Japanese side.

5. Lessons Learned

1) Because the Project adopted "Fast-track system", details of the Project were not strictly defined at the launching time. This has granted flexibility and rooms for maneuvers to the Project for producing achievements within a short time of period. On the other hand, basic documents such as Project Design Matrix and Plan of Operations failed to reflect in time realities of the Project and thus monitoring and evaluation of the Project have faced certain confusion. It should be noted that "Fast-track system" may create positive as well as negative effects and close attention is necessary for appropriate project management by minimizing such negative effects.

2) Since the beginning, the Project has clearly exhibited its strategy, that is "participatory research and extension", and two approaches namely "group approach" and "bottom-up approach" has been applied for attaining the strategy. The fact that the unshakable strategy and its approaches have been repeatedly presented throughout the Project operation has contributed a lot to fostering teamwork among multiple stakeholders from different organizations and to producing substantial results in a short time.

3) One of the most remarkable inventions of the Project is a setting-up of DARFs as a platform where concerned stakeholders jointly work on the ground for the sake of the beneficiaries. The experiences made them notice their own roles in extension and learn importance to supplement each other. This very unique and Japanese, in a sense, measure has been effective. Although operation of DARFs itself may have difficulties to be sustained and continued in a long run due to several reasons, the device can not be under-evaluated because it certainly generated quick impacts. As such, interim measures may be worth consideration to achieve project purpose in some specific circumstances.