Market-oriented agriculture in Palestine <Part 2>

Diagnosis of irrigation facility

In the project area in the Jordan River Rift Valley, many farmers tend to apply excessive irrigation because they have a grave fear of low crop yields due to lack of water. Therefore in some areas, excessive irrigation is causing an eluviation of fertilizer, and water saving technology extension has become a very important task.

In our project, as the first step, we conducted an experiment in farmers' field, to understand the impact of water saving irrigation on a farmer's profitability through reduction of water and fertilizer costs using a tensiometer. In green house tomato cultivation, use of the tensiometer saved irrigation water by more than 10%. However this did not lead to an increase in farmers' profits. In a field with green beans, it saved irrigation water by 17% and the profit increased by 12%. We introduced this profit- increasing effect of tensiometers at field day events and reflected this result in technical manuals.

In this area, there are many instances whereby insufficient pressure and uneven irrigation networks within a field were leading to reduced yields. Particularly, in many cases the diameter of main and sub-main pipes, the length of lateral lines and the emitter types were inappropriate. Therefore as the second step, we established a demonstration plot with an irrigation system which was properly designed based on the appropriate lateral line length. We grew the same crops with the same irrigation schedule in this demonstration plot and in an existing field with the usual irrigation system and compared crop growth and yields. As a result, there was a clear difference between the two plots for eggplant cultivation, therefore we decided to hold a field day to showcase the results. Also we made a crop budget comparison between the demonstration plot and the existing field based on the yield data. The result indicated a significant increase in profitability with a 20% saving in irrigation water volume and a 20% increase in yields. We made a poster with information to spread the results in various fora,

and used these numbers in technical manuals.

However, introducing results from experiments using tensiometers and irrigation network improvement, and communicating the results through field days and through using experiment results in technical manuals did not seem sufficient to extend the technology to farmers in the area. As the third step, we started providing a service to diagnose farmer's individual irrigation networks upon request, as part of the extension services. We focused on providing appropriate suggestions for improvements based on a diagnostic result. Irrigation network design improvement became one of the improvement measures suggested through the diagnostic services. The extension workers previously never received sufficient training on how to diagnose irrigation networks therefore they had little knowledge about it. Our project organized training workshops in collaboration with the SMS (Subject Mater Specialist) in charge aiming to teach extension workers various diagnostic methods. In addition to lectures on the basics of diagnosis, this training course also placed emphasis on field practice to measure water pressure and water volume in fields using the diagnostic kit including a pressure gauge and measuring cylinder.

Lecture

Irrigation diagnosis training

Irrigation diagnosis practice

Comparing water volume

After the training, extension workers compiled a list of farmers who had requested diagnosis for their fields, and conducted irrigation network diagnosis visiting farmers' fields and using the diagnostic kit. Also, the project held discussion sessions where extension workers shared their diagnostic experience and results, and jointly reviewed various recommendations to farmers. Through the training and field activities, extension workers' capacity improved to the level that they can now conduct a basic diagnosis of an irrigation network. However, in order to increase the quality of recommendations to farmers based on the diagnostic results, it is considered necessary for extension workers to accumulate additional experience. We look forward to their continued efforts for improvements.

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