

Mini Series: Irrigation and Water Saving in Arid Land – Case Study from Field Work

Part 2: Comparison between experimental research results and the realities of farming

In the last issue, we introduced theoretically calculated crop water requirement (CWR) and the actual irrigation water amount of farmers, using examples in Syria. In this issue we would like to compare the experimental results of research at the Irrigation Research Center and actual results achieved by farmers. For the results of farmers' work, we used actual results of demonstration plots. Demonstration plots normally are plots managed by relatively well-performing farmers, therefore, the results of ordinary farmers are considered to be inferior.

The table below summarizes water use and yields of cotton at both the Irrigation Research Center and at demonstration farms, both of which are using traditional basin irrigation and water-saving drip irrigation methods. Based on a water use of 6,113 m³/ha which is the experimental results of water use of drip irrigation as 100, demonstration plot A's water use is 136 (8,321 m³/ha) and demonstration plot B's result is 153 (9,351 m³/ha). The fact that with the traditional basin irrigation, water use at demonstration plots is less than that used at the Irrigation Research Center implies that farmers are not yet familiar with using drip irrigation methods. Furthermore, the water saving rate with drip irrigation was 58% and the rate of yield increase was 33% at the Irrigation Research Center. In contrast, at demonstration plots, the water saving rate was 14-39% and the rate of yield increase was 11-15%.

Comparison between the results of experimental research and demonstration plot

Item	Experimental Results		Demonstration Plot Results A (N=3)		Demonstration Plot Results B (N=21)	
	Basin irrigation	Drip irrigation	Basin irrigation	Drip irrigation	Basin irrigation	Drip irrigation
Water use (m ³ /ha)	14,446	6,113	13,565	8,321	10,925	9,351
Water saving rate (%)	-	58%	-	39%	-	14%
Harvest (kg/ha)	3,337	4,516	3,680	4,079	4,330	4,993
Rate of harvest increase (%)	-	33%	-	11%	-	15%
Water use efficiency (kg/m ³)	0.23	0.74	0.27	0.49	0.4	0.55

It is generally known that there is often a discrepancy between experimental results and actual results at ordinary farms. In order to demonstrate the best performance, the gap between results at well managed experimental plots and ordinary farms (with the exception of advanced and/or innovative farmers) is inevitable. However, it is the role of "extension activities" to narrow this gap as much as possible. There is no arguing that it is highly important to disseminate experimental results to farmers in a way the information can be utilized.

However, according to a survey of farmers in Syria regarding the reality of agricultural extension, 63% of the responding farmers cited agricultural material shops as the source for acquiring technical assistance, and only 15% cited agricultural extension workers. In addition, regarding the frequency of accessing public technical assistance by extension workers, 68% responded "extremely rarely" or "never". As for the question regarding the accessible technical services, 76% responded "no assistance". This indicates that the public extension bureau is not very actively engaging with farmers.

In order for agricultural extension organizations to be able to implement effective technical extension activities, it is necessary for those who are engaging in experimental research to set up experimental themes based on farmers' needs and the reality of farming, and conduct the experimentation and provide feedback of results to farmers. However, much experimental work has a tendency to experiment for the sake of research. It is extremely important for research organizations and agricultural extension sections to ensure close cooperation to mitigate this negative trend.



Neatly maintained experimental farm in the Research Center



An example of an ordinary farm – obviously inferior to the experimental farm



Cotton cultivation at a demonstration farm