

Water saving irrigation extension tools in Syria <Part 2>

In this 2nd part of the series, we would like to introduce the discharge measurement kit.

When visiting farmers' plots in order to extend knowledge and information necessary for water saving irrigation, we notice that many farmers use their own method for laying irrigation pipes or leave it entirely to the service providers. As a result, at the end of the pipes often they cannot obtain necessary water pressure because of the influence of loss of water head due to pipe resistance and other causes. These can be a major barrier for modernization of irrigation systems at the farm level, resulting in slow progress when it comes to water saving implementation. Therefore, the project tried to raise extension workers' and farmers' awareness on the importance of water saving, distributing a kit that enables them to easily measure water pressure and volume.

As shown in the photo below, the kit is extremely simple, with a pressure gauge, a joining device for 16 mm drip lines, sealing tape and a 500 ml measuring cylinder in an easily portable carrier bag. In the beginning, we included in the kit a device to enable pressure measurement at the emitter point and a stop watch, however we came to understand that it is easier for farmers to use the kit if only the most basic and essential items are included. Therefore the kit became extremely simple in the end.



- ① Pressure gauge: possible to gauge water pressure up to 5-6 bars
- ② Connecting device to join ¾ inch socket and 16 mm pipe
- ③ ¾ inch socket
- ④ Metal connecting device to join ½ inch pressure gauge and ¾ inch socket
- ⑤ Teflon sealing tape to prevent water leakage
- ⑥ Measuring cylinder: 500 ml capacity
- ⑦ Easily portable carrier bag: to contain the parts

We basically decided to measure the pressure at the drip line end. Some farmers tended to read the pressure as soon as the pump switch was on, and we therefore advised them to wait for a while until the pressure has

stabilized before measuring. In addition, in some farms, when drip line ends are opened, dirty water from the pipe comes out. Therefore we taught farmers to measure the pressure only after the water becomes clean and clear. If the prescribed pressure cannot be obtained, one should go to the next step of looking into possible causes comparing the water pressure with the pressure of the control unit. Also by measuring the pressure at the close or far points from the gate bulb, it is possible to check the uniformity of operational pressure.



As for discharge measurement, for example, we measured the water volume that flows in five minutes from one emitter; this figure is then extrapolated to give the discharge per hour. One can repeat the measurement using a measuring cylinder at the different points. However, if there is enough manpower, it is possible to effectively check the uniformity at different points at the same time. In our project, we organized primary school students with a container in each hand. They stood at 9 different points and on the signal they all took the water for five minutes until they were told to stop. Then one person went around the nine points with the measuring cylinder to measure the water volume of each container. This event was quite popular. For some irrigation became fun!



Using ideas like this, and by using a very simple discharge measurement kit distributed by the project, extension workers and farmers came to understand the operation pressure of irrigation systems in use and the situation regarding the irrigation water volume. We hope that these on-site efforts will raise awareness of the importance of water saving, and will lead to expedite the extension of water saving irrigation systems which will be increasingly important in the world's arid and semi-arid regions.