

Significance of Water Saving through Subsurface Drip Irrigation for Date Palm Trees

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Abstract : A laboratory and field study were conducted on subsurface drip irrigation systems. In the first laboratory study, eight subsurface drip irrigation lines available locally, were selected and a number of experiments were made to evaluate line hydraulic characteristics to insure it's suitability for drip irrigation design requirements and high performance to select the best for field experiments. The second study involves field trials on mature date palm trees to study the effect of subsurface drip irrigation system on the yield and water consumption of date palms, and to compare that with the traditional surface drip irrigation system. Experiments were conducted in Alwatania Agricultural Project, on 50 mature palm trees (17 years old) of Helwa type with 10 meters spacing between rows and between trees. A high efficiency subsurface line (Techline) was used based on the results of the first study. Irrigation scheduling was made through a soil moisture sensing device to ensure enough soil water levels in the soil. Experiment layouts were installed during 2001 season, measurements continued till end of 2008 season. Results have indicated that there is an increase in the yield and a considerable saving in water compared to the conventional drip irrigation method. In addition there were high increases in water use efficiency using the subsurface system. The subsurface system proves to be durable and highly efficient for irrigating date palm trees.

Keywords : drip irrigation, subsurface drip irrigation, date palm trees, date palm water use, date palm yield

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