

Effects of drip subsurface irrigation system on date palm production and water productivity

Al-Wahaibi H. ⁽¹⁾, Al-Kasbi H. ⁽¹⁾, Raisi Y. ⁽¹⁾ and Ben Salah M. ⁽²⁾

(1): Directorate General of Agriculture and Livestock Research, Ministry of Agriculture and Fisheries

(2): International Center for Agricultural Research in Dry Area. Development of Sustainable Date Palm Production Systems in the GCC countries.

12th Gulf Water Conference, 28-30 March, 2017, Bahrain

Abstract

Subsurface drip irrigation system has been proved to give higher water use efficiency and better water productivity (WP) than other irrigation systems. At Al-Kamil Research Station in Al-Sharqiyah North governorate, subsurface drip irrigation system was used to irrigate date palm trees compared with bubbler irrigation which is currently used for irrigating date palms. Four irrigation treatments were 100% ET_c using bubbler irrigation, 60%, 40% and 20% ET_c using Subsurface irrigation system have been tested on date palm production.

The results show no significant differences in fruit production between date palm trees irrigated by 100% ET_c using bubbler system and those irrigated with 60% of the water requirement under subsurface drip irrigation system. Fruit production was significantly reduced under the irrigation with 40% and 20% of ET_c under subsurface drip irrigation system as compared to that irrigated with 60% ET_c . The highest WP of 4.7 kg/m³ was obtained at the rate of 20% of the water requirements under subsurface drip irrigation system. All the results proved that subsurface drip irrigation system contributes to 40% water saving without reduction in fruit production of date palm trees.