

Effect of Irrigatio Amount on Some Reproductive Characteristics of Olive Varieties in Kermanshah Province

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Abstract

Evaluation of fruit trees response to water is one of the important strategies in irrigation management. Current study was conducted in order to assess the response of five olive commercial cultivars to three levels of irrigation. The study was conducted in Olive Research Station, in Dallaho Kermanshah province, for three years (2011-13). A split plot experiment based on randomized complete block design with three replications was used to apply the treatments. The main plots included the cultivars Conservalla, Amphisis, Manznilla, Sivillano and Zard-e-ziton, while different levels of irrigation including 100%, 80% and 60% of water requirement were assigned to sub-plot were assigned to subplots. Potential evapotranspiration was estimated as 1158.8 mm year⁻¹ during 2011-13 using ETo calculator software and daily climatic data. Water amount for olive trees in 100% water requirement level was determined as 5828.1 cubic meters per hectare. The results of this study showed that the effects of irrigation levels on some of the reproductive traits such as fruit yield, and fruit and meat weight were significant. Highest yield was obtained in Conservalla with 80% and 100% water demand and amounted to 17745 kg ha⁻¹ and 17106 kg ha⁻¹, respectively. Irrigation levels had no effect on oil content of the olive cultivars. The cultivars were very diverse in terms of traits, such that there was a significant difference in irrigation water productivity, fruit and meat weight, fruit length and diameter, kernel weight, dry matter, and oil content. Interaction between cultivars and irrigation levels was significant only in the case of irrigation water productivity. The results of this research showed that with increasing irrigation levels, productivity of irrigation water decreased. In the cultivar Conservalla at irrigation level of 60%, irrigation water productivity was 4.2 kg/m³ and at irrigation level of 100%, it was 2.9 kg/m³. Conservative cultivar with average water use efficiency of 3.64 kg/m³ had the highest irrigation water productivity among the studied cultivars.

Keywords: Evapotranspiration, Water productivity, Olive water requirement

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