Effect of water regimes and palm coefficient on growth parameters, date yield and irrigation water use of tissue culture regenerated 'Barhee' date palms grown in a newly established orchard.

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Abstract:

A field experiment was carried out at the Agriculture Experimental Station of King Abdulaziz University during the 2013 and 2014 seasons to study the effect of water regimes and palm coefficient on growth parameters, yield and irrigation water use (IWU) of tissue culture-derived 'Barhee' date palm cultivars in a newly established orchard. Four water regimes T1, T2, T3 and T4 representing 70, 85, 100 and 115% of water requirement were studied to select the best water regime that maximizes yield and IWU. Water requirement in 2013 was calculated based on the FAO palm coefficient (Kp) but based on measured Kp during 2014. Results revealed that using measured Kp reduces water requirements in the summer season and increases date yield. It saves about 12% of irrigation water compared to FAO Kp. Increasing the water regime increased yield per palm, where the highest yield was obtained from T4 (16.5 kg per tree), and the least from T1 (12.4 kg per tree). IWU is increased by decreasing the water regime. However, the differences between T4 and T3 were not significant, indicating that giving the highest water regime produces the highest yield. It is concluded that increasing water supply maximizes yield production of young tissue culture-derived 'Barhee' date palms in a newly established orchard. Copyright © 2016 John Wiley & Sons, Ltd.

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