Optimizing of irrigation water use, yield and quality of "Nabbut-Saif" date palm under dry land conditions.


Abstract:

A field experiment was conducted in the western part of Saudi Arabia to optimize irrigation water use (IWU), yields and quality of the "Nabbut-Saif" date palm grown in sandy loam soil under arid conditions. Four water regimes were investigated. The supplied amounts of irrigation water were 50, 65, 82 and 100% of date palm water requirements to the first (W1), second (W2), third (W3) and fourth (W4) water regimes, respectively. The daily water requirement was calculated using the Penman-Montieth equation for dry climates and applied to the trees three times a week through a drip irrigation system. Results indicated that giving 65% of total date palm water requirement maximized date yield by producing 46.1 kg per tree and resulted in the best IWU (0.8 m³ kg⁻¹ per tree). Increasing the water regime to 82 and 100% of total water requirement produced only 45.5 and 46 kg per tree respectively and reduced IWU. Generally, fruit quality characteristics were insignificantly affected by the water regimes investigated. The results suggested that supplying 34 m³ yr⁻¹ per tree for date palms grown under the conditions of the western part of Saudi Arabia is enough to maximize IWU, yield and quality of the "Nabbut-Saif" date palm cultivar. Copyright © 2014 John Wiley & Sons, Ltd.

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