Measuring crop water requirement and crop coefficient for Blue Panic crop under arid land conditions using draining lysimeters.


Abstract:

Previous research results of Blue Panic (Panicum antidotale Retz) in arid conditions under different irrigation methods proved an increase in forage yield and water productivity (WP) under full and water stress conditions. However, a thorough search in the literature revealed that its water requirement has not yet been determined. Therefore the objective of this research was to measure evapotranspiration (ETc) and crop coefficient (Kc) for a Blue Panic crop under arid conditions. Four draining lysimeters constructed in Jeddah (21° 480 300 N, 39° 430 2500 E) were used to measure its ETc and Kc under a plentiful water supply. Results revealed that ETc varied from 141 mm in the first harvest to 292 mm in the sixth, with an average of 225 mm per harvest. The Kc value was different from one harvest to another. The average Kc over all harvests was 0.7, 1.2, 1.3 and 1.0 for the initial, development, midseason and late stages, respectively. Average fresh and dry forage yields per harvest were 30.5 and 12.6 t ha⁻¹, respectively. AverageWP was 55 kg ha⁻¹ mm⁻¹. The predicted ETc based on the measured crop coefficient value and ET0 show a good fit between measured and calculated ETc. Copyright © 2018 John Wiley & Sons, Ltd.

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