

Article title	Estimating reference evapotranspiration using modified Blaney-Criddle equation in arid region
Authors	Mohamed .H. Abd El-Wahed* Taia. A. Abd El-Mageed ** *Soils and Water Dept., (Agric. Engineering) Faculty of Agric., Fayoum Univ., Egypt ** Soils and Water Dept., Faculty of Agric., Fayoum Univ., Egypt
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Abstract

The estimation of reference evapotranspiration (ET_o) is the most important step for calculating crop water requirements. The Penman–Monteith equation (PM) is ranked as the best equation for estimating ET_o in all climates. The major limitation to PM is that it requires many meteorological inputs. In Libya, there is a shortage in data or unavailability. Alternatively, the Blaney-Criddle equation (BC) is a simpler method for ET_o estimation and it requires only air temperature as an input data. In this study, the BC was modified based on the PM using the meteorological data of three stations (Obari, Ghat and Ghadames station) in arid region of Libya. The modified BC equation (MBC) used effective temperature instead of average temperature. The effective temperature can be calculated based on the minimum and maximum temperature and a calibrated coefficient (k). In this study the variable k values (k_v) and three constant k values (0.72, 0.69 and 0.64) that suggested by other researchers were used to evaluate the MBC. The results showed that the ET_o values calculated based on the MBC which applied k_v were better than the results of ET_o values calculated based on BC when compared with the ET_o estimation from the PM.