Comparing Eight Different ET_o Equations with Penman-Monteith for Antalya, Turkey

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ABSTRACT

Evapotranspiration (ET) is one of the most difficult processes in nature. The most accurate and reliable method to determine ET is lysimeters, which is difficult, expensive and time-consuming[1]. On the other hand, ET can be estimated using reference crop evapotranspiration (ET_o) and crop coefficient easily. Many ET_o equations using meteorological data have been developed. The most widely accepted equation for ET_o is FAO56-Penman-Monteith (FAO56-PM) equation. However, FAO56-PM equation needs numerous meteorological data and is hard to measure for farmers. For this reason, equations which need less meteorological data have been gaining importance.

Characteristic Mediterranean climate prevails in coastal areas of Antalya, Turkey. In the present study, long term data (1985 to 2015) obtained from meteorological stations were used to compute ET_o in Antalya. Eight different ET_o equations (Penman Monteith, Penman 1963, FAO 24 Penman, Hargreaves, Turc, Priestly-Taylor, FAO 24 Pan, Christiansen Pan) were compared with FAO56-PM. It was shown that the Turc equation gives results close to PM equation.