

Comparative Study of Various Evapo Transpiration Methods

(A case study with special reference to Jodhpur Region)

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ABSTRACT

Water is the prime need for the survival of all living things, whether it belongs to flora kingdom or fauna kingdom and industrial development. The demand on water for domestic, commercial, industrial and agricultural purposes is increasing significantly in the recent past. The situation is exacerbated by the growing population and urbanization, thereby there is an increased pressure on agriculture.

In the practice of sustainable water resources management, knowledge of evapo-transpiration (ET) over a range of spatial and temporal scale is essential. During the past several decades, ET estimates have widely been used in water resources management, hydrological modeling and irrigation scheduling to define crop water requirements. Such estimation of crop water requirements is one the principle steps in planning, designing and operation of irrigation and water resources system. These crop water requirements vary with crop characteristics and local agro-hydro-meteorological conditions. A number of methods for its evaluation are available but they all have their own limitations.

The evaporation and evapo-transpiration are closely simulated by the evaporation pan. The processes, in turn, depend upon the various climatological factors. Temperature, Relative Humidity, Sunshine hours, Wind velocity and Rainfall are the major hydro-meteorological parameters, which influence the pan evaporation.

Since, Kharif Crop Season (Week No. 26–44) and Rabi Crop Season (Week No. 45 – 10) are the two main agricultural seasons in Jodhpur region of Rajasthan, hence these two seasons have been selected for the present study.

FAO–24 Penman (Modified) Method has been chosen as reference method for estimation of evapo-transpiration for Jodhpur Region due to its wide applicability all over the world. Different methods for estimating monthly evapo-transpiration have also been used. They are compared and correlated with FAO–24 Penman method for increasing the applicability of these methods in Jodhpur region of Rajasthan.
