

SUITABILITY OF EMPIRICAL MODELS IN ESTIMATING
THE POTENTIAL EVAPOTRANSPIRATION FOR SEVANAGALA
IN LOW COUNTRY DRY ZONE OF SRI LANKA

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Meteorological data collected at the Sevanagala Sugar Project during 1981- 1987 were used in this study. The methods suggested by the FAO and

the Thornthwaite's and Ivanov's methods were involved in estimating the potential evapotranspiration (E_t_p), and these estimates were compared with the adjusted pan evaporation values of the area.

The individual impact of meteorological variables on pan evaporation was determined by a correlations analysis, and the combined effect of these factors was assessed in view of finding a suitable model to estimate the E_t_p of the Sevanagala area.

The estimates from Penman, Radiation (FAO versions) and the Ivanov methods found to be reliable with respective correlations of 0.6358**, 0.6327** and 0.6355** with adjusted pan values. The temperature based methods (Blaney Criddle and Thornthwaite) showed lower correlations, probably due to the consistant pattern of temperature throughout the year. On the basis of the deviation from the measured values, the radiation method showed the **lowest deviation** (0.09%) followed by the Ivanov (2.8%) Blaney Criddle (13.8%) and the Penman method (22.2%).

The regression analysis indicated that the wind velocity (X_2), sun shine hours (X_3), maximum air temperature (X_4) and the relative humidity (X_5) would sufficiently explain the variation of E_t_p . Hence, a linear model for the estimation of E_t_p for the Sevanagala area could be given as;

$$E_{t_p} \text{ (mm/day)} = 2.896 + 0.102 X_2 \text{ (km/hr)} + 0.293 X_3 \text{ (hours)} + 0.018 X_4 \text{ (}^\circ\text{C)} - 0.35 X_5 \text{ (percent)}$$