

Estimation of crop water requirement, effective rainfall and irrigation water requirement for vegetable crops using CROPWAT

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■ **ABSTRACT** : Land and water resources are the basic needs of agriculture and for the economic development of any country. As water becomes increasing scarce and increasing demand for irrigation water, everywhere, has now focused national attention and public interest on utilization of existing water supplies, integrated irrigation water conservation and management policy and practices. Accurate quantification of evapotranspiration is crucial for better management and allocation of water resources. It is important that the water requirements of crops are known at different management levels within the irrigated area to accomplish effective irrigation management. Estimation of the evapotranspiration and effective rainfall are extremely useful for operation planning and management issues. CROPWAT is a computer model, was used to estimate the reference evapotranspiration, effective rainfall, crop water requirement and irrigation water requirement for the Bapatla region in Andhra Pradesh state, India. Daily meteorological data including rainfall, maximum and minimum temperatures, relative humidity, wind speed and sunshine hours were collected for the period of 2009 to 2013 and used as input data for CROPWAT. Average peak monthly ET_0 was observed to be 8.09 mm/day for the month of June and followed by the 7.55 mm/day for the month of May. Whereas average minimum ET_0 were observed as 3.85 and 3.92 mm/day in the months of December and January, respectively. The average effective rainfall was estimated for the study area as 769.3 mm out of 1060.3 mm annual rainfall. The crop water requirement (ET_c) and irrigation water requirement were estimated for vegetable crops during *Rabi* season in the study area (Bapatla) as 516.3 mm and 470.4 mm, respectively.

■ **KEY WORDS** : CROPWAT, Effective rainfall, ET_0 , Crop water requirement, Bapatla region

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