

Estimation of Crop Water Requirement of Groundnut Crop Using FAO CROPWAT 8.0 Model

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ABSTRACT

Groundnut is one the major crop grown under sandy loam soils of north coastal districts of Andhra Pradesh, India. Hence a study was carried out to determine the crop water requirement and irrigation schedules for groundnut crop by using the 10-year climatic data from 2009-2019 which is obtained from Naira meteorological station. Crop evapotranspiration (ET_c) and Reference crop evapotranspiration (ET_o) using CROPWAT 8.0. The study results showed that ET_o varied from 1.9 to 3.9 mm/day and the effective rainfall varied from 0.6 to 141.4 mm. The irrigation requirements were 184.3 mm/dec for groundnut. The total gross irrigation and the total net irrigation requirement were 300.0 mm and 210 mm for groundnut in red sandy soils. Further it is concluded that for proper scheduling of irrigation CROPWAT 8.0 model can be used.

Keywords: Crop water requirement, Groundnut, Irrigation Schedules, Effective rainfall, CROPWAT 8.0

Water is the most demanding and critical input for agriculture. High demand for use of water in different sectors leads to scarcity of water for agriculture crops. In view of changing climate efficient use of irrigation water for crops is more important. In India, among all the consumers, agriculture is the largest end user of water where much effort has to be kept for its efficient use (Surendran *et al.* 2015). Water is an essential input for crop production. Interactions between climate, water and crop growth needs should be carefully considered and should be given a major priority.

Increased water demand brought about by rapid population growth has created the necessity to increase food production through the expansion of irrigation and industrial production to meet basic human needs. The primary objective of irrigation is to apply water to maintain crop Evapotranspiration (ET) when precipitation is insufficient. Uneven and

erratic distributions of monsoon, soil moisture stress prevailing during summer season is considered as the major limiting factors for lower yields. Precise information is required for crop water requirements, irrigation withdrawal as a function of crop, soil type and weather conditions to achieve effective planning. The rainfall and evapotranspiration ultimately determine water balance, crop water and irrigation requirements of different crops of the region. Crop water requirement depend on climatic conditions, crop area and type, soil type, growing seasons and crop production frequencies (FAO, 2009 & George *et al.* 2000).

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