



Time Variant Growth Approximation Model for Estimation of Crop Yield and Water Regulation using Environmental Factors (FCG)

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Abstract: In this research work, new approach of time variant growth approximation model has been proposed for computing the amount water required to the cultivated crop and to estimate the yield of the crop for all the time window and region. The source of data were obtained from the weather data collected through the source of Agro climate research Centre, Tamil Nadu Agricultural University, Coimbatore, Tamil Nadu, India for Coimbatore and Ammapet region. In this proposed method, initially the yield traces are split into a number of time spaces according to the plant being considered, and performs approximation under specified conditions. The growth approximation technique computes time oriented growth weight for each plant based on various irrigation methods (fluid), climate and geological parameters. Additionally, the method estimates the water regulation factor for each time window and generates a water key factor value. The water key factor denotes the level of water to be regulated to improve the crop yield using the environmental factors (FCG) like water, climate, and geology. The results of yield estimation efficiency produced by this model are 98% which was higher in comparing with the other methods. The estimated crop yield and water regulation to the cultivated crop achieved by the proposed new approach was 82500 Kg/ ha and 140 mm respectively. The results of this proposed method shows improvements in comparing with the other methods. Hence this time variant growth approximation model proposes new innovative approach in estimating the amount of water needed to crop and estimating the crop yield for all seasons and regions .

Keywords: Precision agriculture, Crop Yield, Water Regulation, FCG, Time variant model, Growth Approximation
