

## **A study on the incidence of drought at Pelwatte Sugar Cane Plantation**

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### **Abstract**

The availability of moisture is a vital factor in crop growth. This availability depends principally on three factors, namely rainfall, soil and plant characteristics. Drought is the condition where moisture is not available for a plant and likewise depends on rainfall, soil and plant characteristics. Drought analysis demarcates the time frame for planting, after care operation, harvesting and efficient irrigation schedule. In the study, the incidence of drought has been analyzed purely using rainfall data. The average daily rainfall data of Pelwatte Sugar cane Plantation (duration of 15 years) were used to explain the drought spell. A threshold value of less than 6 mm day<sup>-1</sup> was chosen to identify non rainy day from rainy day. In direct analysis, 75% probability of drought incidence was less than 3 consecutive days in all months except June, July and August which had the values of 15, 4 and 4 days respectively. Considering consecutive 10 days drought, since usual irrigation interval is 10 days, highest value was obtained in the month of April and November. These results showed that rainfall was inadequate for crop establishment and growth or in other terms crop failure may occur one year out of 20 years in April planting and one year out of 10 years in November planting crop in rainfed sugar cultivation. Occurrence of drought incidence for every month and year were modeled using the two parameter gamma distribution function. In this modeling approach, the result showed the ability of the model to predict incidence of drought with high correlation between observed and predicated values. These models proved good description of the occurrence of drought over limited periods and the parameters vary with time, would provide useful description of the pattern of drought throughout the year.

**Key words:** Drought, Gamma distribution, Sugar cane

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