

Demarcation of rainfall onset for field crop production in Hambantota District through climatic water balance approach

C M Navaratne^{1*}, M H J P Gunarathna¹ and K D N Weerasinghe¹

¹ *Department of Agricultural Engineering, Faculty of Agriculture, University of Ruhuna, Mapalana, Kamburupitiya*

Rainfall data over the last 42 years (1960-2002) in six rain gauge stations located in the Hambantota district and pan evaporation data at the *Angunakolapelessa* meteorological station were analyzed to identify the optimum cropping calendar for field crops in the Hambantota District.

10 mm weekly rainfall at 50 % probability and Hargreaves weekly Moisture Availability Index at 60 % probability dependable rainfall were used for rainfall onset identification in each station. A farmer survey was conducted to find the existing crop commencement time of the study area.

Based on the 10 mm weekly rainfall at 50 % probability, rainfall onset for *yala* and *maha* seasons varies from 11th week to 16th week and from 37th week to 42nd week respectively. When the Hargreaves weekly moisture availability index was applied, it varies from 12th week to 14th week for *yala* and from 38th week to 42nd week for *maha* seasons. According to farmer survey results, farmers rarely cultivate in *yala* season due to water scarcity and crop cultivation

of dry land crops in *maha* season commences from 39th week to 41st week. The results revealed that, existing crop commencement time for *maha* season, strongly correlates with the onset of rainfall, predicted by the Hargreaves weekly moisture availability index. The relationship between farmer crop commencement week (S) and simulated rainfall onset week by Hargreaves moisture availability index (H) is

$$S = 24.672 + 0.372H$$

$$r^2 = 0.90$$

This equation will help to decide the optimum crop commencement week for *maha* season in the Hambantota district.