

A TIME-SERIES MODELING APPROACH USING CLIMATIC VARIABLES FOR
IDENTIFYING DIFFERENT PADDY PRODUCTION PATTERNS BASED ON SEVERAL
RAINFALL SCENARIOS IN THE BATTICALOA DISTRICT

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ABSTRACT

Climate variations more or less decide the environmental dynamics of an area. Agriculture depends on the performance of the environmental variables especially that of climate (i.e. rainfall). In this respect, knowledge of the likely climate and its impact could add value to sound agro-environmental management. A forecasting approach that incorporates climatic variability and paddy production of the Batticaloa district is presented in this study. Rainfall time series and their corresponding extreme event processes are analyzed using statistical models in order to study the annual climatic trend, fluctuation and variability. Incorporation of long-term monthly rainfall and temperature data in the ARIMA model analysis proved to be a very valuable technique in forecasting climatic trends for Agro-environmental planning. Two broad statistical approaches were used in this analysis; one is based on inference of the entire time series and the other one is correlating the paddy production and climate processes. Furthermore, the inference from the analysis of rainfall records using ARIMA and the predictive information based on the response of rainfed paddy farming have been combined to study different scenarios of rain water balance/availability and paddy production.

Key words: ARIMA, climate, forecasting, paddy, scenario