

# **Forecasting Seasonal Paddy Production in Sri Lanka Using Time Series Approach**

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Rice is not only the staple food of Sri Lankans but the production of paddy also provides employment to rural people, reduces the gap between the rich in urban areas and the poor living in rural, agricultural regions. Paddy is cultivated on two seasons namely Yala (April to August) and Maha (September to March). The Maha season shows highest average paddy production (1,693,000 MT) than Yala Season (954,600 MT). The highest paddy production was recorded in Maha season (2,383,989 MT) in 2008/09. Total Paddy production in Sri Lanka has been fluctuated during the last three or four decades due to various reasons. Therefore, forecasting of annual paddy production is very important. In this study, two techniques, namely a seasonal ARIMA model and Winter's exponential smoothing model, have been investigated for their applicability for forecasting Yala and Maha seasons paddy production in Sri Lanka using seasonal data from 1979/Yala to 2006/Yala. The seasonal ARIMA model was compared with Winter's models to assess their performance in forecasting. The mean absolute percentage error (MAPE) was used to compare the two models. Results showed that ARIMA (0,1,1) (0,1,1)<sub>2</sub> model was better fit to forecast total paddy production in Sri Lanka. The percentage error for the data (1979-2006) was varied from -10.8% to 9.8%. The validity of the model was tested for the observed series as well as an independent set using seasonal data for 2006/Maha-2009/Yala and MAPE was found to be 3.75%. Therefore, forecasted values for total paddy production in Sri Lanka were 2,105,500 MT and 1,431,980 MT corresponding 2009/Maha season and 2010/Yala Season respectively.

**Keywords:** ARIMA, Winter's exponential smoothing, AIC (K), mean absolute percentage error (MAPE), Seasonality.