PREDICTION OF PADDY YIELD IN MAHAWELI AREAS BY STATISTICAL MODELING

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The agricultural sector plays an important role of the economy and social development in Sri Lanka. Rice is the most important food in Sri Lanka. Furthermore, rice is the single most important crop occupying 29% of total agriculture land and 32% of the total employment in Sri Lanka. Mahaweli Authority of Sri Lanka plays an important role in agriculture production and development of the country. Mahaweli areas contributed 22% of domestic paddy production. There are several major cultivation regions in Mahaweli such as systems B, C, G, H and Udawalawe. Mahaweli regions with different environments cultivate paddy under irrigation and rainfall conditions.

Forecasting paddy yield is important for planning purposes. Paddy yield is mainly affected by climate. In this study, the factors affecting on paddy yield in the Mahaweli systems were investigated. Regression analysis was performed using seasonal paddy average yield and weather data (rainfall, temperature, humidity and solar radiation) from 1990 to 2011. The result indicated that the fertilizer usage, rainfall, temperature, solar radiation and humidity are significantly correlated with yield of paddy in systems B, C, G, H and UW. The fitted regression models imbibed the variables (fertilizer usage, rainfall, temperature, humidity and solar radiation) that are significantly impact on the paddy yield.

Time series analysis and forecasting has become a major tool in different applications. In this study seasonal paddy yield data were used. The use of particular statistical tools derived from Box and Jenkins methodology. ARIMA and SARIMA model were fitted. Also vector autoregressive models were fitted and used to forecast the paddy yield.