

FORECASTING COW AND BUFFALO MILK PRODUCTION IN SRI LANKA: A TIME SERIES ANALYSIS

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Livestock production in Sri Lanka mainly comprises meat and milk production. In the recent past, there was an increase in the consumption of milk and milk products in Sri Lanka. Time series analysis is often used to forecast future values of any time dependent observations by smoothing, interpolating, and modeling of the series. Seasonality, trend and autocorrelation are the important characteristics of the time series.

The objective of this study is to fit a time series model and forecast the future values for annual island cow and buffalo milk data recorded at equal time intervals. An analysis of time series consists of four steps: identification of the model, estimation of the parameters of the model, diagnostic checking of model adequacy and finally forecasting future realizations. In this report, we postulate some simple time series models that can be used for accurate forecasts for the milk production of Sri Lanka.

To fit a time series model for annual cow and buffalo island milk production data, first, the non-stationary series (series with actual data values) was converted to a stationary series. The Auto Correlation Function (ACF) and Partial Auto Correlation Function (PACF) graphs were used to find the order of the models. Based on the minimum AICC, BIC and likelihood statistics values, several models such as Auto Regressive (AR), Moving Average (MA) and Auto Regressive Moving Average (ARMA) were fitted. As a diagnostic tool, estimated noise sequences were tested. By comparing the forecasting values of models, one or two models were selected. Finally, these models were used to forecast the monthly average milk production up to year 2006.

Facilities provided by the Postgraduate Institute of Science for conducting this M.Sc. project are acknowledged.