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**FORECASTING COW AND BUFFALO MILK PRODUCTION  
IN SRI LANKA**

A PROJECT REPORT PRESENTED BY

NOORDEEN FAHMIYA  
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to the Board of Study in Statistics and Computer Science  
**POSTGRADUATE INSTITUTE OF SCIENCE**

in partial fulfillment of the requirement  
for the award of the degree of

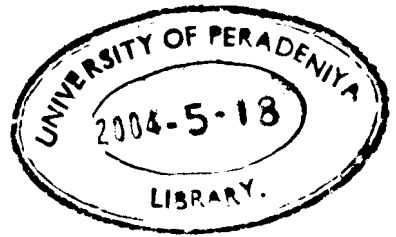
**MASTER OF SCIENCE IN APPLIED STATISTICS**

of the

**UNIVERSITY OF PERADENIYA  
SRI LANKA**

2003

**571433**



## **FORECASTING COW AND BUFFALO MILK PRODUCTION IN SRI LANKA**

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The objective of this study is to fit a time series model for annual island cow and buffalo milk production 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 forecasting future realizations. In this report we postulate some simple time series models that can be used to make accurate forecasts for the milk production of Sri Lanka.

Time series analysis will be used to forecast future values of any time series by smoothing, interpolating, and modeling of the series. Seasonality, trend and autocorrelation are the important characteristics of the time series. Seasonality can be very regular or can be changed slowly over a period of months or years. A trend component is a long-term movement in the series. Autocorrelation is a local phenomenon, which is positive or negative. Based on the above verifications, the analysis is performed for this project.

To fit a time series model to 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 ACF and 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 AR, MA and ARMA models were fitted. As a diagnostic tool,

estimated noise sequences are tested. By comparing the forecasting values of the models, one or two models are selected. Finally these models are used to forecast the annual milk production up to year 2006.

A software package ITSM 2000 developed by P.J Brockwell and R.A Davis (1996) for windows is used to analyse the data.