



STATISTICAL MODELLING TO INVESTIGATE TRENDS IN THE HARVESTED AREA, PRODUCTION AND PRODUCTIVITY OF NATURAL RUBBER IN INDIA

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Abstract : The present study aims to determine the most suited parametric models to analyse the trends in the harvested area, production and productivity of Indian natural rubber. Different linear, non-linear and time-series models are employed for the study. The statistically best fitted parametric models are chosen based on the coefficient of determination (R^2), adjusted R^2 and significant regression coefficients. After examining the data for stationarity, the appropriate time-series models are chosen based on the various goodness of fit criteria, i.e., Akaike's Information Criterion (AIC), Schwarz Criterion (SC), Hannan-Quinn Criterion (HQC), Shapiro-Wilks Test (SW), Shapiro-Francia Test (SF), Root Mean Square Error, Mean Absolute Error and assumptions of normality of residuals. Based on these criteria, the best models (p,d,q) are determined and tabulated. The randomness is tested based on the residual analysis. While the quadratic model is the best-fitted model for analysing the trends in the harvested area, rational model and cubic model are the most suited models for production trends and productivity trends respectively. Depending on best-suited trend function, the relative growth rate of harvested area, production and productivity are estimated.

Key words : Akaike's Information Criterion, Schwarz Criterion, Hannan-Quinn Criterion, Shapiro-Wilks Test, Shapiro-Francia Test, Run Test.