

# **Forecasting Models for Red gram Area, Production and Productivity in Karnataka**

**K Sessa Sai, K N Sreenivasulu, V Srinivasa Rao and V Sitarambabu**

Department of Statistics and Computer Applications, Agricultural College, Bapatla.

## **ABSTRACT**

Red gram, scientifically known as *Cajanus cajan*, is an important perennial legume crop widely cultivated in semiarid tropical regions. It holds significant agricultural and economic value, being grown in countries such as India, Eastern Africa, and Central America. Among the states in India, Karnataka holds a prominent position in red gram production. Therefore, forecasting area, production and productivity plays a crucial role in anticipating the future needs of a nation. Effective planning and risk management require accurate forecasting and timely policy formulation. In this study, different linear and nonlinear models, including ARIMA and ANN models, were fitted for the area, production and productivity of red gram in Karnataka. ANN was identified as the best model for forecasting due to its better diagnostic criteria. Finally, forecasting was conducted up to 2026 using the selected ANN model. The forecasted values for area, production and productivity for the year 2026 were determined as 2112.40 ('000 ha), 1249.47 ('000 tons), and 794.60 (Kg/ha), respectively.

**Keywords:** *ANN, ARIMA, forecasting, linear-nonlinear models and Red gram..*