Time-Series Forecasting Model for Evaluating Efficiency Gains in Nigerian Field Research Stations Systems

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Abstract

Recent studies indicate a need for improved efficiency in Nigerian field research stations (FRSs), which are crucial for advancing agricultural productivity and sustainability. The proposed model will incorporate autoregressive integrated moving average (ARIMA) methodology for forecasting future performance based on historical data from selected FRSs. Robust standard errors and confidence intervals will be used to assess the uncertainty associated with these forecasts. The model not only provides a structured approach for evaluating FRS performance but also highlights the potential of time-series forecasting as an analytical tool for enhancing agricultural research and development efforts in Nigeria. Field managers should consider implementing this method to monitor and optimise their operations, thereby contributing to the sustainable growth of Nigeria's agri-sector. The empirical specification follows $Y = \beta_{0+\beta}^{\rightarrow} p X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *African agroecology, GIS, KPIs, M&E systems, STS, Time series analysis, VAM*

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