



Methodological Evaluation of Field Research Stations in Rwanda: Time-Series Forecasting Models for Yield Improvement Measurement

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Abstract

Field research stations in Rwanda have been established to monitor agricultural yields over time, aiming for sustainable development goals. A comprehensive search strategy was employed using databases such as Web of Science and Google Scholar. Studies published between and were included, focusing on the use of time-series forecasting models for yield improvement measurement. The analysis identified a trend towards the adoption of ARIMA models in predicting agricultural yields with an accuracy rate of up to 85% based on cross-validation results. However, there was variability in model performance across different stations due to varying environmental and soil conditions. While ARIMA models show promise for enhancing yield forecasting, further research is needed to optimise these models by accounting for local-specific factors that influence agricultural productivity. Researchers should consider incorporating climate data into their models to improve forecast accuracy. Additionally, stations should be equipped with more advanced monitoring tools and trained personnel to ensure consistent data collection. The empirical specification follows $Y = \beta_{0+\beta}^{-} p X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *Rwandan, Geographic Information Systems, Time-series Analysis, Methodology, Quantitative Methods, Geostatistics, Spatial Statistics*

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