African Weed Science (Agri/Plant Science)

Methodological Evaluation of Regional Monitoring Networks for Yield Improvement in Ethiopia Using Time-Series Forecasting Models,

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Abstract

This review examines regional monitoring networks in Ethiopia for yield improvement, focusing on their effectiveness through time-series forecasting models. A systematic literature review was conducted using databases such as PubMed and Scopus. Studies were selected based on predefined inclusion criteria, including the use of time-series forecasting models for yield prediction. The analysis revealed that while some networks showed significant improvement trends in crop yields ($p < 0.05$), there is variability across different regions and crops, necessitating further localized model refinement. Despite mixed results, the review underscores the potential of time-series models for enhancing yield prediction accuracy in Ethiopia's agricultural sector. Further research should focus on validating these findings through pilot studies and data integration with local climate information to improve forecasting precision. The empirical specification follows $Y = \beta_{0+\beta}^{\rightarrow} p\, X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *Ethiopia, Geographic Information Systems (GIS), Remote Sensing, Data Collection Methods, Time-Series Analysis, Yield Monitoring, Agricultural Forecasting*

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