African Urban-Rural Linkages (Interdisciplinary - Social/Geography/Policy)

Time-Series Forecasting Model Evaluation within Senegal's Regional Monitoring Networks System for Yield Improvement Measurement

Ibrahima Sow[1,2], **Tayeb Ly Ndour**[3], **Muhammadou Ndiaye**[2,4]

[1] Institut Pasteur de Dakar

[2] African Institute for Mathematical Sciences (AIMS) Senegal

[3] Department of Research, Council for the Development of Social Science Research in Africa (CODESRIA), Dakar

[4] Council for the Development of Social Science Research in Africa (CODESRIA), Dakar

Published: 22 June 2002 | **Received:** 13 March 2002 | **Accepted:** 05 May 2002

Correspondence: isow@hotmail.com

DOI: 10.5281/zenodo.18753269

Author notes

Ibrahima Sow is affiliated with Institut Pasteur de Dakar and focuses on Environmental Science research in Africa.
Tayeb Ly Ndour is affiliated with Department of Research, Council for the Development of Social Science Research in Africa (CODESRIA), Dakar and focuses on Environmental Science research in Africa.
Muhammadou Ndiaye is affiliated with Council for the Development of Social Science Research in Africa (CODESRIA), Dakar and focuses on Environmental Science research in Africa.

Abstract

Regional monitoring networks in Senegal are crucial for agricultural yield measurement and policy development. However, their effectiveness varies due to methodological challenges. A time-series forecasting model was applied to historical agricultural yield data from the region. The model incorporates autoregressive integrated moving average (ARIMA) methodology, accounting for potential seasonality and autocorrelation in yields. Uncertainty around model predictions is quantified using standard error estimates. The ARIMA model demonstrated a significant improvement in forecasting accuracy compared to simple trend-line regression models, particularly evident in the consistent prediction of yield fluctuations over multiple seasons (-). The evaluation highlights the importance of robust time-series analysis for enhancing agricultural monitoring systems. Further research should focus on validating model assumptions and expanding coverage to include more regions within Senegal. Agricultural Monitoring, Yield Improvement, Time-Series Forecasting, ARIMA Model The empirical specification follows $Y = \beta_{0+\beta}^{\rightarrow} p\, X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *Sahelian, GIS, ARIMA, stochastic, econometrics, spatial analysis, regression*

ABSTRACT-ONLY PUBLICATION

This is an abstract-only publication. The complete research paper with full methodology, results, discussion, and references is available upon request.

✉ REQUEST FULL PAPER

Email: info@parj.africa

Request your copy of the full paper today!

SUBMIT YOUR RESEARCH

Are you a researcher in Africa? We welcome your submissions!

Join our community of African scholars and share your groundbreaking work.

Submit at: app.parj.africa

Scan to visit app.parj.africa

Open Access Scholarship from PARJ

Empowering African Research | Advancing Global Knowledge