African Cartography and Geovisualization (Earth Science Methodology)

Multilevel Regression Analysis for Evaluating Regional Monitoring Networks in Yield Improvement across Senegal

Mariama Ndiaye[1], **Fatimata Wade**[2], **Seyni Sarr**[3], **Mamadou Diop**[4,5]

[1] Department of Research, Institut Sénégalais de Recherches Agricoles (ISRA)

[2] Université Gaston Berger (UGB), Saint-Louis

[3] Institut Pasteur de Dakar

[4] Department of Research, Université Alioune Diop de Bambey (UADB)

[5] Department of Research, Institut Pasteur de Dakar

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Correspondence: mndiaye@aol.com

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Author notes

Mariama Ndiaye is affiliated with Department of Research, Institut Sénégalais de Recherches Agricoles (ISRA) and focuses on Environmental Science research in Africa.

Fatimata Wade is affiliated with Université Gaston Berger (UGB), Saint-Louis and focuses on Environmental Science research in Africa.

Seyni Sarr is affiliated with Institut Pasteur de Dakar and focuses on Environmental Science research in Africa.

Mamadou Diop is affiliated with Department of Research, Université Alioune Diop de Bambey (UADB) and focuses on Environmental Science research in Africa.

Abstract

This study focuses on evaluating regional monitoring networks in Senegal, specifically their effectiveness in improving agricultural yield. A multilevel regression model will be used to analyse data collected from various regions of Senegal over the period -, accounting for both regional and local variations in agricultural practices. The analysis revealed significant differences in yield improvements across different monitoring network configurations within Senegal (e.g., higher yields in areas with more comprehensive coverage). This study contributes by providing a robust statistical framework to evaluate the impact of monitoring networks on agricultural outcomes, offering insights for policy-makers and researchers. Based on findings, recommendations include enhancing network coverage in regions with lower yield improvements and integrating early warning systems to address potential yield drops. Agricultural Monitoring Networks, Yield Improvement, Senegal, Multilevel Regression Analysis The empirical specification follows $Y = \beta_{0+\beta}^{\rightarrow} p\, X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *Sub-Saharan, Africa, Geospatial, Regression, Socioeconomic, Modelling, Regionalization*

ABSTRACT-ONLY PUBLICATION

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