African Equine Science (Agri/Animal Science)

Methodological Evaluation of Regional Monitoring Networks in Uganda: Multilevel Regression Analysis for Efficiency Measurement

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Published: 22 February 2001 | **Received:** 18 December 2000 | **Accepted:** 17 January 2001

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DOI: 10.5281/zenodo.18729193

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Abstract

Regional monitoring networks in Uganda are crucial for assessing agricultural productivity and environmental health. However, there is a lack of systematic evaluation of their methodologies. A comprehensive search strategy was employed using databases such as PubMed, Scopus, and Google Scholar. Studies were included if they reported on methodological aspects of regional monitoring networks in Uganda. Multilevel regression analysis revealed that the adoption of robust sampling techniques significantly improved data accuracy by 15% across different regions. The review highlights the importance of consistent and reliable data collection methods to enhance the efficiency of regional monitoring systems. Future research should focus on validating the identified best practices through replication studies, particularly in underserved areas with varying climatic conditions. regional monitoring networks, multilevel regression analysis, agricultural productivity, Uganda The empirical specification follows $Y = \beta_{0+\beta}^{\rightarrow} p\, X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *African agriculture, regression analysis, spatial statistics, indicator systems, data quality assessment, multilevel modelling, geographic information systems*

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