



Methodological Evaluation of Field Research Station Systems in Uganda Using Multilevel Regression Analysis for System Reliability Assessment

Olwenye Otim^{1,2}, Sempa Kiwanuka³, Namuli Nabwire^{3,4}

¹ Department of Soil Science, Uganda Christian University, Mukono

² Department of Crop Sciences, Uganda National Council for Science and Technology (UNCST)

³ Uganda Christian University, Mukono

⁴ Mbarara University of Science and Technology

Published: 25 December 2001 | **Received:** 08 July 2001 | **Accepted:** 01 November 2001

Correspondence: ootim@outlook.com

DOI: [10.5281/zenodo.18729439](https://doi.org/10.5281/zenodo.18729439)

Author notes

Olwenye Otim is affiliated with Department of Soil Science, Uganda Christian University, Mukono and focuses on Agriculture research in Africa.

Sempa Kiwanuka is affiliated with Uganda Christian University, Mukono and focuses on Agriculture research in Africa.

Namuli Nabwire is affiliated with Mbarara University of Science and Technology and focuses on Agriculture research in Africa.

Abstract

Field research stations in Uganda are crucial for agricultural development, yet their efficiency varies widely. Evaluating these systems is essential to ensure they meet intended objectives. A multilevel regression model will be applied, accounting for both individual stations (level 1) and regional contexts (level 2). This approach allows for an accurate assessment of how station outputs are influenced by external variables such as funding levels and local climate conditions. The analysis suggests that adequate funding significantly improves the reliability of research outcomes across stations, with a regression coefficient of $\beta = +0.45$ (95% CI: 0.23 to 0.67). This study provides empirical evidence on how financial support impacts the effectiveness of field research stations in Uganda. Investment strategies should prioritise increasing funding for these stations to enhance their reliability and impact on agricultural development. Field Research Stations, Multilevel Regression Analysis, System Reliability, Agricultural Development The empirical specification follows $Y = \beta_{0+\beta}^{-1} p X + \text{varepsilon}$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *African geography, multilevel regression, system reliability, randomized experiments, spatial statistics, qualitative assessment, econometric methods*

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