African Physics Letters (Pure Science)

Evaluation of Randomized Field Trials in Tanzanian Smallholder Farms Systems: A Replication Study

Simiyu Mwakwaya[1], **Nyalume Nkumbula**[2]

[1] Department of Research, University of Dar es Salaam

[2] Tanzania Wildlife Research Institute (TAWIRI)

Published: 14 January 2001 | **Received:** 21 August 2000 | **Accepted:** 23 November 2000

Correspondence: smwakwaya@hotmail.com

DOI: 10.5281/zenodo.18730046

Author notes

Simiyu Mwakwaya is affiliated with Department of Research, University of Dar es Salaam and focuses on Physics research in Africa.

Nyalume Nkumbula is affiliated with Tanzania Wildlife Research Institute (TAWIRI) and focuses on Physics research in Africa.

Abstract

Randomized field trials have been used to evaluate smallholder farming systems in Tanzania with mixed results, highlighting the need for methodological replication studies. A detailed design was employed to replicate a previous trial, including random assignment of plots, equal distribution of inputs (fertilizers, seeds), and data collection over multiple seasons. Statistical analysis utilised a linear mixed-effects model to account for the hierarchical structure of the data. In one replicated field trial, an increase in crop yield was observed with fertilizer application compared to control plots, although this effect varied significantly across different soil types ($p < 0.05$). The replication study confirmed the robustness of the original findings and underscored the importance of considering site-specific conditions for optimal intervention effectiveness. Future studies should incorporate more detailed data on soil properties to enhance predictive accuracy, particularly in regions with diverse climatic zones. The empirical specification follows $Y = \beta_{0+\beta}^{\rightarrow} p\, X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *Tanzania, randomized controlled trials, smallholder agriculture, experimental design, yield analysis, statistical methods, resource allocation*

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