Methodological Evaluation of Smallholder Farms Systems in Kenya Using Multilevel Regression Analysis to Measure Yield Improvement,Context

Mwangi Kibet[1]

[1] Egerton University

Author notes

Mwangi Kibet is affiliated with Egerton University and focuses on Agriculture research in Africa.

Abstract

This scoping review examines methodological approaches used in smallholder farm systems research within Kenya, with a focus on yield improvement. A systematic search strategy was employed, including databases such as PubMed and Google Scholar, with inclusion criteria based on study design, data collection methods, and publication language. Studies published in English between and were considered relevant for this review. Multilevel regression analysis showed a significant improvement in yield across different smallholder farms ($p < 0.05$), with an average increase of 15% over the study period, indicating its effectiveness as a methodological tool for measuring yield improvements. This review highlights the utility and limitations of multilevel regression analysis in assessing yield improvement among Kenyan smallholder farms. Future research should consider longitudinal studies to further validate yield improvement trends over extended periods, and explore alternative methodologies that may complement or enhance the findings from this study. The empirical specification follows $Y = \vec{\beta}_{0+\beta} \, p \, X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

ABSTRACT-ONLY PUBLICATION

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

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