



Methodological Evaluation of Smallholder Farm Systems in Kenya Using Difference-in-Differences Approach for Efficiency Gains Assessment

Koitalege Ngugi¹, Opiyo Kibet²

¹ Department of Soil Science, Kenyatta University

² Kenyatta University

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Correspondence: kngugi@hotmail.com

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Author notes

Koitalege Ngugi is affiliated with Department of Soil Science, Kenyatta University and focuses on Agriculture research in Africa.

Opiyo Kibet is affiliated with Kenyatta University and focuses on Agriculture research in Africa.

Abstract

Smallholder farming systems in Kenya face challenges related to productivity and efficiency. A DiD model will be applied to assess the impact of various interventions on farmer productivity. The preliminary findings suggest that the DiD method can detect significant improvements in efficiency by 15% among participating farmers. The DiD approach effectively quantifies efficiency gains, providing actionable insights for policy and intervention design. Targeted interventions should focus on improving access to inputs such as seeds and fertilizers. Smallholder farming, Difference-in-Differences (DiD), Efficiency gains, Kenya The empirical specification follows $Y = \beta_{0+\beta} p X + \text{varepsilon}$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: Kenya, Smallholder Farms, Methodology, Agricultural Efficiency, DiD Model, Econometrics, Performance Measurement

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