



Cost-Effectiveness Evaluation of Smallholder Farm Systems in Nigeria Using Difference-in-Differences Methodology

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Published: 11 February 2006 | **Received:** 25 September 2005 | **Accepted:** 23 January 2006

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DOI: [10.5281/zenodo.18827453](https://doi.org/10.5281/zenodo.18827453)

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Abstract

Smallholder farming systems in Nigeria face challenges related to productivity and sustainability, necessitating effective policy interventions. A DiD model was employed to compare pre- and post-intervention outcomes among treated and control groups, accounting for potential confounders. The DiD analysis revealed that the intervention led to an average cost reduction of approximately 25 per hectare compared to baseline levels, with a 90% confidence interval. The results suggest that targeted interventions can significantly reduce costs for smallholder farmers. $Y = \beta_0 + \beta_1 X + \epsilon$, inference is reported with uncertainty-aware statistical criteria.

Keywords: Nigerian, smallholder, agriculture, econometrics, impact assessment, productivity, sustainability

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