



# Methodological Evaluation of Smallholder Farms Systems in Nigeria: A Randomized Field Trial for Yield Improvement,

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## Abstract

This study focuses on evaluating smallholder farming systems in Nigeria, specifically examining yield improvement through a randomized field trial. A randomized field trial was conducted across multiple smallholder farms in Nigeria. The study employed statistical analysis using regression models to assess the impact of various input factors on crop yields. Of all tested fertilizer types, organic compost showed a significant positive effect on yield improvement by an average of 15% compared to conventional chemical fertilizers. The findings indicate that integrating organic compost into farming practices can substantially enhance crop productivity in Nigerian smallholder systems. Farmers and agricultural extension services should be encouraged to adopt the use of organic compost as a sustainable strategy for improving yields. The empirical specification follows  $Y = \beta_{0+\beta}^{-} p X + \text{varepsilon}$ , and inference is reported with uncertainty-aware statistical criteria.

**Keywords:** *African geography, smallholder farming, randomized trial, yield assessment, qualitative methodology, sustainability analysis, empirical evaluation*

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