



Methodological Foundations for Evaluating Smallholder Farm Systems in Senegal: A Randomized Field Trial Approach

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Abstract

This article focuses on evaluating smallholder farm systems in Senegal through a randomized field trial approach, aiming to measure yield improvement. A randomized field trial will be conducted across different regions of Senegal, with treatments randomly assigned to control and intervention groups. Data on crop yields, soil quality, pest management practices, and farmer inputs will be collected using standardised protocols. This study provides foundational insights into methodological approaches for evaluating and enhancing smallholder farming systems in Senegal. The findings will inform the development of evidence-based agricultural policies to support smallholder farmers and contribute to sustainable food security in Senegal. The empirical specification follows $Y = \beta_{0+\beta} p X + \text{varepsilon}$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *Sub-Saharan, agroecology, randomized-control, yield-gap, resilience, sustainability, intervention analysis*

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