



Methodological Evaluation of Regional Monitoring Networks for Yield Improvement in Kenyan Agriculture: Difference-in-Differences Approach

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Abstract

Recent advancements in agricultural monitoring networks have aimed to enhance productivity through regional data collection and analysis. We utilised time-series data from five regions in Kenya over two years to apply the difference-in-differences approach. This method compares pre- and post-intervention outcomes while controlling for regional trends. Data analysis revealed a significant increase in crop yields by 15% across monitored regions, with no discernible effect on non-monitored areas. The difference-in-differences model demonstrated robustness in measuring yield improvements attributable to the monitoring networks. Further research should explore scalability and cost-effectiveness of these regional monitoring systems for broader application. Agricultural Monitoring, Yield Improvement, Difference-in-Differences, Kenyan Agriculture The empirical specification follows $Y = \beta_{0+\beta} p X + \text{varepsilon}$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *Kenyan, Geospatial, Randomized Controlled Trial, Stochastic Frontier Analysis, Spatial Econometrics, Time Series, Panel Data*

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