



Methodological Evaluation of Regional Monitoring Networks in Ethiopia: Panel Data Estimation for Efficiency Gains

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Abstract

In Ethiopia, regional monitoring networks have been established to assess agricultural productivity and efficiency. Panel data analysis was employed using a linear mixed-effects model to estimate the efficiency of farming practices across different regions. A significant proportion (65%) of farmer groups showed improvement in yields, with substantial variations between monitoring zones. The study supports the utility of regional monitoring networks for enhancing agricultural productivity and efficiency. Further research should focus on scaling up these systems to broader geographical areas. Agriculture, Monitoring Networks, Efficiency Gains, Panel Data Analysis

The empirical specification follows $Y = \beta_{0+\beta}^{-} p X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *African agriculture, Ethiopia, panel data, mixed-effects model, econometrics, efficiency measurement, spatial analysis*

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