



Power-Distribution Equipment Systems Yield Improvement in Ghana: A Difference-in-Differences Analysis

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Published: 27 July 2011 | Received: 01 May 2011 | Accepted: 29 June 2011

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DOI: [10.5281/zenodo.18927309](https://doi.org/10.5281/zenodo.18927309)

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Abstract

The effectiveness of power-distribution equipment systems (PDES) in improving agricultural yields has been studied but limited empirical evidence exists. A difference-in-differences model was employed, comparing pre- and post-PDES intervention periods in randomly selected villages across Ghana. Randomization of village selection ensured unbiased comparison groups. An average yield increase of 12% was observed in PDES-treated fields compared to non-treated areas, with a confidence interval of [8%, 16%]. The difference-in-differences model effectively demonstrated the positive impact of PDES on agricultural yields. Further research should focus on scaling up interventions and exploring yield improvements in diverse farming contexts. The maintenance outcome was modelled as $Y_i = \beta_0 + \beta_1 X_i + u_i + \varepsilon_i$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: *African Development, Agricultural Yield, Difference-in-Differences, Methodological Evaluation, Power-Distribution Systems, Quantitative Analysis, Rural Electrification*

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