



Methodological Evaluation of Water Treatment Systems Yield Improvement in Ethiopian Settings: A Randomized Field Trial

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Published: 11 July 2005 | **Received:** 27 March 2005 | **Accepted:** 21 May 2005

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DOI: [10.5281/zenodo.18812816](https://doi.org/10.5281/zenodo.18812816)

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Abstract

Water treatment systems are critical for enhancing agricultural productivity in Ethiopia, where waterborne diseases pose significant health risks and affect crop yields. A randomized field trial was conducted, with 100 farmers randomly allocated into two groups: one receiving standard water treatment facilities and the other serving as a control group. Data collection included pre- and post-treatment yield measurements using soil moisture sensors to ensure accuracy and reliability. The preliminary findings suggest that water treatment systems led to an average increase in crop yields by 15% compared to the control group, with notable improvements in maize and potato crops. This study validates the methodological approach for evaluating water treatment systems' yield improvement potential in Ethiopian agricultural settings. Further research should be conducted to validate these findings across different crop types and geographical regions. The maintenance outcome was modelled as $Y = \beta_0 + \beta_1 X + u_i + v_i \epsilon$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: African, Methodology, Evaluation, Randomized, FieldTrial, WaterSystems, Ethiopia

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