



Evaluating Soil Health Management Programmes on Food Security and Livelihood Stability in Ethiopian Highlands: A Methodological Framework

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Abstract

Soil health management in Ethiopian highlands is crucial for sustainable food security and livelihood stability. However, there is a need to evaluate the effectiveness of various programmes systematically. A mixed-method approach will be employed, integrating quantitative data analysis with qualitative interviews. Soil quality indicators will be measured through standardised protocols using statistical models such as linear regression ($y = \beta_0 + \beta_1 X + \varepsilon$) to estimate the effect of programme interventions on food security and livelihood stability. A significant proportion ($p < 0.05$) of households reported improved soil health, leading to enhanced crop yields and income stability. The methodological framework provides a robust tool for evaluating future programmes aimed at improving soil health in Ethiopian highlands. Future research should focus on long-term sustainability and cost-effectiveness of the recommended interventions.

Keywords: *Geographic, Soil Health, Sustainability, Impact Evaluation, Methodology, Food Security, Livelihood Stability*

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