



# Water Harvesting Systems in Ethiopian Agriculture: Productivity Gains and Economic Benefits in Rural Communities

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## Abstract

Agricultural productivity in rural communities of Ethiopia is significantly impacted by water scarcity, particularly during the dry seasons. The study utilised a mixed-method approach combining quantitative data analysis with qualitative field observations to assess system performance across different regions in Ethiopia. Community water harvesting systems increased average crop yields by approximately 25% compared to non-harvested areas, with a notable reduction of 30% in household expenditure on irrigation. The implementation of these systems not only enhances agricultural productivity but also provides sustainable economic benefits for rural communities in Ethiopia. Further research should focus on scaling up successful models and integrating them into broader agricultural development strategies. The empirical specification follows  $Y = \beta_{0+\beta}^{-1} p X + \text{varepsilon}$ , and inference is reported with uncertainty-aware statistical criteria.

**Keywords:** African geography, water harvesting systems, hydrology, irrigation methods, rural development, sustainable agriculture, participatory approach

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