



Year-Two Performance Outcomes and Rainfall Dependency Indices of Water Harvesting Systems Among Smallholder Farmers in Western Kenya,

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Abstract

This study examines the performance of water harvesting systems among smallholder farmers in Western Kenya over a two-year period. A mixed-method approach was employed, including interviews, surveys, and data from existing water harvesting structures. A comprehensive analysis of performance metrics was conducted using statistical tools. The findings indicate that while some systems showed a significant increase in water storage capacity (over 20% compared to initial designs), there were notable variations among different regions due to varying rainfall patterns. Despite improvements, the effectiveness of these systems was highly dependent on local rainfall conditions. This variability necessitates tailored adaptation strategies for future projects. Recommendations include the development of region-specific guidelines and increased investment in monitoring and maintenance activities to enhance system longevity and efficiency.

Keywords: *African Geography, Smallholder Farmers, Water Harvesting Systems, Methodological Approaches, Quantitative Analysis, Rainfall Dependency Indices, Mixed-Methods*

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