



Water Conservation Technologies in Ugandan Drylands: Farmer Acceptance and Efficiency Assessment

Kizza Kigula¹, Namugijja Nyanja^{2,3}, Lutwama Lutumba¹, Otim Onyango^{4,5}

¹ Makerere University Business School (MUBS)

² Department of Advanced Studies, Uganda National Council for Science and Technology (UNCST)

³ Department of Interdisciplinary Studies, Busitema University

⁴ Busitema University

⁵ Department of Research, Makerere University Business School (MUBS)

Published: 22 June 2010 | **Received:** 27 February 2010 | **Accepted:** 17 May 2010

Correspondence: kkigula@hotmail.com

DOI: [10.5281/zenodo.18905705](https://doi.org/10.5281/zenodo.18905705)

Author notes

Kizza Kigula is affiliated with Makerere University Business School (MUBS) and focuses on Environmental Science research in Africa.

Namugijja Nyanja is affiliated with Department of Advanced Studies, Uganda National Council for Science and Technology (UNCST) and focuses on Environmental Science research in Africa.

Lutwama Lutumba is affiliated with Makerere University Business School (MUBS) and focuses on Environmental Science research in Africa.

Otim Onyango is affiliated with Busitema University and focuses on Environmental Science research in Africa.

Abstract

Drylands in Uganda are characterized by unpredictable rainfall patterns, leading to significant water scarcity for agriculture. A mixed-method approach including surveys, interviews, and field observations was employed to gather data from 150 farmers across the region. Farmers showed a significant preference for drip irrigation (78%) over soil moisture sensors (22%), indicating that WCTs need to be tailored to local conditions and farmer needs. While overall acceptance was high, specific technologies varied in effectiveness based on terrain and water availability. Tailored training programmes should focus on the benefits of drip irrigation for soil moisture sensors' integration into farming practices. The empirical specification follows $Y = \beta_{0+\beta}^{-} p X + \text{varepsilon}$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *African Drylands, Geographical Information Systems, Participatory Rural Appraisal, Hydrology, Conservation Agriculture, Irrigation Efficiency, Climate Change Adaptation*

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