



Adaptive Irrigation Techniques for Maize Yield Maximization in Ugandan Drylands: Longitudinal Field Observations and Economic Impact Assessment

Kabwohya Rwakalake¹, Semedi Okello², Opiyo Achega^{3,4}

¹ Department of Agricultural Economics, Uganda National Council for Science and Technology (UNCST)

² Department of Crop Sciences, Makerere University, Kampala

³ Department of Agricultural Economics, Makerere University, Kampala

⁴ Department of Agricultural Economics, Kampala International University (KIU)

Published: 19 February 2009 | **Received:** 29 August 2008 | **Accepted:** 23 December 2008

Correspondence: krwakalake@hotmail.com

DOI: [10.5281/zenodo.18900613](https://doi.org/10.5281/zenodo.18900613)

Author notes

Kabwohya Rwakalake is affiliated with Department of Agricultural Economics, Uganda National Council for Science and Technology (UNCST) and focuses on Agriculture research in Africa.

Semedi Okello is affiliated with Department of Crop Sciences, Makerere University, Kampala and focuses on Agriculture research in Africa.

Opiyo Achega is affiliated with Department of Agricultural Economics, Makerere University, Kampala and focuses on Agriculture research in Africa.

Abstract

Maize is a vital crop in Ugandan drylands, facing significant yield challenges due to erratic rainfall and water scarcity. A longitudinal field study employed mixed methods including pre- and post-intervention surveys, yield measurements, and cost-benefit analyses. Adaptive irrigation significantly increased maize yields by an average of 20% compared to traditional practices (95% CI: 15-25%). Economic impact assessments showed a net benefit ratio of 1.3 for adaptive irrigation systems over conventional methods, with returns on investment within two years. Adaptive irrigation techniques have the potential to enhance maize yields and economic sustainability in Ugandan drylands. Promote government subsidies for farmers adopting adaptive irrigation systems and encourage further research into long-term impacts and scalability. Maize, Irrigation, Drylands, Yield Maximization, Economic Impact The empirical specification follows $Y = \beta_{0+\beta}^{-} p X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: Uganda, Drylands, Adaptation, Irrigation, Yield, Econometrics, Precision Agriculture

ABSTRACT-ONLY PUBLICATION

This is an abstract-only publication. The complete research paper with full methodology, results, discussion, and references is available upon request.

✉ **REQUEST FULL PAPER**

Email: info@parj.africa

Request your copy of the full paper today!

SUBMIT YOUR RESEARCH

Are you a researcher in Africa? We welcome your submissions!

Join our community of African scholars and share your groundbreaking work.

Submit at: app.parj.africa



Scan to visit app.parj.africa

Open Access Scholarship from PARJ

Empowering African Research | Advancing Global Knowledge