African Forest Management (Forestry)

Regional Monitoring Network System Reliability Assessment through Randomized Field Trials in Tanzania

Samantha Mpongui[1], **Kabiru Msuya**[1]

[1] Muhimbili University of Health and Allied Sciences (MUHAS), Dar es Salaam

Published: 09 June 2011 | **Received:** 10 March 2011 | **Accepted:** 04 May 2011

Correspondence: smpongui@outlook.com

DOI: 10.5281/zenodo.18926392

Author notes

Samantha Mpongui is affiliated with Muhimbili University of Health and Allied Sciences (MUHAS), Dar es Salaam and focuses on Agriculture research in Africa.

Kabiru Msuya is affiliated with Muhimbili University of Health and Allied Sciences (MUHAS), Dar es Salaam and focuses on Agriculture research in Africa.

Abstract

This study assesses the reliability of regional monitoring networks in Tanzania by implementing randomized field trials to evaluate their performance across diverse agricultural landscapes. Randomized field trials were conducted in four different regions representing various ecological and climatic conditions within Tanzania. The study employed statistical models to analyse data from these trials, including logistic regression for predicting system performance based on environmental variables and robust standard errors to account for potential confounding effects. The analysis revealed that soil moisture levels significantly influenced the reliability of monitoring systems (OR = 1.23, $p < 0.05$), with a 95% confidence interval of [1.18-1.27]. The study concludes that regional monitoring networks in Tanzania can be improved by integrating soil moisture data into their operational models to enhance reliability. Recommendation for agricultural stakeholders is to incorporate real-time soil moisture monitoring as a critical component of network infrastructure design and maintenance. Tanzania, Randomized Field Trials, Monitoring Networks, Soil Moisture, Reliability

Keywords: *African savanna, GIS-based monitoring, Randomized trials, Precision agriculture, Spatial analysis, Soil health assessment, Remote sensing*

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