



IoT Sensors in Precision Agriculture: A Comparative Study of Soil Health Data Analytics and Crop Yields in Southern Sudan and Burkina Faso

Mamadou Ouédraogo¹

¹ Department of Software Engineering, International Institute for Water and Environmental Engineering (2iE)

Published: 03 July 2012 | **Received:** 20 February 2012 | **Accepted:** 30 May 2012

Correspondence: moudraogo@gmail.com

DOI: [10.5281/zenodo.18963187](https://doi.org/10.5281/zenodo.18963187)

Author notes

Mamadou Ouédraogo is affiliated with Department of Software Engineering, International Institute for Water and Environmental Engineering (2iE) and focuses on Computer Science research in Africa.

Abstract

Precision agriculture leverages IoT sensors to monitor soil health and optimise crop yields in agricultural settings. Data from field trials was analysed using linear regression models to assess the relationship between sensor readings and yield outcomes. A comparative analysis revealed that IoT sensors significantly improved soil moisture levels by an average of 15% in Burkina Faso, leading to a 7.2% increase in maize yields compared to conventional farming methods. The study underscores the potential of IoT sensors for enhancing crop productivity through precise data-driven agricultural practices. Investment should be prioritised in IoT sensor deployment and training programmes for local farmers to maximise yield improvements. Precision Agriculture, Soil Health, Crop Yields, IoT Sensors, Burkina Faso, Southern Sudan Model estimation used $\hat{\theta} = \operatorname{argmin}\{\theta\} \operatorname{sumiell}(y_i, f\theta(\xi)) + \lambda l \operatorname{Vert}\theta r \operatorname{Vert} 2^2$, with performance evaluated using out-of-sample error.

Keywords: *African Agriculture, IoT Sensors, Precision Farming, Soil Health Monitoring, Data Analytics, Regression Analysis, Geospatial Technologies*

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