



# Data-Driven Agricultural Information Systems Enhance Yields in South Sudan's Drylands

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## Abstract

South Sudan's drylands face significant challenges in agricultural productivity due to unpredictable weather patterns and limited access to data-driven tools. A mixed-methods approach was employed, including surveys, yield assessments, and machine learning algorithms for data analysis. The DIAS system showed an average increase of 20% in maize yields across the targeted regions compared to conventional farming methods. Variability was noted with some areas showing no significant improvement. DIAS systems can be effective tools for increasing crop yields, but their impact varies by region and specific crops. Further research is needed to tailor solutions more precisely. Investment in DIAS infrastructure should prioritise high-risk areas identified as having minimal previous yield improvements. Data-Driven Agricultural Information Systems (DIAS), South Sudan, Drylands, Crop Yields, Machine Learning The maintenance outcome was modelled as  $Y = \beta_0 + \beta_1 X + u_i + v \epsilon$ , with robustness checked using heteroskedasticity-consistent errors.

**Keywords:** African Drylands, Data-Driven Systems, Precision Agriculture, GIS Applications, Remote Sensing, Sustainable Farming Practices, Crop Modelling

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