African Economic Geography
(Geography/Economics/Social)

Precision Agriculture in Coastal Zanzibar: Yield Gains and Resource Efficiency on Rice Farms

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Abstract

Precision agriculture techniques are increasingly being adopted to enhance crop yields while reducing resource inputs in various agricultural settings. The study employed a case study approach, involving field observations, farmer interviews, and data collection from selected rice farms. A mixed-methods design was used to gather qualitative insights alongside quantitative metrics for analysis. Precision agriculture techniques have led to an average yield increase of 15% compared to conventional farming methods across the sampled coastal rice farms in Zanzibar. The findings suggest that precision agriculture can be a viable strategy for enhancing agricultural productivity and sustainability on Zanzibar's coastal rice farms, with notable improvements in resource utilization efficiency. Adoption of precision agriculture should be promoted through targeted training programmes and supportive policy frameworks to facilitate its wider application across the region.

Keywords: *African Geography, Precision Agriculture, Resource Management, Case Study, Yield Improvements, Geographical Information Systems (GIS), Participatory Action Research*