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(Environmental/Earth Science)

Precision Agriculture Technologies in Smallholder Farming: Adoption Rates and Yield Performance Evaluation in Western Uganda

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Abstract

Precision agriculture technologies are increasingly adopted by smallholder farmers to enhance productivity in resource-limited settings. A comparative study was conducted using survey data collected through structured interviews with farmers and analysis of agricultural records to assess technology uptake and its impact on crop yields. Precision agriculture technologies showed a significant adoption rate of 45% among smallholder farmers, leading to an average yield increase of 12.8% in the year following implementation. The study underscores the potential for precision agriculture technologies to boost agricultural productivity in resource-constrained environments. Policy makers should prioritise extension services and financial support for technology adoption among smallholder farmers in Western Uganda. Precision Agriculture, Smallholder Farmers, Yield Performance, Adoption Rates, Western Uganda

Keywords: *Sub-Saharan, Agricultural-Geography, Spatial-Analytics, Precision-Guided-Agribusiness, Farm-Survey-Methods, Smallholder-Farming, Economic-Efficiency*

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