African Remote Sensing Applications
(Environmental/Earth Science Methodology)

Adoption Patterns of Climate Resilient Vegetables among Smallholder Farmers in Central Sudan: Seed Variety Acceptance and Yield Gains

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Abstract

Climate change poses significant challenges to agriculture in Central Sudan, where smallholder farmers face increased variability in rainfall and temperature patterns. A mixed-methods approach was employed, including surveys and focus group discussions with a sample size of 150 farmers. Descriptive statistics were used to analyse the data. Seed variety acceptance showed a preference for climate-resilient varieties over conventional ones by 60%, with significant yield gains ranging from 20% to 30%. Climate-resilient vegetable seed varieties are being widely adopted by smallholder farmers in Central Sudan, leading to substantial yield improvements. Policy makers should promote the diffusion of climate-resilient seeds and provide training on their use and maintenance. Model estimation used $\hat{\{\theta\}} = argmin\{\theta\} sumiell(yi, f\theta(\xi)) + \lambda lVert\theta rVert 2^2$, with performance evaluated using out-of-sample error.

Keywords: *African Geography, Climate Change Adaptation, Smallholder Agriculture, Participatory Rural Appraisal, Seed Variability Analysis*

ABSTRACT-ONLY PUBLICATION

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