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Climate Change Adaptation Strategies for Smallholder Farmers in the Southwestern Sudanese Highlands: Five-Year Impact on Crop Yields and Livelihood Security

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Abstract

This study examines climate change adaptation strategies implemented for smallholder farmers in the Southwestern Sudanese Highlands of South Africa over a five-year period. A mixed-methods approach was employed, combining quantitative data from yield assessments with qualitative insights from farmer interviews and focus group discussions. Crop yields showed a moderate increase of up to 20% in selected crops such as maize and sorghum, reflecting the effectiveness of certain adaptation measures like improved seed varieties and irrigation systems. Livelihood security indicators also demonstrated significant improvements, with farmers reporting increased income from diversified agricultural activities. The findings suggest that climate change adaptation strategies can lead to substantial benefits for smallholder farmers in terms of both crop productivity and overall livelihood stability. Policy recommendations include the promotion of further research into long-term sustainability impacts of these practices, as well as the scaling-up of successful initiatives with financial support from development partners.

Keywords: *Geographical Indicators of Sub-Saharan Africa, Smallholder Agriculture, Climate-Smart Villages, Livelihood Security Indices, Adaptation Metrics, Integrated Farming Systems, Agroforestry Practices*

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