



Technological Adoption in Climate Resilient Agriculture Practices in Northern Nigeria: A Case Study

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Abstract

Climate change poses significant challenges to agricultural productivity in northern Nigeria, where traditional farming practices are vulnerable to extreme weather events. A mixed-methods approach combining qualitative interviews with quantitative surveys was employed to gather data from 150 randomly selected farmers in the region. Farmers showed a strong preference for solar-powered irrigation systems, which were adopted by more than half of respondents (54%) as compared to traditional water pumps. While initial investment costs are high, long-term benefits outweigh these expenses, contributing to increased agricultural resilience in the face of climate variability. Government and development agencies should provide financial incentives and technical support for farmers adopting solar irrigation systems.

Keywords: *African Geography, Climate Change Adaptation, Mixed Methods, Technological Innovation, Sustainable Agriculture, GIS Applications, Participatory Rural Appraisal*

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