



# Climate-Smart Agriculture Practices' Yield and Nutrient Retention Impact Analysis in Northern Nigerian Farmlands: A Mixed-Methods Study

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## Abstract

This study examines the impact of climate-smart agriculture (CSA) practices on crop yields and nutrient retention in farmlands of northern Nigeria. A mixed-methods approach was employed, integrating quantitative data collection through yield measurements and soil analysis, along with qualitative insights from farmer interviews and field observations to explore the sustainability and effectiveness of CSA practices. In one year of intervention, maize yields increased by an average of 15% in fields adopting CSA compared to conventional farming methods. Cowpea yields showed a steady growth trend with similar improvements. The findings suggest that CSA can significantly enhance crop productivity and nutrient retention without compromising long-term sustainability, providing evidence for its adoption in northern Nigerian farmlands. Based on this study, policymakers should encourage the scaling-up of CSA practices through targeted interventions, education programmes, and extension services to benefit farmers and improve food security in the region.

## Keywords:

*Nigerian*

*Geographic*

*Terms:*

*Methodological:*

*Mixed-Methods*

*Theoretical:*

*Qualitative-Quantitative*

*Integration*

*Empirical:  
Longitudinal*

*Study*

*Contextual:  
African*

*Agriculture*

*Innovative:  
Climate-Smart Practices*

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