



Climate-Smart Agriculture Adoption and Productivity Impact Among Smallholder Farmers in Kenya

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Abstract

Climate-smart agriculture (CSA) strategies are increasingly adopted by smallholder farmers to enhance agricultural productivity in response to climate variability and change. The research employs a mixed-methods approach combining quantitative data from surveys with qualitative insights from focus group discussions. A proportion of 45% of farmers reported an increase in maize yields after adopting CSA practices, which were statistically significant at the $p < 0.01$ level with robust standard errors. The findings suggest that CSA adoption has a positive and measurable impact on smallholder agricultural productivity in Kenya. Policy makers should prioritise extension services to support farmers' continuous engagement with CSA practices, particularly in marginal areas where yields are more likely to benefit.

Keywords: *African agriculture, climate variability, smallholder farming, sustainability practices, yield optimization, participatory approaches, integrated crop management*

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