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Effect of Climate Smart Agricultural Practices on Household Food Security in Smallholder Production System: Micro Evidence from Kenya

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Abstract

Background: Climate change in Sub Saharan Africa has had a negative impact on agricultural production leading to food insecurity. Climate Smart Agricultural (CSA) practices have the potential to reverse this trend because of its triple potential benefits of improved productivity and high income, reduction or removal of greenhouse gases and improved household food security. Hence, we empirically find the determinants of choice and the effect of Climate Smart Agricultural practices (CSAs) on household food security among smallholder farmers in Kenya.

Methods: Primary data was collected in Teso North sub-county, Busia County of Kenya among smallholder farmers. CSA practices used by farmers were grouped by principal component analysis and linked to food security by multinomial endogenous switching regression model.

Results: Results for principal component analysis revealed clustered the CSA practices into 4 packages; crop management, field management, farm risk reduction and soil management practices. The greatest effect of CSAs adoption by smallholder farmers on food security is when they use all the four packages. Further, adoption of the package with greatest impact on food security was positively influenced by gender, farm size and value of productive farm assets.

Conclusions: CSAs have the potential to alleviate food insecurity among smallholder farmers if used in combinations and to a larger extend. To enhance adoption, land fragmentation should be discouraged through civic education and provision of alternative income generating activities for farmers to benefit when practised on relatively bigger land. Finally, farmers should be sensitized on the need to invest in farm productive assets in order to absorb the risks of climate change while enhancing adoption of CSA practices.

Keywords: Climate-smart agricultural practices: Food security: Climate change: Multinomial endogenous switching regression.

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