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Adoption of Climate Change Adaptation Strategies by Maize-dependent Smallholders in Ethiopia

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Abstract

Climate change is a biophysical process that is amongst the most limiting factors for increasing or even maintaining food production by small-farmer communities in Sub Saharan Africa (SSA). Adoption of climate change adaptation strategies that increase agricultural productivity and at the same time building farmers' resilience capacity has become a top policy priority in SSA. In this study, we investigate how maize-dependent smallholders in Ethiopia adapt to climate change. Both household and plot-level data were collected, and subsequently analysed by a multivariate probit regression model. Results show that most climate change adaptation strategies implemented by maize-dependent smallholders, are complementary. Combining conservation tillage, mixed maize-legume cropping and terracing along with the use of drought-resistant maize varieties allows farmers to increase productivity while building resilience to climate change more than a subset of these strategies. This relationship suggests that adoption of specific climate change adaptation strategies should be made simultaneously with other agronomic management operations to better enhance productivity, build resilience and ensure food security.

Findings indicate that adoption of climate change adaptation strategies is positively and significantly influenced by farmers' confidence in extension agents' capacity in promoting strategies that help to deal with climate change, and household education level and membership in local farmer organisations. The study also makes it clear that social connection with friends and families in the face of shocks and hazards positively and significantly affects adoption of climate change adaptation strategies. Policies should aim at further building agricultural extension agents' capacity by providing effective and continuous education and training on climate change impacts and responses, and at promoting household memberships in local farmer organisations that foster adoption of climate change adaptation strategies at small farm settings.

Keywords: Africa , drought stress, erratic rainfall, multivariate probit model, plot tenure security, productivity, resilience

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