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Adoption of Climate-smart Technologies in Agriculture: Evidence from an Eastern Indian State

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Abstract

Climate change, poverty, and inequality are the major issues of developing countries. Climate change threatens rural livelihoods by adversely affecting crop yields. Developing countries are the most vulnerable to climate change due to their lack of adaptive capacity. Climate-smart agricultural (CSA) practices are advanced as a possible solution. However, resource-poor farmers often face financial constraints to adopt practices that could sustainably increase their crop yields. The current paper using a structured questionnaire survey among the farming households of an Eastern Indian state, namely, Odisha, explores the key determinants of CSA adoption. Two districts with one each from the coastal and the inland regions of the state are chosen for the study. The majority of the respondents (95 %) perceive the effects of climate change in the region. The respondents have adopted practices such as rescheduling planting (79 %), crop rotation (50 %), micro-irrigation (19 %), and early maturity seeds (18 %). Farmer's perception of climate change has been analysed to assess the knowledge of farmers on climate change. To explore the key determinants of adopting these five major practices, a probit model is estimated. Understanding the role of women farmers to upscale the CSA practices has been described qualitatively. The result shows that factors such as farmer field school participation, subsidies, access to energy use, and perception of climate shocks are the major determinants. Further, the interaction between landholding and credit availability has positively affected the decision to adopt. Government extension services have a substantial impact on various adaptation practices. Farmers' access to govt extension is more likely to do rescheduling planting by 11 %, crop diversification by 14 %, crop rotation by 18 %, and early maturity variety seeds by 28 %. Lack of training, poor access to the market, lack of land rights to females, and resource constraints are barriers for women to adopt CSA. Region-specific policies such as farmers' field schools, subsidies on farm machinery, and resource endowments can upscale CSA adoption in the region.

Keywords: Agricultural Extension, climate-Smart Agriculture, Odisha , Perception of climate change, Probit model

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