World Academy of Science, Engineering and Technology
International Journal of Environmental and Ecological Engineering
Vol:17, No:05, 2023

Climate-Smart Agriculture Technologies and Determinants of Farmers' Adoption Decisions in the Great Rift Valley of Ethiopia

Authors : Theodrose Sisay, Kindie Tesfaye, Mengistu Ketema, Nigussie Dechassa, Mezegebu Getnet

Abstract : Agriculture is a sector that is very vulnerable to the effects of climate change and contributes to anthropogenic greenhouse gas (GHG) emissions in the atmosphere. By lowering emissions and adjusting to the change, it can also help to reduce climate change. Utilizing Climate-Smart Agriculture (CSA) technology that can sustainably boost productivity, improve resilience, and lower GHG emissions is crucial. This study sought to identify the CSA technologies used by farmers and assess adoption levels and factors that influence them. In order to gather information from 384 smallholder farmers in the Great Rift Valley (GRV) of Ethiopia, a cross-sectional survey was carried out. Data were analysed using percentage, chi-square test, t-test, and multivariate probit model. Results showed that crop diversification, agroforestry, and integrated soil fertility management were the most widely practiced technologies. The results of the Chi-square and t-tests showed that there are differences and significant and positive connections between adopters and non-adopters based on various attributes. The chi-square and t-test results confirmed that households who were older had higher incomes, greater credit access, knowledge of the climate, better training, better education, larger farms, higher incomes, and more frequent interactions with extension specialists had a positive and significant association with CSA technology adopters. The model result showed that age, sex, and education of the head, farmland size, livestock ownership, income, access to credit, climate information, training, and extension contact influenced the selection of CSA technologies. Therefore, effective action must be taken to remove barriers to the adoption of CSA technologies, and taking these adoption factors into account in policy and practice is anticipated to support smallholder farmers in adapting to climate change while lowering emissions.

Keywords : climate change, climate-smart agriculture, smallholder farmers, multivariate probit model
Conference Title : ICCSACC 2023 : International Conference on Climate-Smart Agriculture and Climate Change
Conference Location : Vancouver, Canada
Conference Dates : May 22-23, 2023