

ABSTRACT

Globally, approximately 62% of farmers have embraced climate-smart agricultural practices (CSAPs). Adopting these practices presents the farmer a chance to adapt and mitigate the effects of climate change. However, in Kenya, adoption rate is less than 30%. In various parts of Kenya, Irish potato farmers are hindered by their perceptions, socio-economic, and institutional factors from adopting CSAPs. This study aimed to determine the effects of perception, socio-economic, and institutional factors on Irish potato farmers' adoption of CSAPs in Ainabkoi, Uasin Gishu County. The study employed a descriptive cross-sectional survey design. The target population was 1500 Irish potato farmers, and a sample of 196 farmers was selected using cluster sampling procedure. Data on the farmers' perceptions, socio-economic, and institutional factors were collected using both closed and open-ended questionnaires. Socio-economic and institutional data, along with CSAPs were analyzed using SPSS version 28 and econometric analysis through Stata version 17. Descriptive statistics were used to identify CSAPs used by Irish potato farmers, while categorical principal component analysis was used to estimate perception aspects on benefits, impact, risks, costs, and profitability of CSAPs, and multivariate probit model was used to analyze the socio-economic and institutional factors. The findings showed that 77.55% of the farmers had not used improved seeds varieties, while 22.44% had used them. Most farmers, 72.44% had not used soil management practices such as minimum tillage and improved fallowing, while 27.45% reported using them. Agroforestry practice was found to be adopted by 46.94%, while 53.06% indicated that they had adopted. Crop rotation was adopted by 56.12%, while 43.88% indicated that they had not used the practice. The crop mostly rotated with Irish potato was beans 36.22%, maize 10.20%, vegetables 8.16%, and oats 1.53%. Additionally, 43.88% stated that they do not rotate Irish potatoes with any specific crop. The study findings on perception showed that four of the perception aspects had more than one eigen values and were retained. The impact on farm variable had the highest eigen value of 4.458, coping climate change 2.180, knowledge level 1.216, and resilience had 1.182. The multivariate analysis showed that various socio-economic and institutional factors had positive relationships and were significant at different p-values to various practices. Land size dedicated to Irish potato cultivation showed a significant ($p < 0.05$), and negative association with the adoption of improved potato seed varieties, while having significant ($p < 0.01$) and positive relationship with intercropping, access to income had ($p < 0.01$), and a positive relationship with intercropping and conservation tillage practices. Extension services had ($p < 0.01$) and a positive relationship with soil management practices, schooling years had ($p < 0.05$) positive relationship with conservation tillage, credit access had significant ($p < 0.01$) positive relationship with minimum tillage, group membership had ($p < 0.05$), and positive relationship with improved Irish potato seeds, while the number of years in Irish potato farming had ($p < 0.01$) positive association with adopting organic amendments. Based on the findings the Irish potato farmers had embraced various climate-smart agricultural practices, driven by perceptions, socio-economic factors, and institutional support. The study recommends addressing farmers' perception aspects while addressing their socio-economic and institutional factors to Irish potato farmers to increase farmers' knowledge and awareness of CSAPs. Additionally, governments and policy makers should formulate and implement supportive policies and incentives for CSAP. The farmers, policy makers, and government agencies, stand to benefit from increased adoption of CSAPs.