

ABSTRACT

Maize is Kenya's staple food crop. The Kenyan government has developed ambitious agricultural policies and programs to increase its performance and productivity to improve its rural citizens' livelihoods. Agroforestry is among the practices recognized as a technique of contributing to food security and economic development. However, its adoption rate remains low despite its capacity to improve crop yield, mitigate soil erosion, and reduce fuel wood and fodder scarcity. This study aimed to analyse the socio-economic and institutional factors influencing the adoption of agroforestry technologies for improved maize production in selected Sub-Counties in Kericho County, Kenya. The study employed a descriptive cross-sectional survey design. The target population was smallholder maize farmers who have and those who have not adopted agroforestry farming systems. A sample of 350 smallholder farmers was used in the study. A stratified random sampling technique was used to select the respondents. A semi-structured questionnaire was used to collect data on socio-economic factors such as farm size, age, household size and education. Data collected on institutional factors included access to credit, extension services, farmer's group membership and availability of research institutions. Data collected was coded and analysed using STATA version 17. A binary logistic regression model was used to determine socio-economic factors influencing the adoption of agroforestry farming systems. A propensity score matching regression model was used to analyse the effect of agroforestry adoption on maize production. The findings showed that among the socio-economic factors, gender ($p = 0.000$), land ownership ($p = 0.012$), and income ($p = 0.036$) positively and significantly influenced the adoption of agroforestry. However, age, household size, land size and education did not significantly influence ($p > 0.05$) the adoption of agroforestry. Institutional factors such as extension services ($p = 0.000$), group membership ($p = 0.001$), credit ($p = 0.000$), and the availability of research institutions ($p = 0.033$) were found to influence adoption of agroforestry significantly. The propensity score matching was used to determine agroforestry adoption's effect on maize yield among selected farmers from the overall group. The nearest neighbor matching algorithm results showed that agroforestry adoption negatively affected maize grain yield by -1241.2 kg per ha. It is possible that the adopters did not follow the recommended spacing for the planted agroforestry trees. As a result, the canopies may have cast too much shade on maize crops, preventing them from receiving the necessary amount of sunlight. Despite agroforestry reducing maize grains production, the study findings indicated that farmers increased their overall income through the sale of tree products such as timber fruits, thus accounting for the positive and significance of agroforestry. The findings of this research mean that efforts to increase agroforestry adoption should not only concentrate on improving farm productivity but also on other benefits that can be derived from agroforestry. The study also encourages empowering farmers through credit access, quality extension services, and the formation of farmer groups to create awareness on how best farmers can utilize agroforestry to increase overall household income and farm productivity. Although the current findings indicate that agroforestry did not increase maize production, farmers can still gain from the farming system through the sale of tree products, among other benefits that complement household income.