

## Abstract

Climate change poses a significant threat to agricultural productivity and food security in Kenya, particularly in arid and semi-arid regions where smallholder farmers depend on rain-fed agriculture. Increased climate variability, characterised by erratic rainfall and rising temperatures, has undermined rural livelihoods and exposed limited adaptive capacity. Climate-Smart Agriculture (CSA) offers a promising path to resilience, but its adoption is heavily influenced by access to agricultural finance, a persistent challenge for rural farmers. This study examined how access to financial services affects CSA adoption among smallholder farmers in Mwingi West Sub-county, Kitui County, Kenya. Key factors analysed included financial awareness, credit access, proximity to financial institutions, group membership, and barriers to service utilisation. CSA practices assessed were conservation agriculture, mulching, water harvesting, irrigation, integrated pest management, agroforestry, weather advisories, inorganic fertiliser use, zai pits, and soil conservation structures. Using a cross-sectional design, data were collected from 393 randomly selected farmers and key informants through interviews and focus group discussions. Statistical analysis, chi-square and binary logistic regression using SPSS v26, showed that while 64.9% of respondents were aware of financial services, only 13% had accessed them. Major barriers included low financial literacy, lack of collateral, high interest rates, and poor accessibility. Awareness of financial services was significantly associated with CSA adoption ( $p = 0.000$ ), as were distance to institutions ( $p = 0.022$ ), type of financial services ( $p = 0.001$ ), ease of access ( $p = 0.000$ ), and group membership ( $p = 0.003$ ). The study recommended that, to boost CSA adoption, financial institutions provide tailored loans with flexible collateral and interest terms. Additionally, the government and partners should strengthen financial literacy and expand financial access through mobile and agent banking, especially in remote areas.