

Promoting Sustainable Intensification Technologies; What Drives Small Farm Households' Adoption Decisions?

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Abstract

Smallholder farmers' behavioural decisions to adopt a given technology are a source of debate among applied economists as to what influences farmers' choices in each geographical area, and it remains an active area of research. Sustainable intensification technologies (SITs) or practices, it is argued, provide opportunities to increase farm-level productivity and income while minimising human, social, economic and environmental costs, especially in the face of increasing human population, food malnutrition, and climate change. Over the last two decades, policymakers and scientists have advocated for sustainable intensification of production, which has resulted in the development and dissemination of sustainable intensification technologies (SIT) to small farms in developing countries. However, adoption rates continue to be low, and the factors influencing farmers' adoption decisions have not converged. The study used a multistage sampling technique and a structured questionnaire to collect data from 461 small farm households in northern Ghana. To investigate the factors influencing SIT adoption, the logistic regression model was used. Further, a test of difference in means of the covariates of the two groups was performed. In terms of age, educational level, access to credit, extension, cost of hired labor, on-farm income, group membership, and regional or geographical location, the study finds a statistically significant difference in means between SIT non-adopters and adopters. The adopters are 1.68 years older than non-adopters. More non-adopters are educated (26.23%) than adopters (15.62%). Non-adopters and adopters spend an average of 2.69 years and 1.56 years in school, respectively. Adopters, on the other hand, are more likely to be in a group or a member of Farmer Based Organisation (93.67%) than non-adopters (28.88%). Adopters have more (2.87) access to agricultural extension than non-adopters (1.60). The odds of SIT adoption increase with age (1.150, $p < 0.05$), educational level (2.273, $p < 0.05$), number of agricultural extension visits (1.373, $p < 0.01$), group or FBO membership (39.420, $p < 0.01$), and geographic location ($p < 0.05$). SIT adoption is significantly influenced by access to extension services, group membership, age, education, and geographical location. The study proposes interventions by state and non-state actors to improve the delivery of extension services and education, as well as to promote group formation for peer learning, information sharing, and networking while taking geographical dynamics into account when delivering new technologies to farmers.

Keywords: Adoption, Determinants, Smallholder farmers, Sustainable intensification technologies, Northern Ghana.