

## ABSTRACT

In Southern Mali, small-scale farmers face multiple constraints such as low soil fertility that lead to low agricultural productivity and income. Crop-Livestock Integration System (CLIS) among small-scale farmers has been promoted by extension services to tackle these challenges in order to improve farmers' livelihoods. Some small-scale farmers have embraced the integrated crop livestock production system and adopted innovations that have been promoted by extension services providers. However, little is known on the determinants of small-scale farmers' decision to uptake these innovations. In addition, the enterprise combination which gives the highest returns to small-scale farmers in crop livestock integration systems is still unknown. This study aimed to fill out that knowledge gaps. The general objective of this study was to contribute towards optimal resource use in crop livestock integration systems for improved livelihood of small-scale cotton farmers in southern Mali. Specifically, it was to determine the socioeconomic and institutional characteristics of small-scale cotton farmers in Southern Mali; to determine the socioeconomic and institutional factors influencing small-scale cotton farmers' uptake of innovation in CLIS; and to determine the enterprise combination that gives the high gross margin in CLIS. A multistage sampling procedure was used to obtain a sample size of 171 small-scale cotton farmers. Descriptive statistics, multivariate probit model, and linear programming model were used in data analysis. The key differences between small-scale cotton farmers' socioeconomic and institutional characteristics were in years in formal education, market distance, agricultural asset value, extension distance, household size, number of cattle owned, and land size. Numbers of trainings, land size, age, years in formal education, market distance, extension distance and participation in off-farm activities were the main determinants of small-scale cotton farmers' decision to adopt innovations in CLIS. Finally, small-scale cotton farmers are not efficiently used their resources. At present resource level, small-scale cotton farmers could optimally maximize their profit by 104.80%, 54.35%, 23.01%, and 19.52% increase compared to the actual total gross margin respectively. Therefore, this study recommends that there is need to reinforce the technical knowledge of lowly educated farmers through innovative agricultural training methods and techniques. Further, this study recommends that an effective advice of farmers on the efficient allocation of farm resources should be built into programs promoting increased agricultural productivity and income.