Introduction

Women contribute greatly towards most farming activities and family food security in Africa. Nevertheless, they are confronted with many challenges such as low productivity, lack of institutional supports, low farm incomes, lack of access to credit, and family burdens including domestic chores. Sustainable intensification (SI) of smallholder agriculture systems can help address the constraints of low productivity and low farm incomes. SI involves the application of multiple inputs and practices in an integrated manner to increase productivity while increasing contributions to natural capital and environmental services (Pretty et al., 2011).

Research Objectives

- To explore the gender differentials in the adoption of Sustainable Intensiﬁcation Practices (SIPs),
- To determine the impact of SIPs on maize yields and net income.

Material and Methods

A total of 468 farmers were randomly selected from 16 Africa RISING intervention communities for the survey (Figure 1). Farmers were interviewed with a structured questionnaire. The questions were centered on areas such as crop production, marketing and transportation, etc.

Three SIPs were considered in this study: improved maize, cropping system diversification (CSD), and the combination of the two SIPs.
- A mixed multinomial endogenous treatment effects model was used to explore the adoption of SIPs as well as estimate the impact of SIPs on maize yields and net income. The model was estimated using a Maximum Simulated Likelihood (MSL) approach.

Findings

1. Rates of adoption

Figure 2: Adopted SIPs by gender

2. Adoption patterns of SIPs

Using non-adoption as a reference category. The model estimates show that:
- The gender of the plot manager does not inﬂuence the adoption of the SIPs.
- Female farmers in female-headed households are less likely to adopt improved maize and CSD, whiles their counterparts in male-headed households are more likely to adopt CSD.
- Factors that affect adoption and impact of SIPs include household size, land tenure, livestock ownership, educational level, farmer’s age, group membership, improved seeds, number of traders the household knows, plot distance, soil characteristics, agro-ecological zone, and source of information on SIPs.

2.1. Average treatment effects of SIPs

Figure 3: Effect of SIPs on maize yields (kg/ha).
- Improved maize increased yield by 95%.
- CSD decreased yield by 14%.
- Improved maize with CSD increased yield by 77%.

Figure 4: Effect of SIPs on net income (GHC/ha).
- Improved maize increased net income by 51%.
- CSD decreased net income by 18%.
- Improved maize with CSD increased net income by 48%.

Conclusions

- The gender of the plot manager does not affect the adoption of SIPs.
- The adoption of SIPs differs across female farmers in both male and female headed-head households respectively.
- The adoption of SIPs depends on access to essential resources such as labour, land, livestock, and other factors.
- The adoption of the combined SIPs had the greatest beneﬁts in general.
- The adoption of improved maize had the greatest impact on maize yields. However, the adoption is associated with the use of more inorganic fertilizers, which are very expensive to most small-scale farmers.

Reference


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Figure 1: Africa RISING intervention communities in northern Ghana

Figure 2: Adopted SIPs by gender

Figure 3: Effect of SIPs on maize yields(kg/ha).

Figure 4: Effect of SIPs on net income(GHC/ha).

Figure 5: Adoption of SIPs by gender

Figure 6: Adoption of SIPs by male and female-headed households respectively.

Figure 7: Adoption of SIPs across different agro-ecological zones.

Figure 8: Adoption of SIPs by source of information on SIPs.

Figure 9: Adoption of SIPs by household size.

Figure 10: Adoption of SIPs by land tenure.

Figure 11: Adoption of SIPs by livestock ownership.

Figure 12: Adoption of SIPs by educational level.

Figure 13: Adoption of SIPs by farmer’s age.

Figure 14: Adoption of SIPs by group membership.

Figure 15: Adoption of SIPs by number of traders the household knows.

Figure 16: Adoption of SIPs by plot distance.

Figure 17: Adoption of SIPs by soil characteristics.

Figure 18: Adoption of SIPs by agro-ecological zone.

Figure 19: Adoption of SIPs by source of information on SIPs.

Figure 20: Adoption of SIPs by household size.

Figure 21: Adoption of SIPs by land tenure.

Figure 22: Adoption of SIPs by livestock ownership.

Figure 23: Adoption of SIPs by educational level.

Figure 24: Adoption of SIPs by farmer’s age.

Figure 25: Adoption of SIPs by group membership.

Figure 26: Adoption of SIPs by number of traders the household knows.

Figure 27: Adoption of SIPs by plot distance.

Figure 28: Adoption of SIPs by soil characteristics.

Figure 29: Adoption of SIPs by agro-ecological zone.