Exploring Gender Differentials in Adoption of Sustainable Intensification Practices in Northern Ghana

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Introduction

Women contribute greatly towards most farming activities and family food security in Africa. Nevertherless, 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 contraints 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.

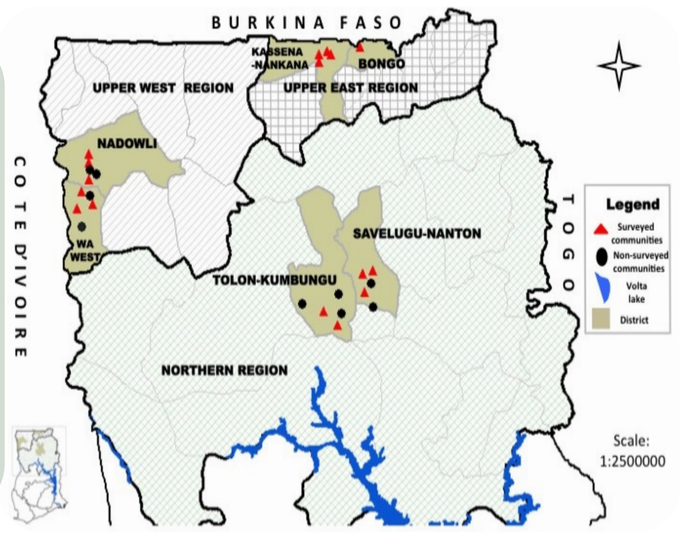

Figure1: Africa RISING intervention communities in northern Ghana

- 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 extimate 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

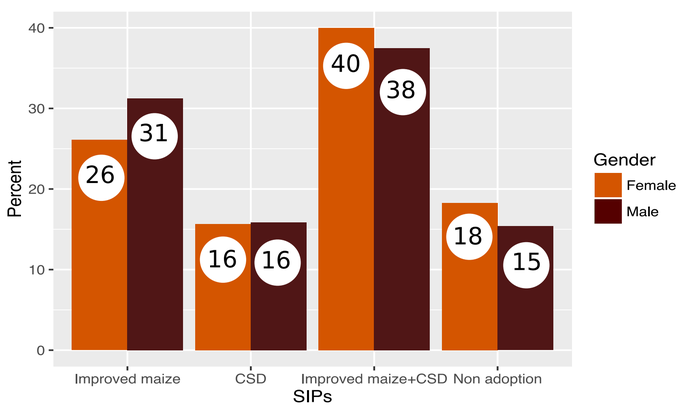

Figure 2: Adopted SIPs by gender

Mr. John Baanaah, a farmer in northern Ghana shows off his maize harvested.Credit:IITA/Jonathan Odhons

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

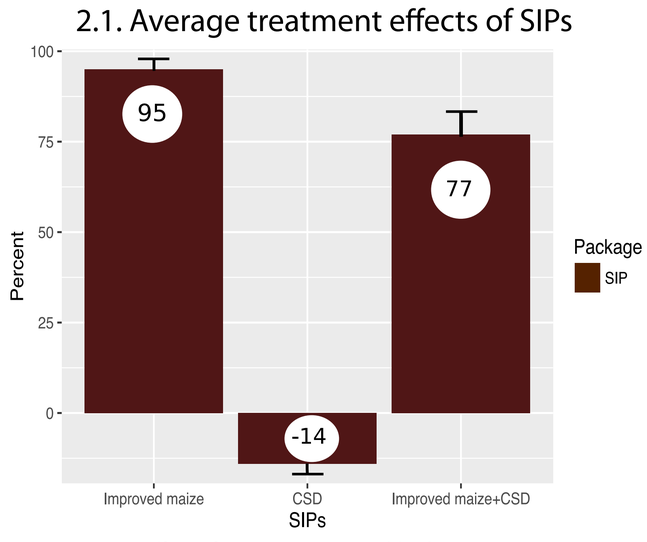

Figure 3: Effect of SIPs on maize yield(kg/ha). Improved maize increased yield by 95%, CSD decreased yield by 14%, and improved maize with CSD increased yield by 77%.

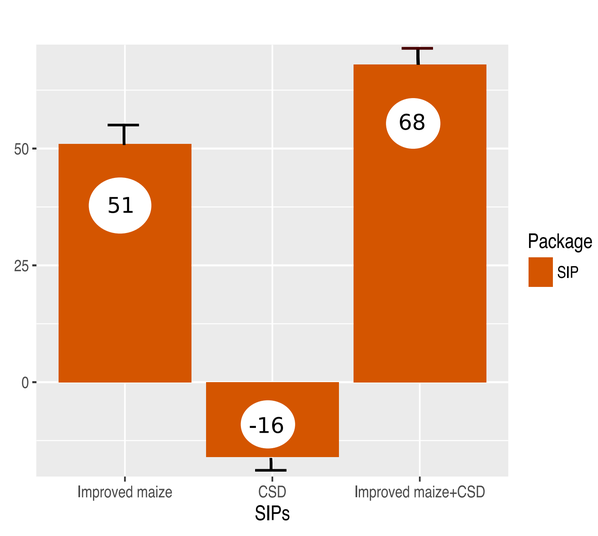

Figure 4: Effect of SIPs on net income(GHC/ha). Improved maize increased net income by 51%, CSD decreased net income by 16%, and improved maize with CSD increased net income by 68%.

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-headed 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
Pretty,J.,Toulman, C&Willams,S.(2011). Sustainable intensification in African agriculture. Int.Jour of Agricultural Sustainability.

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