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Introduction and justification

Soybean (*Glycine max*) is a high value crop that has shown great potential to sustain production systems in smallholder farming systems due to its multiple roles of cash income, food and soil fertility management in cereal-legume rotations. The net income benefits derived from soybean production depend on the extent to which farmers participate in output markets. Siziba et al (2011) and Barret (2008), found out that smallholder farmers find it difficult to participate in markets because of a range of constraints and barriers reducing the incentive for participation. Previous studies on market participation have concentrated on cereal market participation and there is scanty literature on soybean market participation. It is therefore necessary to identify the key determinants of soybean market participation by farmers in order to be able to identify key entry points that increase household income.

Materials and Methods

This study aims to identify factors affecting a farmer's decision to participate in soybean market and evaluate the factors that affect intensity of market participation. The study is based on an extract of 187 households from Guruve district interviewed during 2011 as part of the IFAD project baseline survey in Zimbabwe. The data was collected in November 2011 through a household survey. In this study, we use the Heckman's sample selection model. Choice of this model was guided by the need to correct sample selection bias and incidental truncation since soybean sales are only observed for households that participated in the market. Data analysis was done using STATA version 11.

Results and discussion

Table 1 shows the summary statistics and statistical significance tests on equality of means for continuous variables and equality of proportions for binary variables for soybean market participants and non market participants. Some of these characteristics are the covariates of the estimated models presented in table 2.

Table 1: Socio-economic characterization of sample

	Market participants	Non market participants
Sample	54	133
Head age (years)	43.76	50.43 ^{ab}
Household size	5.33	5.18
Farming experience (years)	15.13	20.42 ^{ab}
Gender (prop of male)	75.93	79.70
Mobile phone (prop)	68.52	63.91
Radio (prop)	68.52	52.63 ^{ab}
Total arable land (ha)	3.52 ^{ab}	2.41

^{ab}The Bonferroni results at 5% level of significance show significant differences between market participating and non market participating farmers

Table 2 shows the Ordinary Least Squares (OLS) and the Probit model results. Dependent variables for the OLS and Probit models are amount of soybean sold and participation in soybean market respectively. Covariates were adopted from literature.

In total, five variables in the selection model significantly explain the probability of a household to participate in Soybean market as a seller: Gender, Own radio, access to extension, used inoculants and used certified seeds. These results show that male headed households and those that own radios, have access to extension, use inoculants and improved seeds have a higher likelihood to participate in soybean markets. In the OLS regression, wealth index and distance to nearest town significantly and positively explained intensity of market participation.

Table 2: OLS and Probit model results

Dependent variable	Probit (Sell soybeans)		OLS (Amount of soybean sold)	
	β	p-value	β	p-value
Gender	-0.8465787	0.004***	6.248642	0.345
Head age	-0.0631673	0.172	0.2099507	0.536
Head age ²	0.0003158	0.488	0.0036811	0.49
Household size	0.0448211	0.511	-0.4030923	0.256
Experience	-0.0009955	0.939	-0.3667439	0.183
Wealth Index	0.0029989	0.283	0.0218074	0.094*
Market_distance	-	-	3.920472	0.014**
Own radio	0.6723377	0.006***		
Own cellphone	0.0026592	0.992		
Access_extension	0.4174631	0.086*		
Used Inoculants	0.8934502	0.016**		
Use certified seeds	0.6843014	0.041**		

Source: Computation from authors' household survey data (2011)
significance levels: *** =1%, ** = 5%, * =10%



Picture 1: soyabean crop in a farmer's field in Guruve district

Picture 2: Agro-industrial processor loading soybean from a collection point in Guruve

Conclusion

The results from this study show that soybean market participation can be improved by improving access to rhizobial inoculants, improved germ plasm, access to extension agents and market information on prices. Volumes can be achieved by targeting resource endowed farmers and also by encouraging farmers to bulk their produce.

References

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