Tropentag, September 11-13, 2024, hybrid conference

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Poverty and food security impacts of sustainable intensification: Evidence from Ethiopia

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Abstract

As sustainable intensification is a major pathway for improving agricultural productivity and reducing the environmental impacts of land use, the Government of Ethiopia and international development organisations have been promoting several practices and technologies for sustainable intensification. Rural households are likely to adopt a combination of various approaches and practices. This paper seeks to answer the question of how SI impacts poverty and food security among rural smallholders in Ethiopia by utilising three rounds of panel data from Ethiopia and concentrating on integrated soil fertility management (ISFM) technologies and their combination with conservation agriculture (CA). Using panel data from 376 farming households in Ethiopia from 2014, 2016, and 2019, this study gauges the poverty and food security impacts of ISFM technologies and their combined use with conservation agriculture practices. We employ the multinomial endogenous switching regression (MESR) model in addressing potential selection bias in farm households' uptake of these SI packages. We include two instrumental variables in the first stage of MESR: the standard deviation of rainfall between 1981 and 2018 and the historical average for the same period. We assume that historical rainfall patterns can play a role in technology choices and adoption decisions of smallholder farmers, but that they are not directly related to the outcomes of interest. We find significant positive effects of ISFM adoption in terms of increasing dietary diversity and food expenditure and reducing food insecurity. In terms of poverty, ISFM adoption decreases the probability of being poor, the poverty gap, and the severity of poverty. When combined with CA practices, we find that the effects are consistently larger for farmers who integrate ISFM and CA for all food security and poverty measures. Our findings strongly suggest that the adoption of ISFM technologies has significant positive implications for poverty reduction and improved food security. These benefits are likely to gain a considerable boost if ISFM technologies are applied together with CA practices.

Keywords: Conservation agriculture, integrated soil fertility management

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