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Spillover Effects from Large-scale Biofuel Feedstock Production on Smallholder Food Production— Evidence from Madagascar

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Abstract

Increased global demand for sustainable biofuel feedstock has triggered its large-scale cultivation in land-abundant developing countries. These feedstock value chains were expected to contribute to livelihoods, food security, as well as agricultural and rural development, especially in remote rural areas neglected by public and private investors. Using a rich household panel data set collected from 2008 to 2013 in the southern highlands of Madagascar, this article tests the hypothesis that through increasing income and therefore relaxing financial constraints, large-scale feedstock production can increase household innovation capacity in agricultural value chains. Off-farm employment is the major channel through which the livelihoods of participating households are affected. Former studies in the area have shown modest but significant positive impacts on household income and food security, especially dietary diversity. We focus on self-reported investment in agricultural production and commercialisation and the adoption of technologies, and use OLS and tobit regression models, testing an instrumental variable approach to control for endogeneity. Our results show spillover effects from the project for easily observable strategies, like crop diversification. The widespread adoption of a formerly taboo legume species illustrates the impact pathway, namely information dissemination through wage workers in their networks. We do not find evidence for spillover effects for more complex and costly innovations like the use of improved inputs and equipment. These results strengthen the complementarity of policies that improve livelihood strategies and measures aiming at agricultural development and food security, while also highlighting the need for improved extension services and information dissemination in rural areas.

Keywords: Agrofuel production, family farmers, large-scale agricultural production, Madagascar, smallholder farming, spillover effects