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Improved Rice Variety Adoption, Land Use, and Food Security: Empirical Evidence from Rice Producers in Ghana

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Abstract

Improved varieties are developed and disseminated to increase productivity and food production. Despite this, major technological challenges and yield gaps in Ghana persist. Most staple crops such as maize, rice, and sorghum yields are generally less than half of economically realistic yields. Due to scarcity of land, improved varieties are expected to ensure intensification of available land resources, while increasing food availability. There is however limited information on the causal relationship between improved varieties and land use on one hand, and improved varieties and food security on the other hand. To contribute to this literature gap, this study seeks to examine the effects of improved rice varieties on land use and incidence of food security among cross-section of 820 households of rice farmers in Ghana. It will construct land intensification index and incidence of food insecurity for adopters and non-adopters. Since adoption of improved varieties is potentially an endogenous decision in a typical farming system, regression procedures that account for the potential bias will be employed. This will require the examination of the existence of endogeneity using Hausman's test. Available options including instrumental variable regression models and endogenous switching regression models will be explored.

The expectation is that land use intensity is decreased by adoption of improved rice varieties. Through increased productivity and production, food security incidence among adopters is expected to be high. Given these expectations, possible recommendation would be the need to continuously sensitise farmers on the importance of improved varieties and how they effects their livelihood and wellbeing.

Keywords: Food security, improved varieties, land use, northern Ghana, rice