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## Scaling-up Agricultural Technologies: Who Should Be Targeted?

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### Abstract

Policy directions from most agricultural technology adoption studies in sub-Saharan Africa (SSA) often recommend single solution in addressing challenges associated with already complex farming systems. Thus, previously disseminated agricultural technologies in SSA have either been less adopted or disadopted by farmers or farm households. In this study, we adopt the marginal treatment effect approach in examining how farmers' resource endowment and unobserved factors influence the marginal benefits of adopting sustainable intensification of agricultural practices (SI practices), estimate both the marginal and average benefits of adopting SI practices on maize yield and net returns, and predict which farm households at the marginal entrants will benefit most when targeted during the scaling-up. Our findings suggest that both farmers' resource endowment and unobserved factors affect the marginal benefit of adopting SI practices. Estimates also indicate that the adoption of SI practices increases maize yield and net returns of adopters. Our scaling-up policy prediction estimates suggest that at the marginal entrants, scaling-up SI practices to favour farm households who by observed socioeconomic characteristics appear least likely to adopt would generate the highest marginal benefits. Furthermore, our findings indicate that policies that promote the formation of farmer-based organisation or coupled with the enhancement of farmers' human capital through extension services can be used to stimulate adoption. Finally, our results caution the use of the average estimate of treated farmers or farm households for scaling-up policy decision, since the average estimate of treated farmers is greater than the average marginal estimate of farmers at the marginal entrants.

**Keywords:** Adoption, Ghana, marginal treatment effect, scaling-up, sustainable intensification practices