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Determinants of Adoption of Sustainable Intensification-Enhancing Technologies: Evidence from Cotton-Wheat Zone, Pakistan

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Abstract

Increases in agricultural production are often driven by the adoption of technologies including improved quality farming inputs. In low-income countries such as Pakistan, farming household's social and economic conditions greatly determines the adoption of technologies. The study in hand is conducted to examine the role of farming capital variables and socio-demographic including food insecurity of smallholder farming households which assesses the adoption of sustainable intensification (SI) enhancing technologies in Pakistan. We elicit food security outcomes by Household Food Insecurity Access Scale (HFIAS) - an instrument that has not been used in Pakistan for adoption assessment before. We focus the quality of crop care inputs (fungicide, herbicide, insecticide, and seed treatment) as a SI enhancing technologies. The study conducted in cotton-wheat zone of the Punjab, a major contributor in agricultural GDP in Pakistan (N=275 smallholder farming households, multi-stage random sample). Using an ordered probit model, we tested for the influence of farming capital variables and socio-demographic on adoption of improved quality crop care inputs. The finding shows that off-farm income, farm machinery, neighbourhood adopters, education, agricultural extension services, age, cotton area sown, and no-tillage have statistically significant and positive association with the adoption of SI enhancing technologies. Regression estimates also shows that adoption of SI enhancing technologies have negative but statistically significant association with household's food insecurity (P¡0.01).Further analysis using endogenous switching regression will seek to reduce endogeneity issues in order to determine if a convincing case for advocating improved quality crop care inputs can be made. For policy implications, based on these results, we suggest to consider that (a) agriculture extension services should more aggressively encourage adoption of improved quality inputs, (b) implement more effective restrictions on sub-quality, uncertified crop care inputs, (c) adoption should be further encouraged through alleviating food insecurity in smallholder farming households.

Keywords: Crop care inputs, food insecurity, smallholder farming households, sustainable intensification

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