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Economic Analysis of Inoculant-Based Technology Use and their Effect on Output Commercialisation: Case of Field Bean (*Phaseolus vulgaris*) among Smallholder Farmers in Western Kenya

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Abstract

Inoculant-based technologies have been used in legume production for over a century. In Africa however, these technologies are relatively new especially among smallholder farmers. Introduction of these technologies promote increased legume productivity as well as increased soil fertility. While past studies have assessed the adoption of inoculant technology as a single package, the effect of different inoculant- based technologies on bean, *Phaseolus vulgaris* L., yield remains unknown. There is also lack of information on the role of these technologies on common bean output market participation.

Data was collected from 248 farmers between August and September 2014. A multivariate probit (MVP) model was used to analyze the hypothesis that farmers' decision to use inoculant-based technologies is not affected by participation in a project that promotes the use of inoculant-based technologies. A Tobit regression was estimated to assess the second hypothesis that participation in a project promoting inoculant-based technologies does not affect the share of field beans marketed/sold by farmers. Results from the multivariate probit regression analysis showed that the distance to agricultural extension office, group membership, project participation, wealth, age and gender significantly affected the use of the inoculant-based technologies. The Tobit regression analysis results showed that transaction costs, age, years of schooling, totals assets, access to information and total bean production area significantly influenced the commercialization of beans by the small holder farmers. The findings of this study imply that use of inoculant-based technologies is influenced by asset endowment and hence the need to support the poorer farmer. Further, the finding that participation in groups increased output commercialization implies the need to encourage farmers to use collective action schemes to reduce transaction costs that could reduce the benefits of inoculant-based technologies.

Keywords: Agricultural technologies, BIOFIX, inoculant, inoculant-based technologies, legumes

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