Setting the Stage: A Note on Farmers’ Attitudes and Adoption of Improved Maize in Mozambique

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Abstract

The rural poor in the developing world can benefit from production and productivity gains from green revolution (i.e. use of modern factors of production, including improved maize seeds, irrigation, fertilizers, pesticides and insecticides) coupled with low local wages. In Mozambique, political leadership and agricultural development policy stress on green revolution to fight rural poverty. Accordingly, the Ministry of Agriculture of Mozambique is decided to embrace what it takes to implement a green revolution to increase cereal yields, from about .4 ton/ha to 6 tons/ha. For example, the Ministry of Agriculture is contracting 190 new extension agents to add to 590 already existing agents, 139 new motorcycles are planned to be bought, and several partnerships are being established for the production of certified seed. These decisions, however, are being made in a context where for some basic cereals such as maize, the promotion of a widespread adoption of improved maize varieties is still a major challenge to agricultural development policy. Despite extension recommendations on seed treatment, seed rate, proper seed spacing, and planting depth, the use of improved maize seed is still limited. There are various possible explanations for the apparent rejection of improved maize seed by farmers, including negative attitudes toward improved seed, inadequate how-to-knowledge, lack of information on improved seed, inadequate agro ecological conditions to grow improved seed, farmers’ age, and availability of family labor.

The aim of this study was to gain insights into the factors of adoption of hybrid maize SC513, among farmers in the highlands of Machipanda and lowlands of Vanduzi in the Manica district from 1995 to 2005. Specifically, the study determined how the decision to adopt hybrid maize SC513 is influenced by farmers’ attitudes toward production characteristics of hybrid SC513 and marketability of its produce, agro-ecological zone, and socio-economic variables—age, family size, sources of information, and how-to knowledge. The study used a cross sectional survey to collect data on adoption of hybrid SC513 from two randomly selected samples of 120 households from the highlands and 173 households from the lowlands. During April and May 2006, a questionnaire was administrated to the two samples (n=293) for data collection. Data analysis was performed using descriptive statistics, factor analysis, t-test for independent samples, and multiple logistic regression.

The results from descriptive statistics suggested that maize growers from the highlands of Machipanda and the lowlands of Vanduzi were fairly similar in age and family size. The respondents were mostly young and of middle age. In both study areas, farmers were aware of improved maize varieties. Knowledgeable farmers (i.e. those who felt very or somewhat
knowledgeable about the advantages and disadvantages of improved maize varieties) explained that improved maize varieties have the advantage of coping with drought and securing a food supply for their households. These farmers also highlighted as a disadvantage of improved maize its susceptibility to infestations of maize weevil (including protesphanus truncatus and Sitophilus zeamais) when stored unshelled with the husks intact. Nonetheless, the majority of maize growers in the highlands felt very knowledgeable, and the majority of maize growers in the lowlands felt somewhat knowledgeable of improved maize varieties. The exploratory factor analysis revealed a two-factor attitude scale: attitudes toward marketability of hybrid SC513 (ATTmark), and attitudes toward production characteristics of hybrid SC513 (ATTchar).

Respondents from highlands and lowlands held a generally positive attitude toward the marketability and production characteristics of SC513. Farmers believed that grain and fresh maize (roasting cob) of SC513 are easy to sell and that planting hybrid SC513 is not a waste of time and money. Moreover, farmers believed that the seed of SC513 has good germination, grain from SC513 is good for milling, and that the seed of SC513 is more drought tolerant than local maize variety chimanhica. When farmers from the highlands and lowlands were compared regarding attitudes toward marketability of SC513, the study location made no difference (P>.10). However, significant differences (P<. 01 and P<. 05) in attitudes toward production characteristics of SC513 were observed between the highlands and lowlands. Farmers in the highlands were slightly more supportive than farmers in the lowlands, of the drought tolerance and maize meal quality of hybrid SC513. The results from Multiple Logistic Regression model suggested that adopters of improved maize varieties, tended to be younger than non-adopters, were mostly located in the highlands, held positive attitudes toward the production traits and marketability of improved maize, and were knowledgeable about advantages and disadvantages of improved maize.

These results implies that, for a widespread adoption of improved maize varieties, extension education should go beyond production practices and increase farmers' awareness about the advantages and disadvantages of improved maize varieties, production characteristics as well as marketability of improved maize. Extension education should also promote and strengthen positive attitudes toward the production characteristics and marketability of improved maize, through on-farm demonstrations, farmer-to-farmer extension, and educational campaigns on improved maize varieties. Maize breeders should develop varieties resistant to storage insects with wide adaptation to highlands and lowlands, and meet farmers' demands in terms of production and marketability of maize varieties. Technical specifications in seed company's manuals should include farmers' perception on the marketability of the variety. Wholesalers and informal traders should strengthen access to improved seed by the farmers, particularly at the farm gate.

Keywords: Extension Education, Attitudes, Adoption, Improved Maize Varieties, Green Revolution.