



Does Establishment of Demonstration Plots Have an Impact on Farmer's Awareness, Perception and Use of Improved Maize and Bean Seed?

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PLAIN LANGUAGE SUMMARY

In many SSA countries, seed delivery systems are poorly developed or are lacking. But even in countries where seed systems are relatively better developed, the uptake of new crop varieties is low, and it takes years before smallholder farmers finally adopt them up, if at all. Efforts to increase agricultural productivity through crop improvement encounter challenges, not only of how to increase smallholder farmers' uptake of new improved varieties, but also in speeding up the adoption process amongst these farmers, including women farmers. According to AGRA's PASS theory of change, the promotion campaigns mounted by local seed companies raise farmers' awareness, and together with other interventions in the seed value chain, would increase farmers' use of the improved varieties being promoted, and subsequently increase crop productivity, production and income.

Though the private seed companies, governments, and non-governmental agencies invest in varietal development and in campaigns to create awareness and promote seed of new crop varieties, adoption studies show that many farmers in sub-Saharan Africa are not using such improved varieties or certified seed. Demonstration plots and field days are among the methods commonly used by seed companies and other players in the seed industry to create awareness and promote new improved varieties. They are costly to establish and maintain hence are normally established in selected areas.

The promotion campaign comprised radio spot adverts and radio talk shows which were aired through regional radio stations. In addition, demonstration plots were established and field days held in selected sub-counties that had been randomly assigned to a treatment group. At maturity of the crop, the seed company hosted farmers, extension agents and agro-dealers at the demo sites (field days). The seed industry players believe that adoption of a new variety is more likely after: observing and verifying its attributes and performance in a demonstration plot; comparing performance of the promoted variety with other varieties grown in neighbouring fields and on their own farms; and, receiving clarifying information during field days. The promotion continued in the same areas for four cropping seasons from 2014/15 to 2015/16. The success rate in establishment of demonstration plots was about 70 percent due to challenges such as failure due to delayed or insufficient rains, crop damage by domestic animals in some instances, and failure to establish demos in some of the sites due to late delivery of the seed to the demo hosts, as well as the limited capacity to monitor the demos. These affected the performance of the crop in the demo, and subsequently, the magnitude of the effect.

Because demo plots are costly to establish and maintain, they are only established in selected areas. Consequently not all farmers have easy access to them. Farmers who have access to demos are believed to have an advantage over those who do not and are more likely to adopt a new improved variety being promoted including the recommended cultural practices. The impact evaluation study sought to establish the effectiveness of demonstration plots in influencing the adoption behavior of smallholder farmers, including women farmers. Changes in outcomes in the treatment areas were compared to changes in outcomes in control (control) areas. Data used were from two waves of household survey, where both household and individual level data were collected. The baseline was conducted at the onset of the promotion campaign and the

endline two years after the promotion campaign had commenced.

The effects of the demos and field days have been estimated using the inverse probability weighted (IPW) approach. This estimator uses inverse propensity scores for each observation as weights when estimating the average treatment effects. The IPW estimator has robust properties and yields consistent estimators when the either treatment or outcome model is correctly specified, thus providing two chances to make a valid inferences. Post weighting balance tests showed a reduction in the sample bias in the overall sample as well as in the different strata.

In areas where demos were established and field days held, farmers had: a better attitude towards improved varieties of both maize and beans; a better perception and greater knowledge about the maize variety being promoted, but not on the bean variety. There was a greater proportion of farmers who purchased and planted the maize variety promoted, and a greater acreage planted with the variety, probably due to a better attitude and perception of the varieties. The maize yields obtained were higher and so was the volume produced, but not for beans. The magnitude of the effects was however small, and was mainly for improved maize varieties.

In addition, exposure to demonstration plots and field days caused other positive changes in farmers' behavior. There was an increase in farmers' use of unrecycled improved maize seed, and a reduction in the use of recycled (retained) improved seed for both maize and beans. It also increased awareness and use of other improved varieties which had already been introduced to farmers earlier, implying that demos and field days tend to instill confidence among farmers in the improved varieties in general, and varieties that they are already exposed to but probably lacked adequate information.

These findings were reinforced by findings from a qualitative study undertaken at the endline in villages where demo plots had been established.

This study showed that farmers in the vicinity of demo sites were highly aware, however uptake of the promoted varieties was marginal. The reasons given were that though farmers had noted some positive attributes of the varieties, uptake was deterred by their negative attributes. Farmers found costs of adopting the variety to be prohibitive, yet there was no difference in performance when compared to their home saved seed. The price of the seed was high and the cultural practices were stringent, including the use of purchased inputs. The other reasons for not planting the improved seed were that the seeds were not available or accessible as they could only be found in major towns. Moreover, the seed was not commonly even in the major towns.

The findings show that demonstration plots are effective in creating awareness and knowledge (for males) about new crop varieties. However, players in the seed industry need to consider the fact that: demos had a marginal effect; had limited reach and were more effective in increasing knowledge for the male farmers and less effective in increasing female farmers' knowledge about the varietal attributes.

To increase uptake of new improved varieties, there is need for the following actions on the demand side: The seed industry needs to, increase farmers' access to demonstration plots and field days, or similar experiences; identify and invest in promotion approaches that are more effective in creating awareness and knowledge about new improved crop varieties, quickly and widely among smallholder farmers, particularly women; invest in knowing what the clients (farmer and consumer) want in terms of varietal attributes. Further, reduce costs of improved seed to commensurate with the benefits and the level of smallholder agricultural development in a region or country.

On the supply side, fix the constraints causing non-availability of the new varieties nearer to farmers as this affects uptake due the travelling cost and time. Also, the late supply of the improved seed to the agro-dealers, particularly in the second season is a major hindrance. Lack information about the level of demand for the seed in new locations by local seed companies also curtails adoption.

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