

Barriers to Fertilizer Use: Evidence from a Field Experiment in Kenya



Policy Issue

Agricultural outputs in Africa have stagnated over the past decades: although total output has risen, food production has not kept up with the increase in Africa's population. The number of chronically undernourished people in Africa has increased to 200 million in 1997-99.¹ When used correctly, chemical fertilizer can substantially raise agricultural yields, yet usage of fertilizer remains low in Sub-Saharan Africa. Past studies suggest that usage is low because farmers have difficulty saving harvest income to purchase fertilizer for the next growing season, have limited information on the benefits of using fertilizer properly, and the fact that knowledge about fertilizer is not passed from one farmer to another. This project attempts to address all three issues.

Evaluation Context

This project focuses on small-scale subsistence farmers in rural Western Kenya, many of whom grow maize as their staple crop. All farmers in this population are extremely poor subsistence farmers, earning on the order of \$1 per day. Previous research in this area has shown that when used correctly, top dressing fertilizer can increase yields by about 48%, amounting to a 36% rate of return over just a few months. However, only 40% of sampled farmers in the Busia district of Western Kenya report ever having used fertilizer.

Details of the Intervention

This experiment looks at a complex intervention with several components meant to increase fertilizer use and dissemination of knowledge. Farmers were recruited to the study through meetings at primary schools and randomly divided into four groups.

The first group received small, time-limited discounts which were valid within a 3 week window right after harvest, redeemable at a local shop. Farmers received coupons for a discount of about 15% of the price of fertilizer, for up to 25 kilograms.

The second group was encouraged to form farmers' cooperative with their friends and neighbors to talk about fertilizer and agricultural practices. The researchers organized the groups and coordinated the first few meetings, but did not provide any direct information to the groups.



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COUNTRY

Kenya

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PROGRAM AREA

Agriculture

TOPIC

Technology Adoption

TIMELINE

2009-2011

The third group participated in both the coupon scheme and the cooperatives.

A fourth group received none of these services, and served as a comparison.

Researchers will examine the changes in fertilizer usage between the different groups and whether farmers in the treatment groups talk to each other about agriculture more than others.

A separate intervention was designed to investigate the spread of information and technology when provided only to a subset of farmers in the treatment and comparison groups. The research team visited the randomly selected farmers and provided them with ½ teaspoon measuring spoons, as well as information about the returns to using ½ teaspoon of fertilizer per plant. To enable diffusion of this technology to others in the community, the spoons were made available in nearby fertilizer shops to other farmers for a nominal fee. In addition, when distributing the measuring spoons, the farmers were given vouchers for spoons which they could give to their friends. This intervention will test the hypothesis that the fertilizer discount intervention and the cooperative intervention could lead to greater diffusion of information about fertilizer.

Results and Policy Lessons

Results forthcoming.

Sources

1 Ernest Harsch, "Agriculture: Africa's Engine for Growth", available at <http://www.un.org/ecosocdev/geninfo/afrec/vol17no4/174ag.htm>.

2 Duflo, et. al., "Nudging Farmers to Use Fertilizer: Experimental Evidence from Kenya", available at http://www.povertyactionlab.org/sites/default/files/publications/99_Understanding_Technology_Adoption.pdf

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