Communicating with Farmers Through Social Networks

MORE EVIDENCE, LESS POVERTY

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Project Overview

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SAMPLE
168 Villages
6,472 People

TIMELINE
August 2009–October 2011

THEMES
Agriculture

POLICY GOALS
Technology Adoption

DONOR SUPPORT
World Bank
Millennium Challenge Corp.
Yale University
University of New South Wales

Can volunteer farmers effectively communicate information about conservation farming and nutrient management to other farmers? Does the social position and gender of these farmers affect their success in disseminating this knowledge?

This evaluation studies the effects of new ways to disseminate knowledge of conservation farming and nutrient management practices via the Ministry of Agriculture and Food Security (MoAFS) extension staff. We observe that volunteer farmers trained by MoAFS extension workers can effectively disseminate knowledge of conservation farming and nutrient management techniques to others in their villages. The largest gains in knowledge and usage took place when these communicators were similar to the average village member and where the communicators were offered moderate, in-kind rewards for good performance.

Context

In support of the Agricultural Development Programme – Support Project (ADP-SP), researchers from several well-known universities and the World Bank joined forces with staff from MoAFS to launch an innovative impact evaluation.

Agricultural production in Malawi is dominated by maize.[1] More than 60 percent of the population's calorie consumption derives from maize, 97 percent of farmers grow maize, and over half of households grow no other crop. Throughout Malawi, maize yields remain remarkably low, and many families struggle to meet their basic consumption needs. At the

1 While there has been some recent diversification, the area under maize cultivation is still approximately equivalent to that of all other crops combined (Lea and Hanmer 2009).

same time, relatively simple technologies such as composting and pit planting have been shown to have promising impacts on maize yields in southern Africa, but are rarely used in Malawi. The study surveys showed that knowledge of these technologies is very limited and is a major obstacle to their widespread use.

MoAFS has taken up the dissemination of these technologies, but faces key challenges. Approximately 50 percent of government extension positions remain unfilled in Malawi, and each extension worker in our sample is responsible for 2450 households on average. The shortage of staff means that much of the rural population has little or no contact with government extension workers. Thus, extending the reach of existing personnel in a cost-effective manner—by having them partner with volunteer farmers who may be able to communicate more frequently and more effectively with their own neighbors - may be a promising approach.

With the support of the ADP-SP and Agriculture Sector Wide Approach (ASWAp), agricultural extension workers and individual farmers in Malawi were trained on a locally appropriate technology and, in some cases, incentivized to disseminate this information to other farmers.

The evaluation assessed:

- Can volunteer farmers effectively communicate information about conservation farming and nutrient management to other farmers?
- Does the social position and gender of these farmers affect their success in disseminating this knowledge?
  - » Do "lead farmers," who are more educated and more able to experiment than others in their villages better transmit technical information about our targeted technologies?[2]
  - » Do "peer farmers," who are more representative of the general population, have greater credibility or provide information that is more applicable to the recipient's own conditions?

Evaluation Design

Our study covers eight districts across Malawi: Balaka, Chikwawa, Dedza, Mchinji, Mzimba, Neno, Rumphi, and Zomba. In four of these districts, individuals were trained on conservation farming (pit planting)[3], while in the other four districts nutrient management was the focus (more specifically, Chinese composting)[4]. For the evaluation, 168 villages in the 8 districts were randomly selected from a list of all villages in areas staffed by an Agricultural Extension Development Officer (AEDO), and randomly assigned into treatment groups of different types:

1 **Extension worker [AEDO]** 25 villages	**2** **Peer farmers [PF]** 45 Villages
3 **Lead Farmer [LF]** 50 Villages	**4** **Control** 48 Villages

AEDOs in villages of type (1) – (3) participated in a 3-day training in August 2009 facilitated by the Ministry of Agriculture, in which they were taught how to select and work with lead and peer farmers, and trained in the new technologies. After training, AEDOs assigned to work with lead or peer farmers worked with the selected villages to choose lead and peer farmers and train those farmers in the new technologies. In half of the lead farmer villages, the new lead farmer had to be female. In half of the peer farmer villages, at least 3 of the 5 new peer farmers had to be female. Once trained by the AEDO, the lead farmer or peer farmers were primarily responsible for working with other farm families in the village. In "AEDO treatment" villages, in contrast, the AEDOs were primarily responsible for working with farm families. In the control villages, AEDOs operated as they normally would, but did not receive any training on pit planting or composting.

The impact evaluation also included a "rewards program." Half of the communicators were offered a small in-kind reward as recognition of good performance if they were able to increase knowledge of the new technology in their village by 20 percent after one year of work. The specific rewards varied by communicator type: extension officers were offered bicycles, lead farmers were offered a

2 The household survey data shows that lead farmers are better educated, less poor, and able to sustain larger family sizes than the general population.
3 Balaka, Chikwawa, Neno & Rumphi
4 Zomba, Dedza, Mchinji & Mzimba

fertilizer package, and peer farmers received legume seeds, but the average total value of rewards for each village was approximately 12,000 MWK[5]. In the first year of the rewards program, 6 of 13 eligible AEDOs qualified for the bicycles, 10 of 25 eligible lead farmers, and 10 of 23 groups of eligible peer farmers.

We examine the knowledge of the targeted practices[6] among a random sample of other farmers in the communicators' villages in June-August of 2010, obtained via household surveys.

Results

Conservation and Composting Was Limited

- Conservation farming and composting technologies were not widely practiced at the start of ADP-SP in 2009. Both adoption and technical knowledge of composting and pit planting was limited.
  - » 19 percent of households had ever used composting and <1 percent had planted in pits. Very few respondents knew the correct features of the technologies, e.g., <1 percent could correctly specify the dimensions of pits (within a reasonable range).

Table 1: **Gains in Knowledge 1 Year After the Training**

COMMUNICATOR TYPE	GAINS IN KNOWLEDGE WHEN COMMUNICATOR NOT OFFERED REWARDS	GAIN IN KNOWLEDGE WHEN COMMUNICATOR OFFERED REWARDS
AEDO	17% [7% – 25%]	5% [0% – 10%]
Lead Farmer	8% [2% – 14%]	7% [2% – 12%]
Peer Farmer	2% [-3% – 7%]	12% [6% – 18%]

Margins of error incorporated into figures in brackets (95% confidence that the gain falls in this range).

Table 2: **Gains in Usage 2 Years After the Training**

COMMUNICATOR TYPE	GAINS IN USAGE WHEN COMMUNICATOR NOT OFFERED REWARDS	GAIN IN USAGE WHEN COMMUNICATOR OFFERED REWARDS
AEDO	2% [0% – 4%]	6% [2% – 9%]
Lead Farmer	0% [-2% – 2%]	6% [1% – 11%]
Peer Farmer	2% [-1% – 3%]	10% [6% – 14%]

Knowledge and Use of Technology Improved

- **After one year, knowledge of the technologies had improved significantly in most targeted villages.**
  - » The gains varied between 0 percent and 17 percent depending on the type of communicator and participation in the rewards program.
- **After two years, usage of the technologies had risen substantially,** albeit largely in villages where communicators participated in the rewards program.

The Rewards Program Incentivized Technology Usage

- PFs who were eligible for the rewards program achieved the largest gains in usage of both technologies (27 percent gains in composting usage, 9 percent gains in pit planting) and broad gains in knowledge.

5 The reward to each peer farmer is smaller than that for the lead farmer or AEDO, because there are 5 peer farmers per village (but only 1 lead farmer or AEDO).
6 This knowledge covers the technical features of these techniques. For pit planting: (i) appropriate dimensions of each pit, (ii) the number of seeds to be planted in it, (iii) the quantity of compost to be applied in the pit, and (iv) the optimal use of maize stalks after harvest. For composting: (i) the optimal materials, (ii) time to maturity, (iii) heap location, (iv) moistness level and (v) application timing.

- Among communicators not enrolled in the rewards program, AEDOs achieved the largest gains in knowledge. AEDOs not enrolled in the program also raised the usage of pit planting by a statistically significant amount (although they appear to have reduced the usage of composting).
- Lead farmers consistently raised the knowledge levels of other farmers in their villages, but not by as much as either AEDOs or reward-eligible peer farmers. However, lead farmers who were not enrolled in the rewards program did not see usage gains in their villages, while those that were saw reasonable gains in usage of both technologies.

Policy Implications

Extension Workers and Peer Farmers

- **Partnering extension workers with peer farmers can be as effective as government extension workers working alone, if rewarded for their work:**
  - » Peer farmers eligible for the performance-based incentive performed at least as well as—and in some cases better than—government extension workers working alone.
  - » However, without the offer of the performance-based incentives, peer farmers did not have any significant effect on knowledge levels or usage in their village.

Lead Farmers

- **Lead farmers achieved knowledge gains in their villages whether or not they were offered a reward, but only achieved usage gains when offered a reward.**
  - » Gains were not as large as those achieved by AEDOs outside of the rewards program, or by peer farmers within the rewards program, but they were consistently positive. However, lead farmers did not raise usage without the rewards program.

Successful Communicators

- **Successful communicators both retained more knowledge about the technologies and exerted more effort in transmitting it to others.**
  - » Peer farmers in the rewards program demonstrated better knowledge of the technologies after one year than the lead farmers. Farm families in the villages of reward-eligible PFs reported attending more activities organized by PFs than in those with reward-eligible LFs.
- **Peer farmers who were seen as most similar to other farm families in their input use and land holding size were most effective**
  - » When rewarded, PFs who were believed to have smaller land holdings or to use fewer inputs on their farms achieved the largest gains in adoption of the technologies.

Rewarding Extension Partners

- **Rewarding extension partners for good performance enhances their credibility in the village:** Lead and peer farmers eligible for rewards were seen as more honest by their neighbors (rather than less, as might be the case if offering rewards undermined communicators' credibility). This may be because increasing interactions between communicators and other farmers improved the perceptions of these communicators more generally.

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