

HOW DO FARMERS LEARN FROM EXTENSION SERVICES? SOME TIPS FROM MALAWI



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Malawi is a small country in Southern Africa where agriculture continues to play a dominant role in the economy, accounting for nearly one-third of the GDP and 85% of employment. Given the significance of agriculture to Malawi's economy, government institutions supported by NGOs such as the Clinton Development Initiative (CDI) have made it a priority to provide pathways to improve farmer access to agricultural extension services. In due course of monitoring and evaluation of such programs in recent years, agencies have discovered that despite sustained efforts, programs have not translated into high uptake of best agricultural practices among smallholder farmers.

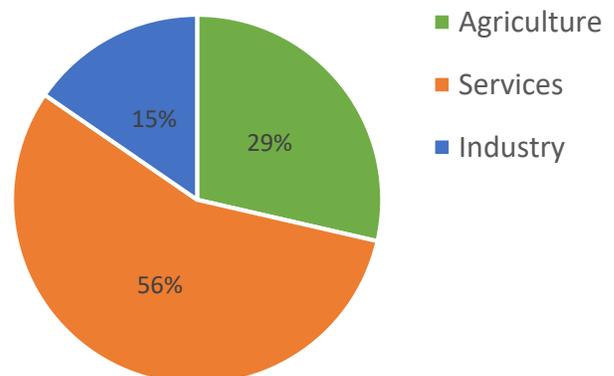
Evidence of limited uptake raises the following questions:

- i. whether the adoption of available technology is feasible and;
- ii. whether the method of teaching is suited to farmer adoption

This study looks at two distinct methods of knowledge transfer utilized in agricultural extension programs, and their effectiveness in increasing farmer learning. The two methods are:

- i. **Farmer-led Demonstration Plots:** In this method, farmer clubs are invited to set up a plot located centrally in the village

% Share per Sector in GDP



and experiment with new technologies under the guidance of an extension agent. The plot would often feature control sections and treatment section. The farmers are responsible for the day to day management of the field.

- ii. **Farmer Field-Days:** A large number of farmers are invited to attend a one-day event at a local demonstration plot. This events usually happens a little before harvest and would include talks of the local farmers and extension agents.

CDI seeks to increase the adoption of **Integrated Soil Fertility Management (ISFM)** technologies among smallholder farmers in Malawi through extension and improved market access programs for two crops – **maize and soybean**. ISFM practices refer to a range of techniques designed to increase the fertility of soil. A few examples of techniques under the ambit of ISFM are — adoption of agroforestry, application of mineral fertilizers, crop rotation and intercropping. CDI uses farmer-led demonstration plots and farmer field-days to convey information about ISFM practices. The information provided under ISFM is extensive and learning about these techniques is not only expensive and time consuming, but also intellectually demanding.

This study is designed to test the impact of exposure to the demonstration plots and field-days on farmer knowledge about ISFM and adoption of these techniques. By measuring farmer knowledge retention, this study provides insights critical to the success of agriculture extension programs not only in Malawi, but throughout Sub-Saharan Africa.

The study is conducted in 100 villages in Central Malawi, located in Chibvala in Dowa District and Mtumthama in Kasungu District. Of the 100 villages, about half were randomly assigned to a treatment group, while the remaining half were assigned to a control group. The villages in the treatment group were invited to form farmer clubs, CDI's preferred program delivery mechanism, and to participate in farmer field-days. A subset of the treatment villages were invited to set up demonstration plots. Table 1 introduces the sample.

Table 1: The sample

Demographic Characteristics at the Baseline Survey	Description
Avg. Age of Head of HH	42
Head of HH is female	18%
Avg. size of HH	5 members
Avg. Education of Head of HH	4.5 years
Avg. size of land holding	3.5 acres

HH = household; Avg = Average

The first (baseline) household survey in 2014 collected information on current use of ISFM practices and expectations. The follow-up survey in 2015 included questions on knowledge of the promoted ISFM technologies. The questions were designed to test farmer general knowledge on aspects such as benefits of certain ISFM practices, as well as specific aspects such as the use of inoculants. Every question had a correct answer, based on which each respondent was given a knowledge score.



We also conducted focus group interviews among farmer clubs and extension agents. We also collected data on demonstration plot location, activities and performance, including soil, rainfall and yield.

Findings from the study are:

- i. We note a 22% increase in ISFM adoption in farmer clubs that managed a demonstration plot.
- ii. Participation in demonstration plots led to an 8% increase in the knowledge score. Farmers display significant increases in knowledge of inoculation and pesticide use (of soybean).
- iii. We find a positive relationship between yields and knowledge retention among demonstration plot participants, suggesting that a successful outcome on the demonstration plot motivates farmers to learn more about the new technology.

- iv. In contrast, being invited to participate in a field-day has no discernable impact on adoption or knowledge score.
- v. However, interviews with focus groups indicate that field-day participants did learn about the labor-intensive aspects of ISFM such as mulching, optimal plant spacing and number of seeds per planting station for maize. This suggests that farmers constrained by time and credit focus on learning about technology that they easily adopt.
- vi. We find that farmers that are not credit constrained learn more about soybean related technologies that are typically more expensive. In contrast, for maize, farmers learned more about labor-intensive technology regardless of their financial situation.
- vii. We find that relatively wealthier farmers learn more regardless of which extension program they participate in, demonstration plots or field days.
- viii. Most farmers were aware of the benefits of soy production, but less aware of best practices. Few farmers had knowledge of soybean input preparation and application. However, for maize, the staple crop, farmers seemed to be aware of select ISFM technologies, such as organic fertilizers, but again were lacking detailed knowledge to mulch successfully.



Maize on BPA plot

Based on these research findings, we provide **five tips for extension services**:

- ◆ Shorten farmer-field day sessions and provide tools such as visually intensive pamphlets and measuring spoons to measure correct amounts of inputs.
- ◆ Credit constraints are a major impediment to technology adoption. A new policy intervention with the dual purpose of improving access to credit and encouraging adoption of ISFM technology shall lead to better results.
- ◆ Farmers should be matched to attend field-days at demonstration plots that most closely mimic their own growing conditions.
- ◆ Utilize cell phones to convey knowledge. Send short reminders to farmer phones during the season. For example, if the region is expecting very heavy rainfall, what precautions can the farmers take at that moment to prevent loss of yield.
- ◆ Create a structured lesson plan that effectively utilizes field-days and demonstration plots. For example, a new technology can be introduced at the field-day and in a few weeks the farmers could be taken to the demonstration plots to see the technology in use.

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