

Disseminating Innovative Resources and Technologies to Smallholder Farmers in Ghana: Results of the Community Extension Agent Program



Photo: Mohammed Ibrahim

Ghana's Ministry of Food and Agriculture currently operates an agricultural extension agency program to help teach smallholder farmers the most current farming techniques, but there are not enough agents to provide a constant presence in local communities. As part of the Disseminating Innovative Resources and Technologies to Smallholder Farmers (DIRTS) project, researchers collaborated with the ministry to test a new community agricultural extension agent program, which selected and trained local agents to supplement the existing MOFA agents and provide more frequent teaching and support.

Key Findings*

After three years

- Community extension agents successfully increased local farmers' knowledge and improved their practices.
- Delivering specific information about a practice close to the time when the practice should be adopted may be an important component of a successful program.
- However, farmers' improved knowledge and implementation of best practices did not ultimately translate into increased yields or more earnings for the farmers.
- Farmers who received the program invested more in the use of chemicals, but not other inputs.

**These results are preliminary and may change after further data collection and/or analysis.*

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Partners: Ghana Agricultural Insurance Programme (GAIP), Ghana Ministry of Food and Agriculture, International Food Policy Research Institute (IFPRI), Savanna Agricultural Research Institute (SARI)

Timeline: 2014-2018

Study Sample: 3,240 households in 162 farming communities in Northern Region.

The Challenge

In Ghana, agriculture accounts for 19 percent of economic output and 45 percent of total employment. Yet farmers in northern Ghana achieve just 30 percent of potential crop yields.

As in other parts of sub-Saharan Africa and across the developing world, these low yields may be the result of insufficient investment in agricultural inputs such as fertilizer, high-yield seeds, and land preparation among smallholder farmers. Uncertainty about rainfall, lack of access to these inputs, and lack of knowledge about the benefits of these inputs and how to use them may all combine to reduce

smallholder farmers willingness or ability to invest more into these potential ways to boost yields.

Extension services could potentially increase agricultural productivity and profits, by better informing farmers about agricultural best practices and increasing awareness around the benefits of improved inputs. Ghana's Ministry of Food and Agriculture currently operates an agricultural extension agency program to help teach smallholder farmers the most current farming techniques, but with a current farmer-to-agriculture extension agent ratio of about 1,600 to 1, the service is currently unable to meet farmers' need for support.

The Program

As part of the Disseminating Innovative Resources and Technologies to Smallholder Farmers (DIRTS) project, researchers collaborated with MOFA to introduce and test a new community agricultural extension agent program, which selected and trained local agents to supplement the existing MOFA agents and provide more frequent teaching and support.

The new community extension agents (CEAs) were drawn from the local community and trained, so that they could be a trusted and easily available local presence to complement the existing MOFA agents. The program was designed for them to have frequent contact with the farmers (on a weekly basis), be aware of their practices, and provide timely feedback tailored to the individual needs at the moment.

The Evaluation

Researchers tested the impact of access to a supplemental community-based agricultural extension service on knowledge, practices, yields, and profits among farmers who had access to agricultural insurance.

The randomized evaluation took place among 3,240 households in 162 farming communities in the Northern Region of Ghana. In a random half of those communities, one person was selected and trained to serve as a CEA, and paid for their time spent with farmers. They were selected based on merit by

community members who were able to read and write in English and who held at least a secondary school diploma. Each week, the agent met with 40 farmers from 20 randomly selected households in the community; and delivered recorded extension messages to male and female groups separately using audio/video equipment. Researchers developed a tablet-based diagnostic tool for the CEAs to collect information about farmers' activities during each week, and suggest the most relevant message to deliver. The messages were tailored for the different crops that men and women tend to grow.

Results & Conclusion

Note: These results are preliminary and may change after further data collection and/or analysis.

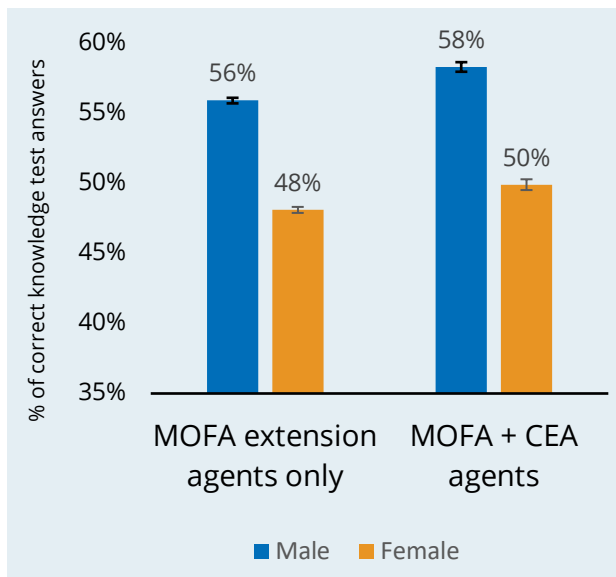
Overall, the CEA program increased farmers' knowledge and led them to adopt the new practices they were taught. However, these changes did not lead to increased productivity or earnings.

- **Farmers with access to the CEA service knew more about best agricultural practices.** Tested four to seven months after the intervention, farmers in communities with the CEA agents had small but statistically significant improvement of

approximately two percentage points on a test about agricultural practices compared to those in communities with only MOFA agents.

- **Test scores were higher for both women and men in CEA communities**, indicating that the intervention met the target of addressing male and female needs equally (Figure 1). Nonetheless, men in both sets of communities scored higher on the knowledge tests than women.

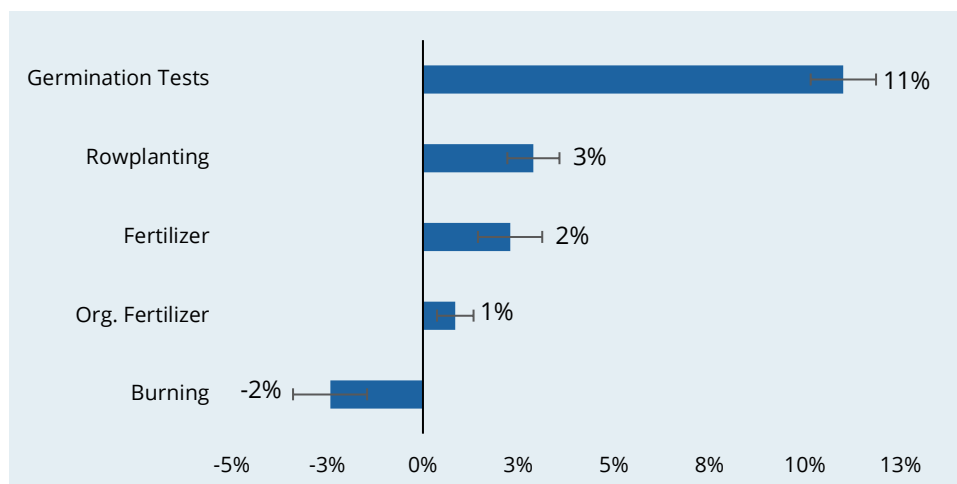
Figure 1: Impact of the CEA intervention on knowledge, by gender of farmers.



- **By the end of the third year of interventions, all farmers in communities with a CEA performed better on the knowledge test than with only MOFA.** In the third year of interventions, all farmers in communities with a CEA were given access to extension advice. At the end of the evaluation, all farmers—not only those who directly received CEA services the first two years, but their neighbors as well—had higher levels of knowledge about agricultural practices. These extra benefits to other farmers were limited to male farmers, however. The impact on female farmers who did not receive direct CEA support during the first two years was not significant.

- **Not only did farmers learn more, they also adopted more new practices (Figure 2).** The program successfully changed farmer behavior—fewer farmers under CEA intervention burned their plots; they also showed significantly more adoption of germination tests, row-planting, and both organic and inorganic fertilizers. The effect of the CEA program was larger on the adoption of recommended practices than it was on later test scores of farmers. This may suggest that the program is more effective at delivering relevant messages when they're needed than improving farmers' long-term knowledge of best practices.

Figure 2: Impact of CEA intervention on adoption of best practices and improved inputs.

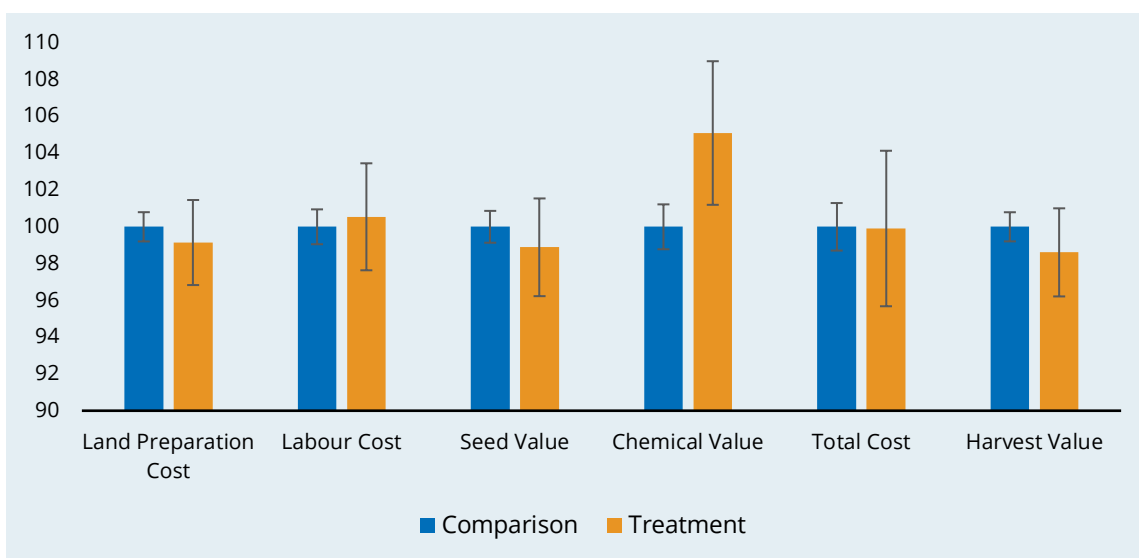


- **Farmers in communities with a CEA invested more in use of chemicals, but not in other inputs** or practices such as high-yield seeds or land preparation.
- **The increased knowledge and adoption of new practices was not associated with an increase in agricultural outputs or profits, nor with any observed change in living standards.** While the CEA program was successful at changing farmers' practices, it did not ultimately increase their farms' yields. There was no change in observed average earnings, output or welfare of farmers who received the CEA program.
- **Program cost:** The cost of the CEA intervention over the four-year project period was about US \$824,000. This covers

the cost of project management personnel, content development, monitoring costs, field staff costs, logistical support for message delivery and management of demonstration fields. The cost per farmer was about \$500 while the cost per village resident was about \$85. Over the course of four years, this works out to \$21 per village resident per year.

These results suggest that the community-based extension agent model can be an effective vehicle to increase farmer knowledge and change behavior. However, since the program did not lead to an increase in yields or profits, this research raises new questions about the barriers to higher productivity and earnings, which will require further investigation.

Figure 3: CEA impact on agricultural outcomes (comparison group outcomes set to 100).



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