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Strengthening soil management practices and access to markets amongst smallholder farmers in Malawi

Malawi's agricultural sector employs 90 per cent of its rural population and accounts for 35 per cent of GDP; yet at least half of those engaged in agriculture live below the poverty line. In an effort to improve livelihoods amongst smallholder farmers in Malawi, the Clinton Development Initiative (CDI) has established the anchor farm model.

Established in 2008, this model is designed to increase agricultural production, income and food security by promoting the adoption of yield-enhancing integrated soil fertility management (ISFM) practices amongst smallholder farmers in central Malawi.

Researchers at the University of Sussex, Bunda College and the University of Illinois collaborated to conduct an impact evaluation of the anchor farm model. The evaluation sought to understand the learning and adoption processes of farmers.

Highlights

- Demonstration plots, as opposed to field days, aided in farmers' understanding and adoption of ISFM practices.
- Field days might not yield beneficial results unless designed purposefully with efficient training strategies and participatory methods.
- Market interventions must be timed to ensure that farmers are aware before the growing season, so that they are positioned to make informed decisions about selling their products.
- Combining extension services with credit services might better facilitate farmers' learning from extension services.



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Intervention

Through the anchor farm model, CDI: (1) disseminates production knowledge using demonstration plots, lead farmers and farmer field days and (2) provides access to structured output markets and guaranteed prices through CDI's established relationship with international buyers. Through this evaluation, the research team aimed to support CDI in its scale-up by evaluating the impacts of CDI's extension and marketing activities.

The study sample comprised 250 villages in the Kasungu and Dowa districts, with half the villages

randomly assigned to an extension control group and half randomly assigned to an extension treatment group. When CDI rolled out its marketing programme of negotiated prices with international buyers, villages were again randomised, creating four groups: no treatment, extension only, marketing only and extension plus marketing.

The villages in the extension treatment group were encouraged to form farmer clubs and participate in CDI's extension activities. A subset of clubs was also selected to set up

demonstration plots. In 2017, CDI rolled out its marketing treatment, which provided farmers with the option of prearranging sale of their products at guaranteed prices at the end of the season.

Using detailed panel data collected amongst 2,500 farming households, the evaluation identified effects of the intervention on farmers' knowledge of ISFM, adoption of ISFM, yield, prices and revenues. The evaluation ran from 2014 to 2019 and followed the agricultural calendar for data collection.

Main findings

- **Farmers' knowledge:** Farmers participating in demonstration plots experienced an increase in knowledge of ISFM practices. There was a statistically significant increase (8%) in knowledge of inoculation and pesticides in particular. Demonstration plot participants were also better able to demonstrate the use of various ISFM practices. However, the field days were not effective tools for technology dissemination, as being invited to a field day did not significantly alter farmers' knowledge.
- **Adoption of ISFM:** Demonstration plot participation increased the adoption of ISFM practices by 22 per cent, whereas being invited to a field day did not produce a statistically significant increase. Being a member of a demonstration plot club increased the probability of soybean inoculation, using hybrid maize and planting fertiliser trees.
- **Marketing programme:** Although farmers who participated in the marketing programme achieved better prices, take-up of the programme was quite low. In qualitative interviews, farmers noted that the marketing programme of CDI came fairly late in the season; therefore, credit constraints forced them to sell before they could participate. However, an unintended but beneficial effect was that information on local market prices allowed many farmers to determine that they could obtain better prices by slightly delaying sales.
- **Heterogeneous impacts:** There is some evidence that the effect of demonstration plots on ISFM adoption was greater for female-headed as compared to male-headed households. However, this conclusion is tentative given the small proportion of female-headed households (18%) in the sample.
- **Intervention costs:** A rough calculation shows that the per-farmer cost difference is substantial between a field day and a demonstration plot. Hosting one farmer field day for around 20 farmers cost approximately US\$65, whilst organising one demonstration plot for around 20 farmer costs approximately US\$281. The authors estimate the cost of the marketing programme at about US\$6 per farmer, though this does not account for the time CDI spent negotiating with buyers.

Lessons for policy and practice

Lessons for practice

- **Lively farmer engagement:** Field days may be unsuccessful unless designed purposefully with visual and pictorial instruments, props, and daily-use materials. Field days should be facilitated in an interactive and participatory fashion for farmers' stimulation and ease of learning. Information regarding ISFM practices should be introduced sequentially so it makes sense for farmers' use.
- **Effective management of farmer clubs:** Farmer clubs should be formed to include under-represented, marginalised and vulnerable farmers. These clubs should be supervised to ensure appropriate information flows to enable access to information and resources for all.
- **Timing of market interventions:** Market interventions may see greater participation if introduced to farmers before the growing season, so that farmers are aware of available opportunities well before making decisions as to when and where to sell their products.

- **Using data:** Practitioners can improve programme delivery by collecting data on programme outputs and outcomes (rather than just inputs) and using existing data to guide activities. Secondary sources like demographic and health surveys contain valuable information about household assets, adoption of agricultural technologies, and access to media and sanitation. Information technology, like phone and SMS surveys, can capture real-time information about market prices and household consumption.

Lessons for policy

- **Reforming extension systems:** Whilst government extension workers are still a primary source of information for farmers, the extension system in Malawi is under significant strain. The government might consider changing the incentive structure for extension workers by paying them for improvements in farmers' knowledge and adoption of recommended technologies. Tracking extension workers via GPS might also increase the effectiveness of extension services.
- **Combining extension services with credit services:** An emerging solution to provide credit access to farmers entails governments combining extension services with credit services. Delivering new interventions through extension services whilst also providing access to credit has multiple benefits. Evidence suggests that credit access influences the openness of farmers to information on capital-intensive technologies. Consequently, it may influence their uptake of interventions through extension.
- **Improving infrastructure and pricing policies:** Improving infrastructure in the form of roads, railways and phone connectivity is crucial to ensuring farmers' access to information and markets. The majority of soy and tobacco farmers in this study sell only within their village or nearby towns. Improving mobile phone connectivity and providing market information through SMS might strengthen the presence of smallholder farmers in market competition.





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About this impact evaluation

This brief is based on an impact evaluation report by Hope Michelson, Chris Barrett, Cheryl Palm, Annemie Maertens,

Wezi Mhango and Ephraim Chirwa, *The effect of demonstration plots and the warehouse receipt system on integrated soil fertility*

management adoption, yield and income of smallholder farmers: a study from Malawi's Anchor Farms, published in 2020.

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July 2020



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