



What is the impact of Farmer Field School programs on farming practices and agricultural outcomes?

The majority of the rural poor in developing countries depend on smallholder farming to feed their families and meet their basic needs. Accordingly, improving smallholder-farming systems has been a priority for governments in developing countries as a strategy to improve agricultural development and poverty reduction. Farmer Field School (FFS) programs represent an important intervention targeting smallholder farmers in developing countries context, especially in Sub-Saharan Africa.

This brief presents evidence on the effects of FFS interventions. It is developed to answer a question from a policymaker in Benin. The results are primarily based on a high-quality systematic review that combined evidence from 92 studies with interventions conducted in 25 countries, supplemented with additional data from studies in Kenya and Mali.

Key Findings

- FFS improved farmers' knowledge of new agricultural technologies and increased their adoption.
- Adoption of new technologies recommended by FFS increased agricultural yields and farmers' profits. It also significantly reduced the use of pesticides.
- FFS may empower women in some cases, when targeted for the crops women commonly grow or where women have decision-making power in the household.
- Farmers with low levels of education and limited land may not fully benefit from FFS programs.
- FFS yields larger effects when implemented alongside complementary interventions, such as provision of inputs or marketing support.

This evidence primarily comes from studies of small-scale FFS programs; there is very limited evidence of effectiveness at scale.

Key Recommendations

- Where possible, FFS should be implemented with complementary interventions such as access to agricultural inputs or assistance in marketing of harvested products.
- To increase agricultural output and adoption of new technologies, FFS should target farmers with higher levels of education, farmers with sufficient land and women who have decision-making power in the household.
- If the goal is to help the poorest farmers or women who lack decision-making power in their households, FFS programs may not be effective. Other approaches should be considered.
- FFS facilitators should be well trained to lead FFS trainings following a participatory and discovery-based approach in which farmers experiment and observe new practices.

Context

In recent decades, agricultural productivity has grown slowly in Sub-Saharan Africa, and the adoption of modern inputs and new technologies remains low. The barriers to technology adoption include lack of accessibility of inputs, lack of affordable credit, high prices and lack of knowledge of new technologies.

Agricultural extension and advisory services were traditionally viewed as a means of transferring technologies developed in research stations and farm management practices to farmers using top-down delivery approaches. Since the 1980s, the approach to reach rural smallholder farmers has increasingly drawn on more participatory methods, which enable farmers' self-learning and sharing. In FFS, farmers work together with their extension agents to learn and experiment. Farmers are encouraged to make their own decisions regarding inputs and technology use. FFS has become a prominent participatory and learner-centered approach for agricultural development that may empower farmers more generally to become problem-solving decision makers, more adaptive and resilient to change.

Details of interventions

The studies considered in the systematic review are those that report specific Farmer Field School interventions. Interventions were identified as FFS if they contained both of the following components:

- Intensive, facilitated group training, typically involving season-long weekly meetings and the use of control plots farmed using standard farmer practices.
- The provision of information on holistic techniques and inputs, such as techniques to reduce the use of pesticides or improve the use of fertilizer. Some production practices and disease-control methods include: integrated pest management (IPM), integrated production and pest management (IPPM), integrated crop management (ICM) and integrated disease management (IDM).

This brief is primarily based on a systematic review that draws together 92 studies on interventions conducted in 25 countries. Thirty-one studies took place in Sub-Saharan Africa, 25 in South Asia, 24 in East Asia, 11 in Latin America and 1 in Central Asia. Most studies evaluated integrated pest management (IPM) and, particularly in Africa, integrated production and pest management (IPPM) Farmer Field School curricula, although a number implemented training on other intensive input management approaches, such as integrated crop management (ICM), integrated disease management (IDM) and integrated soil management (ISM).

FFS was provided as part of a multi-component intervention package alongside additional intervention components in 11 studies, which included support in procuring inputs and/or marketing produce.

Additional findings are drawn from a more recent study of an integrated production and pest management (IPPM) Farmer Field School program in Mali focused on pest management for cotton farmers, in addition to a qualitative study of FFS and gender roles in Kenya.

Findings

Improving knowledge

FFS participants improved their knowledge of farming technology, both on average across evaluations as well as in all individual studies with enough participants for precise measurement. Knowledge outcomes improved across all FFS curricula, with the largest effects coming from integrated pest management programs.

Adopting technology

Farmers also adopted the new technologies from FFS. The more traditional FFS delivering integrated pest management (IPM) or integrated production and pest management (IPPM) training usually measured adoption in terms of reduced amounts of pesticide usage. Findings showed evidence that these FFS participants did reduce their average pesticide use. Other practices, whether promoted by IPM/IPPM field schools or those focused on other technologies, were also adopted according to the evidence, leading to average improvements in new practices adoption.

Agricultural outcomes

FFS improved agricultural outcomes among participants, increasing yields and profits on average. The evidence suggests that FFS programs are likely to result in substantial benefits only in areas where farmers overuse pesticides, practice intensive methods of farming or have so far ignored economic considerations in their decisions to apply pesticides. Qualitative evidence also suggests ongoing support or follow-ups are important for the FFS approach to be sustainable, including sufficient technical support from researchers and extensionists to allow farmers to continue developing local practices.

Gender roles

Some evidence suggests that FFS programs that target women or in which men and women work together can improve empowerment, as long as they are targeted at crops grown by women. One study of FFS and gender in Kenya suggests that the program empowered women because it gave men an opportunity to see women succeeding in work outside their usual gender roles, changing men's perceptions. The effects on women depend on the crop selected for the FFS program – in contexts where women primarily grow subsistence crops, an FFS program focused on commercial crops is unlikely to help them, the review found.

Targeting participants

FFS programs yielded larger results when they targeted participants who were more educated and those who had larger landholdings. The review's results suggest that higher levels of education may allow farmers to better understand new techniques. Increased landholdings may ensure that farmers have the space to dedicate to experimental FFS plots. These findings speak only to the agricultural effects – there may be other social reasons to target poorer individuals, even if the effects on agricultural yields are smaller.

Training of facilitators

Inadequate training and support for FFS facilitators was a common issue identified in a number of qualitative studies in the review. Some of the problems with their training included incomplete curricula, an absence of training on participatory techniques, a lack of ongoing support and inadequate materials.

Findings from Mali

A recent study on an integrated pest management FFS program in Mali identified similar findings to the overall review – the program effectively reduced pesticide use, which was its goal. The study suggests that the program may have been particularly effective because it offered farmers a way to reduce their spending on pesticides. It calculated that the FFS program resulted in farmers saving approximately USD470,000 that they would otherwise have spent on pesticides. With a program cost estimated at USD122,724, the program would have a benefit–cost ratio of 3 to 1.

Program scale

The studies included in the review generally investigated smaller-scale FFS programs. There is little evidence on how these programs might work at a national scale. Scaling up programs can raise a number of complications in implementation, which can inhibit effectiveness, especially in the recruitment, training and monitoring of facilitators.

Recommendations

Targeting FFS participants

For the largest effects on agricultural yields and pesticide usage, FFS should target farmers with higher levels of education, farmers with larger amounts of land and women who have decision-making power in their households. The evidence shows that these groups have the necessary physical and social capital to benefit from FFS programs. However, if the goal is to help the poorest and least-educated farmers, or to empower women who lack decision-making power in their households, FFS programs have shown much less evidence of effectiveness among those groups. Therefore, additional complementary interventions should be considered to address blockages beyond technical knowledge.

FFS facilitators

FFS facilitators should be well trained to lead FFS trainings following a participatory and discovery-based approach in which farmers experiment and observe new practices. According to the review: 'Recruitment of facilitators should take into account personal attitude, maturity, literacy, leadership skills, knowledge in local language and experience with farming.'

Complementary policies

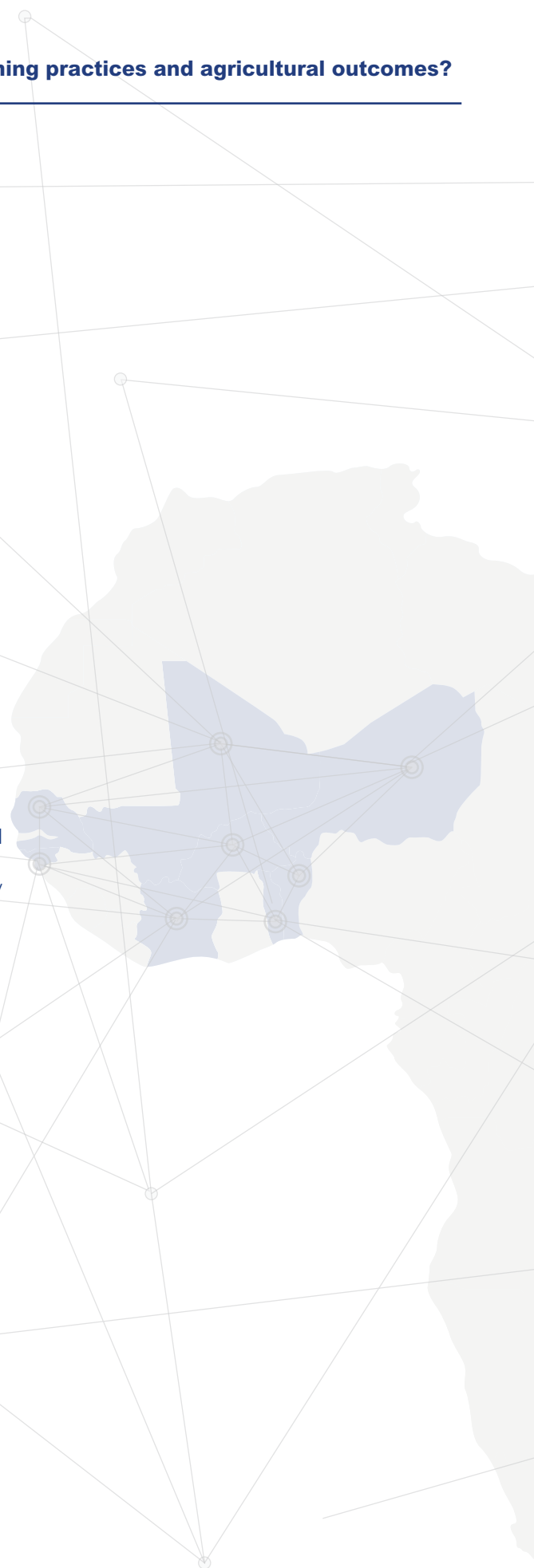
Institutional actors involved in FFS should consider farmers' needs and interests in the design and implementation of FFS programs. This consideration should include an analysis of potentially complementary policies such as the provision of agricultural inputs or assistance in marketing of harvested products.

Local institutionalization

Practices promoted in FFS should be sustainable. Therefore, FFS alumni should be formally encouraged and supported to train other farmers and share their knowledge even with nonparticipant farmers.

Evidence quality, strengths and limitations

Most findings and recommendations are based on a high-quality systematic review that combined evidence from 92 studies with interventions conducted in 25 countries. A large number of studies and a wide variety of contexts in which they were implemented suggest that the review's findings are likely to be broadly applicable. One drawback is that most of the studies' follow-up periods were quite short, between 9 and 24 months. Another weakness is the potential for bias among the underlying studies: None of the studies included in the review was coded as having a low risk of bias. The findings on gender were drawn from the review's analysis of the subset of studies that addressed gender questions, as well as one of the qualitative studies included in the review. Given the smaller number of studies, those findings should be viewed more carefully. The findings from Mali are based on a single study and should be treated as a single observation that may have been affected by local factors.



What is the WACIE helpdesk?

The WACIE helpdesk, a partnership between 3ie's WACIE program and IDinsight, provides rapid synthesis and evidence translation to help policymakers in West Africa understand what evidence exists for specific policy questions. The helpdesk can also connect interested policymakers with further resources to meet additional needs. It is staffed by the WACIE Secretariat in Cotonou and the IDinsight regional office in Dakar, with engagement from the wider 3ie and IDinsight technical staff and other experts as needed.

To submit a policy question, or for additional information, contact wacie@3ieimpact.org.

What is WACIE?

The West Africa Capacity Building and Impact Evaluation (WACIE) program, a partnership between 3ie and the Government of Benin, was launched to help build evaluation capacity in the eight countries that comprise the West African Economic and Monetary Union (WAEMU): Benin, Burkina Faso, Cote d'Ivoire, Guinea-Bissau, Mali, Niger, Senegal, and Togo. Program goals include increasing evaluation capacity in targeted countries, ensuring that policymakers have access to relevant evidence, and promoting take-up of high-quality evidence by relevant stakeholders.

This Rapid Response brief is primarily based on the following Systematic Review

Waddington, Hugh, et al. 2014. "Farmer field schools for improving farming practices and farmer outcomes: A systematic review." *Campbell systematic reviews* 10.1: i-335.

Additional findings are based on the following paper:

Settle, William, et al. 2014. "Reducing pesticide risks to farming communities: cotton farmer field schools in Mali." *Philosophical Transactions of the Royal Society B: Biological Sciences* 369.1639: 20120277.



The International Initiative for Impact Evaluation (3ie) promotes evidence-informed, equitable, inclusive and sustainable development. We support the generation and effective use of high-quality evidence to inform decision-making and improve the lives of people living in poverty in low- and middle-income countries. We provide guidance and support to produce, synthesise and quality assure evidence of what works, for whom, how, why and at what cost.



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