A guide for conducting farmer field schools on cocoa integrated crop and pest management

by

Soniia David, Sylvanus Agordorku, Simon Bassanaga, JeanYves Couloud, Mary Adu Kumi, Innocent Okuku and Dieu ne dort Wandji

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International Institute of Tropical Agriculture
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About STCP

The Sustainable Tree Crops Program (STCP) constitutes a coordinated and innovative effort made by farmers and producer organizations, industry and trade, national governments, research institutes, the public sector, policymakers, donors and development agencies to facilitate the improvement of smallholder agricultural systems based on tree crops in West and Central Africa. The goal of STCP is to improve the economic and social well-being of smallholders and the environmental sustainability of tree crop farms in West and Central Africa. For more information on STCP, see www.treecrops.org. STCP is hosted and managed by the International Institute of Tropical Agriculture.

About IITA

The International Institute of Tropical Agriculture (IITA) was founded in 1967 as an international agricultural research institute with a mandate for improving food crop production in the humid tropics and to develop sustainable production systems. It became the first African link in the worldwide network of agricultural research centers known as the Consultative Group on International Agricultural Research (CGIAR), formed in 1971.

IITA’s mission is to enhance the food security, income, and well-being of resource-poor people in sub-Saharan Africa by conducting research and related activities to increase agricultural production, improve food systems, and sustainably manage natural resources, in partnership with national and international stakeholders.
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Preface

The farmer field school (FFS) approach is relatively new to West Africa, and worldwide, there are few examples of its application to tree crops and perennial crops in general. Since 2003, the Sustainable Tree Crops Program, hosted by the International Institute of Tropical Agriculture (IITA), has pioneered FFS on cocoa integrated crop and pest management (ICPM) in Cote d'Ivoire, Ghana, Nigeria and Cameroon. This manual is based on STCP’s experience with conducting cocoa ICPM FFS in West Africa. Although the manual is based on our experience with cocoa FFS, many of the principles and recommendations can be applied to FFS on other tree crops.

This manual is directed to FFS program managers and other development practitioners. It is intended for use in conjunction with other STCP FFS training materials, namely:


This document is very much “a work in progress”. Feedback and comments are warmly welcome and should be sent to:

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## Acronyms

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<th>Description</th>
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<tr>
<td>AESA</td>
<td>Agro-ecosystem analysis</td>
</tr>
<tr>
<td>FAO</td>
<td>Food and Agricultural Organization of the United Nations</td>
</tr>
<tr>
<td>FFS</td>
<td>Farmer field school</td>
</tr>
<tr>
<td>FP plot</td>
<td>Farmer practice plot</td>
</tr>
<tr>
<td>IPM</td>
<td>Integrated pest management</td>
</tr>
<tr>
<td>ICPM</td>
<td>Integrated crop and pest management</td>
</tr>
<tr>
<td>MT</td>
<td>Master trainer</td>
</tr>
<tr>
<td>NFE</td>
<td>Non-formal education</td>
</tr>
<tr>
<td>PRA</td>
<td>Participatory rural appraisal</td>
</tr>
<tr>
<td>ToT</td>
<td>Training of trainers</td>
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</table>
1. An introduction to farmer field schools

The Farmer Field School (FFS) approach

FFS is a participatory training approach that can be considered both as an extension tool and a form of adult education. A farmer field school consists of a group of farmers (20-30) from the same or nearby villages who meet regularly guided by a trained facilitator during the course of a cropping cycle. The purpose of the school is to experiment with new production options.

FFS focuses on building farmers’ capacity to make well-informed crop management decisions through increased knowledge and understanding of the agro-ecosystem. FFS participants make regular field observations and use their findings, combined with their own knowledge and experience, to judge for themselves, what, if any, action needs to be taken.

FFS follow a set curriculum that is determined by the priority constraints identified during needs assessment. FFS curricula do not promote recommendations; farmers are encouraged to experiment on their own farms and make their own decisions based on their observations and knowledge. FFS therefore encourages farmer experimentation as part of discovery learning.

History of FFS

The integrated pest management (IPM) FFS approach emerged out of years of developing participatory farmer training activities in Asia. The first FFS were conducted in 1989 by an FAO project in Indonesia in response to a devastating insecticide-induced outbreak of brown plant hoppers on rice. The focus of the emergency IPM field training was on reducing the application of the pesticides that were destroying the natural insect predators of the brown plant hopper. Since then, FFS have been used in a wide number of countries and contexts. While FFS were first developed for IPM, the approach has now been applied to integrated crop management, natural resource management (soil fertility, water management), livestock, forestry and social issues (food security, nutrition, health, HIV/AIDS, literacy training etc).

FFS programs in Africa started through the efforts of the FAO global IPM facility. The first ToT for IPM FFS was held in Ghana in 1995. Mali established FFS in rice in 1999 through a national IPM program. Similar programs were established in Kenya and Zimbabwe. Now there are FFS programs in several African countries dealing with a range of commodities including rice, vegetables, cowpea, cotton, livestock, potatoes and bananas, natural resource management, livestock and social issues.
**Why cocoa FFS?**

In cocoa producing countries, institutions specializing in cocoa have typically been responsible for cocoa extension. With the decline of many of these institutions, cocoa extension has been turned over to national extension systems that are overburdened with providing extension services for a wide range of crops. The result is that in most cocoa producing countries, cocoa extension is inadequate at two levels. On the one hand, there are too few extension agents to take on the task of providing extension advice and moreover, few have specialized training on cocoa. On the other hand, the training and visit (T&V) approach typically used in cocoa extension is inadequate to change farmers’ practices or impart new knowledge. T&V is a top down approach that seeks to “transfer” recommendations to farmers, paying little attention to farmer knowledge and understanding of concepts and principles behind these recommendations.

A basis assumption of the FFS approach is that farmers need knowledge of biological processes and agro-ecosystem analysis to be able to make sound management decisions. It is only by understanding how, for example a disease is transmitted, that farmers will be motivated to do certain practices to avoid disease transmission.

The FFS curriculum developed by STCP on cocoa integrated crop and pest management covers 8 learning topics:

- Black pod disease
- Mirids
- Farm sanitation and cultural practices
- Soil fertility and fertilizer use
- Making decisions about rehabilitating a cocoa farm
- Cocoa quality
- Child labour sensitization
- HIV/AIDS sensitization

**Objectives of FFS**

The objectives of FFS are to:

- Provide an environment in which farmers acquire the knowledge and skills to be able to make sound crop management decisions
- Sharpen farmers’ abilities to make critical and informed decisions that make their farming activities more profitable and sustainable
- Improve farmers’ problem solving abilities
- Show farmers the benefits of working in groups and encourage group activities
- Empower farmers to become “experts” on their own farms and to be more confident in solving their own problems.

**FFS principles**

While FFS is a flexible approach, 7 basic principles should be respected. These are:

- **Farmer-centered.** In FFS, farmers conduct their own field studies. The training program is in response to farmers’ identified problems and farmers decide on the “special topic” each session. In this way, farmers become “experts” on the particular topic they are investigating. Each person’s experience of reality is unique. As farmers become more aware of how they learn and solve problems, they can refine and modify their own styles of learning and action.

- **Group discovery learning.** Learning is based on experience. All learning is done in the field in small groups by doing comparative studies/experiments of different options. This learning by doing (discovery learning) allows farmers to come to their own conclusions about an innovation. As people participate in collaborative group approaches, they develop a better sense of their own worth.

- **A learning, rather than a technology/message, focus.** FFS generally does not promote technologies or recommendations. Rather, the approach encourages farmer experimentation as part of discovery learning. Farmers generate their own learning materials from drawings of what they observed, to the field trials themselves. Farmers are encouraged to experiment on their own farms and make their own decisions based on their observations and knowledge.

- **Competent facilitators:** Learning takes place in a situation in which teaching is seen as a facilitation process that assists people to explore and discover the personal meaning of events for themselves. The role of the facilitator is to create a suitable environment for learning, facilitate learning by asking questions and provide backstopping support. A good facilitator needs not only technical knowledge, but more importantly a
certain attitude. Becoming an expert facilitator can be learned by good mentoring, on-the-job training and experience.

- **Empowerment of farmers:** Learning is an evolutionary process and is characterised by free and open communication, confrontation, acceptance, respect and the right to make mistakes. Farmers make all decisions in FFS. Through collecting data, analysing data, making decisions based on the analysis of the data and reaching group consensus, farmers develop a greater confidence in their abilities and local knowledge. By training farmers in groups, FFS improves farmers’ communication, conflict and problem solving abilities, leadership and discussion skills. FFS may shift more strongly to an empowerment agenda by facilitating collective action and sensitising farmers to act on such issues as setting national research agenda, governance and trade relations.

- **Systems approach.** FFS consider the farm and the whole agro-ecosystem in the learning process.

- **Self help.** FFS is a participatory, community based approach and as such depends on the total involvement of individual farmers and communities. For the impacts and efforts of FFS to be realized, the process must continue over a long period of time (hence the term FFS movement). Key to the sustainability of FFS is a sense of farmer ownership and involvement in the training process at all levels. Farmers are even expected to take over the financing of FFS.

**Four principles of integrated pest management**

The FFS approach is based on four principles of integrated pest management. These are:

- **Grow a healthy plant:** Strong, vigorous plants are better able to tolerate insect and pest damage.

- **Protect and help natural enemies:** Many natural enemies live naturally within the crop field. Others live in wild plants in nearby fields. Just like the crop and insects pests are managed, natural enemies must also be managed so that they become abundant and effective.

- **Regular field observation and analysis:** Farmers can only make good decisions if they have good information. Insect pests, natural enemies, diseases, the growth stage of the crop and the weather are among the factors that should be observed and analyzed.
- **Farmers become experts**: Farmers must have confidence in their own knowledge and ability to make their own decisions. If not, they may, for example, use too much pesticide out of fear.

**The FFS method**

There are 4 main steps in implementing farmer field schools:

1. Needs assessment and community sensitisation (called "groundworking")
2. Participant selection
3. FFS implementation
4. Graduation

Farmer field schools are conducted on a farm where all activities are carried out during school sessions for a whole cropping season. The FFS farm is divided into two plots: the integrated crop and pest management (ICPM) plot, where new practices are implemented, and the farmer practice (FP) plot, where the normal management practices of farmers in that location are carried out. A third plot may be set up to experiment with new ideas. Throughout the field school, farmers make comparisons between these ICPM and FP plots.

The main elements of each FFS session are:

- **Agro-ecosystem analysis data collection**: In small groups, FFS participants make observations on the crop and other aspects of the agro-ecosystem including disease and pest infestation, the weather, weeds, the soil. They make a drawing to represent the data they collect and analyze their findings. Each group makes recommendations on what action should be taken on the farm to address production constraints.

- **AESA presentation**: Each group makes a presentation to the whole school on their findings. After group presentations, participants discuss the recommendations made by each group and agree on one or two actions to take. These can include learning about a topic to understand it better, doing fieldwork such as harvesting or removing diseased pods, or carrying out a simple experiment.

- **Implementation of a “special topic”**: The special topic is the topic that participants, sometimes with the help of the facilitator, agree to learn more about. In most cases, the facilitator will lead participants through a discovery learning exercise contained in the FFS curriculum.
Adapting the FFS approach to cocoa

The FFS approach was first developed for training farmers on IPM of annual crops such as rice and vegetables. We adapted the FFS approach developed by FAO to cocoa as shown in Table 1.

Table 1: Comparison of classical FFS for food crop IPM and cocoa ICPM

<table>
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<tr>
<th></th>
<th>Food crop IPM</th>
<th>Cocoa ICPM</th>
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<tbody>
<tr>
<td>Frequency of meeting</td>
<td>Weekly</td>
<td>Every two weeks</td>
</tr>
<tr>
<td>Length of farmer training</td>
<td>Season long</td>
<td>9-10 months (Feb-Dec)</td>
</tr>
<tr>
<td>Number of sessions</td>
<td>14 (average)</td>
<td>15-20</td>
</tr>
<tr>
<td>Length of training session</td>
<td>4-5 hours</td>
<td>4-5 hours</td>
</tr>
<tr>
<td>Focus during agro-ecosystem analysis</td>
<td>Whole plant and conditions on the learning plots</td>
<td>Up to 2 m. for some parameters; pods on whole tree, conditions on the learning plots</td>
</tr>
<tr>
<td>Technical content</td>
<td>Identification and preservation of natural enemies</td>
<td>Disease and pest management, cultural practices</td>
</tr>
<tr>
<td>Emphasis of FFS</td>
<td>Training and research</td>
<td>Training</td>
</tr>
</tbody>
</table>

Over time, we modified the following aspects of the classical FFS approach:

1. Facilitator training: When doing FFS with annual crops, facilitators are trained for a whole season to allow them to grow a crop and gain experience with conducting discovery-learning exercises. With perennial crops, season-long training would delay the start of FFS for a year or more and would be too short for trainees to grow a crop. One way to ensure that facilitators gain field experience with the crop and training materials, is to conduct an initial ToT workshop before the start of the cropping season. After the workshop, facilitators-in-training start schools, preferably supervised by, or working in a team with, a more experienced FFS facilitator. Facilitator trainees attend a second ToT workshop held at an appropriate time later in the year. In this way, facilitators are trained for one year and gain field experience with training material at the appropriate time during the cropping cycle.

2. Focus on insect and pest management: There is limited scientific knowledge of some of the key pests and diseases of cocoa and other tree crops in West Africa and other parts of the world. In many cases, the natural enemies of the major pests of cocoa and other tree crops are not known. This is one
reason why the curriculum of FFS on tree crops typically places greater emphasis on crop husbandry and less attention to pest and disease management.

3. Frequency of doing agro-ecosystem analysis (AESA). In FFS with annual crops, AESA is done weekly. For perennial crops, doing AESA every two weeks, or weekly at specific periods in the cropping cycle, is more appropriate.

4. Observations during AESA: It is much easier to make observations on a rice plant as you can easily see the whole plant. It is often difficult to observe all parts of a tree, especially if they are tall. Ladders may not always be available and can be dangerous to use. In the case of cocoa, it may be necessary to make observations up to a specified height (for example, 2 meters).

**Conditions for successful FFS**

Based on our experience, the following conditions are necessary to ensure the success of FFS:

- Well trained, technically competent facilitators
- Well defined priority problem(s)
- Adequate resources and logistical support
- Clear understanding of the FFS concept and procedures by all stakeholders
- Support and good will by authorities at various levels
- Availability of appropriate technical knowledge and interventions
- Availability of an FFS curriculum