



Food and Agriculture
Organization of the
United Nations



INTRODUCTION TO FARMER FIELD SCHOOLS

A Reader for Institutions of Higher Learning



User: Instructors and Students

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Preface

The essence of farmer field schools (FFS) is to empower farmers to learn, understand, and make informed decisions. The FFS approach challenges conventional agricultural extension approaches, which are based on top-down delivery of technology packages. It is estimated that by 2015, millions of farmers and agro-pastoralists in the world had benefited from the unique ability of FFS programmes to address the technological, social and economic needs of small-holder farmers and land users. As a result of this success, the demand for FFS programmes has been increasing, and in several countries, the approach is now institutionalized within public extension systems and NGO programmes.

In eastern Africa, FAO has been leading the efforts to institutionalize FFS approach to the national systems through a project funded by Swiss Agency for Development and Cooperation (SDC). The development of this publication was conceived during a stakeholders workshop organised by FAO from 24th -29th April 2017 in Malindi-Kenya to share experiences on how best to institutionalize field schools (FS) into the university curriculum, and to develop related FS teaching materials. The workshop drew participation from universities, local government representatives and FS practitioners. Among the key outputs of the workshop was a proposal by the stakeholders to develop a core reading material on FS for use by universities as they undertake to institutionalize the approach in their institutions. The document would also clarify unclear areas of the FS methodology.

This Reader has been developed to address the stakeholders' needs as expressed during the Malindi workshop. The Reader is a compilation of materials on FS methodology sourced from existing FFS publications such as manuals, journal articles and books. It was developed through a writeshop process facilitated by IIRR from 21st - 23rd July 2017 in Nairobi-Kenya. The writeshop involved representatives from universities, FS hub team members, FS experts and practitioners from the eastern Africa. The document was later peer reviewed by FS master trainers to enrich and validate the content.

The FS Reader provides the audience with a common understanding of the salient aspects of the FFS approach. The document is not meant to be exhaustive but rather introduces the reader to the fundamentals of FS methodology and provides specific references for further reading. It is expected that the document will contribute to the mainstreaming of participatory and experiential learning processes and knowledge on the FFS approach in tertiary education system in eastern Africa. It is also hoped that academia and especially students interested in researching or learning about FFS will find this Reader intellectually stimulating, informative and resourceful.

Acknowledgments

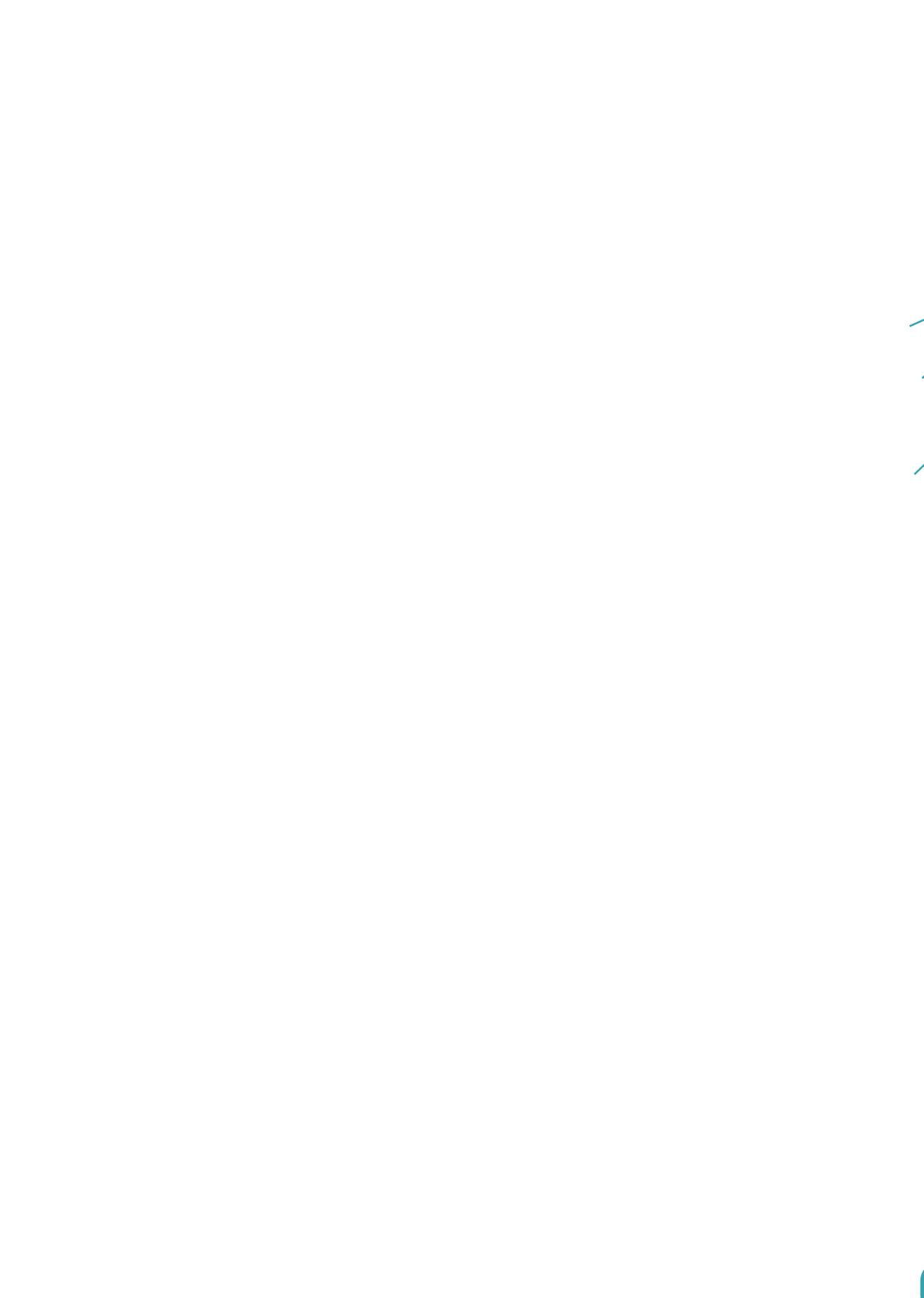
This READER was developed through a consultative process, with inputs from a wide range of stakeholders.

- The Swiss Agency for Development and Cooperation, SDC funded the entire process under the FAO implemented program for '*Institutionalization of Field Schools in Eastern Africa*'.
- The International Institute of Rural Reconstruction (IIRR) facilitated the writeshop process for the FS READER.
- A team of multinational experts comprising Deborah Duveskog, Edwin Adenya, Paul Mutungi, Chrispin Mwatate, Eric Mwaura, George Chemening'wa, Titus Mutinda, Solomon Nega, Benjamin Mweri, Godrick Khisa, Dorothy Maye, Twaha Ateenyi, Yonas Messeret, Elizabeth Wanjekeche, Oscar Simanto, Josepha Mukamana, and Winfred Nalyongo provided content development for the Reader and subsequent reviews
- The Editorial team comprised of Benjamin Mweri, Lenard M. Gichana, Annie Onga'yo, Baha Nguma and Wycliffe Omany.

Special thanks for the valuable support rendered towards the production of the READER.

Acronyms and Abbreviations

AESA	Agro-Ecosystem Analysis
CAHW	Community Animal Health Workers
CBO	Community-based Organization
CDA	Coast Development Authority
CIP-UPWARD	International Potato Center, Users' Perspectives With Agricultural Research and Development
FAO	Food and Agricultural Organization of the United Nations
FFS	Farmer Field School
FS	Field School
GoK	Government of Kenya
IIRR	International Institute for Rural Reconstruction
IPM	Integrated Pest Management
IPPM	Integrated Production and Pest Management
KARI	Kenya Agricultural Research Institute
MoA	Ministry of Agriculture
NGO	Nongovernmental Organization
PFI-FFS	Promoting Farmer Innovation through Farmers Field Schools
PM&E	Participatory Monitoring and Evaluation
PPP	Public-Private Partnerships
PTD	Participatory Technology Development (Participatory Comparative Experimentation)
SPFS	Special Programme for Food Security
SWM	Soil and Water Management
T&V	Training and Visit
ToF	Training of Facilitators
ToT	Training of Trainers
UNDP	United Nations Development Programme



*Go to the people
Live among them
Learn from them
Plan with them
Work with them
Start with what they know
Build on what they have
Teach by showing
Learn by doing
Not a showcase
But a pattern
Not odds and ends but a system
Not to conform but to transform
Not relief but release.*

-IIRR Credo by Dr. James Yen



1. INTRODUCTION

The farmer field school (FFS) approach was developed in the late 80's by FAO in South East Asia as a way for small-scale rice farmers to investigate, and learn for themselves the skills required for adopting integrated pest management (IPM) practices in their paddy fields and the associated benefits. The approach emerged from the ecological, political and economic crises occasioned by the massive rice pest outbreaks that threatened the national food security of many countries in Southeast Asia in the late 1980s and early 1990s. Conventional extension, largely under the training and visit (T&V) process, with technical packages, including the blanket application of inputs such as pesticides ironically aggravated rather than solved the problem. Massive insect outbreaks at the time, demanded a rethinking of crop protection approaches. Under T&V, schooled extension staff were expected to be experts delivering messages from research to farmers, however, most of the messages were inappropriate, too simple and the messengers not local experts. This "technology transfer" model was not functioning to manage large-scale outbreaks of the rice brown plant hopper, which threatened rice self-sufficiency in Indonesia. The Integrated Pest Management Farmer Field School (IPM FFS) was developed in response to these conditions. The form and structure of FFS therefore grew from the practical need for field observation making practice, use of a facilitative leader, or formation of a local group to self-organize the study field and participants.

The Farmer Field School (FFS) is a group-based learning process that has been used by a number of governments, NGOs and international agencies to promote Integrated Pest Management (IPM).

Farmer Field Schools

From Extension to Education

The IPM Farmer Field School program emerged out of a concrete, immediate problem. Farmers were putting their crops, health, their environment at severe risk through massive abuse of highly toxic pesticides promoted aggressively by private industry and government. Pest species were becoming resistant and in some cases resurgent. What was called for was a large-scale decentralized program of education for farmers where in they would become "experts" in managing the ecology of their field - bringing better yields, fewer problems, increased profits, and less risk to their health and environment. "Grow a Healthy Crop" was the first principle of the IPM program.

*Russ Dilts -
ILEIA Newsletter, October 2001.*

The well-known Brazilian educator Paulo Freire published a critical analysis (financed by Unesco and FAO) of agricultural extension systems entitled "Extension or Communication?" (Freire, 1969). This called for empowering of farmers to act on their own behalf, as equal partners in the creation of technical agriculture, instead of being passive, silent "objects" of the efforts of agricultural technicians to promote new technologies. This paper influenced the emergence of the FFS approach.

The early steps of creating the IPM farmer field school started in the Philippines with a farmer training programme lasting for five consecutive planting seasons from 1978-1990. Models such as functional literacy, children's primary health care, and other practical programmes were used during design processes under an adult education team leader. Initial efforts included emphasis on getting farmers to master ecological principles to become experts in IPM. Farmers were trained in small groups and encouraged to be active in the discussions. Hands-on field practice was favoured rather than expensive materials, theory or lectures. By 1984, about 55,000 farmers had been trained. Additional aspects were incorporated in the approach which later became the norm when scaling up the approach in Indonesia. These included; considering the field as the classroom, use of live and practical examples for learning rather than images, and shift of methodology from lectures to structured experience and analysis of field conditions.

By 1989, a large wave of IPM FFS was conducted in Indonesia, and by 1990, more than 1,800 FFS had been initiated in six provinces in the country. By 1991, the approach spread to other countries in Asia. With the geographical expansion, agricultural practices expanded to other commodities including beans and vegetables beyond rice. At the Global IMP meeting held in Bangkok in 1993, practitioners from other regions such as Africa and Latin America were exposed to the approach. The approach then spread to Africa starting from Sudan, and by 1995-1996, a number of African extension officers were sent to Philippines for season long training.

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HISTORY AND EVOLUTION OF FIELD SCHOOL

Historic Background

The Farmer Field School (FFS) approach emerged out of a concrete, and immediate problem. At the end of the eighties of the last century, farmers in Indonesia were putting their crops, their health and their environment at severe risk. There was a massive abuse of highly toxic pesticides promoted aggressively by the private industry and government. Pest species were becoming resistant and in some cases resurgent. This period necessitated demand for a large-scale decentralized programme of education for farmers where they would become “experts” in managing the ecology of their fields towards better yields, fewer problems, increased profits, and less risk to their health and environment (Dilts, 2001). The IPM-FFS and a corresponding large-scale Indonesian programme were developed in response to these conditions. The genesis of IPM, was a response to the emergence of problems associated with the reliance on chemical controls for insect pests by governments, extension systems, and farmers.

The search for solutions to these problems led to the development of a more holistic view of what constituted an agro-ecosystem, and how human interventions could either enhance or disrupt one. The main principle underpinning the concept of FFS approach is for the alumni not to only apply IPM principles in their fields, but also to master the process, enabling them to help others learn and apply IPM principles, and organize collaborative activities in their communities to institutionalize IPM principles.

Evolution

Farmer Field Schools approach was based on the fact that farmers learn optimally from field observation and experimentation. It started by developing IPM in rice farming in 1990. An initiative of farmers who graduated from the first round of FFS in 1990, led to the establishment of the first Farmer-to-Farmer field school in Indonesia. From 1991 to 1994, the Food and Agriculture Organization (FAO) supported inter-country IPM programme that enhanced the spread of rice IPM-FFSs from Indonesia to Bangladesh, Cambodia and Vietnam. From 1995 to 1999, the Farmer-to Farmer Programme took root in China, Lao PDR, Nepal and Sri Lanka (CIP-UPWARD, 2003). Because of the popularity of the IPM-FFSs in Asia, a strong movement emerged to copy and adapt the approach to other situations in Philippines, Sri Lanka and Vietnam. During this period, the FFS Programme moved from its single-crop focus to include secondary or rotation crops within the rice-based systems and vegetables in both low and highland systems.

The approach has since been innovatively applied, strengthened and deepened in other fields such as gender advocacy, health impact studies, field ecology, farmer-led action research and farmer planning by FAO, and national programmes. It is now a standard element in most FFS programmes around the world (CIP-UPWARD, 2003).

The waves of adaptations in FFSs have developed from focusing on a single constraint (pest management) of a single crop (rice) in Asia, to an emphasis on the multiple dimensions of crop IPM, cropping systems, resource management, to socio-cultural dimensions of community life. The dimensions include potato IPM FFSs for illiterates and advocacy (Rahadi and Widagdo, 2003). This may be seen as the natural progression of the FFS; the phasing or timing by which particular FFSs would evolve to multi-dimensional and/or higher-level based on individual farmer groups (CIP-UPWARD, 2003). Over time, the approach has been adapted to various technical domains, involving a range of thematic areas (Figure. 1). By 2015, over 90 countries were using FFS applied by a range of different stakeholders, from Governments, NGOs and technical agencies to the private sector.

The figure 1 below shows the evolution of Field Schools in the globe.



Figure 1. Technical domains, involving a range of thematic areas in Farmers Field School concept

Source: (Source: *Farmer Field School Guidance Document* pg. 17 of 112)

From Asia to Africa

After Asia, the FFS approach has extended to several countries in Africa and Latin America. At the same time, it has shifted from a focus on a single constraint of a single crop (IPM for rice based systems) to an emphasis on the multiple aspects of crop production and management, to cropping systems, to non-crop/forest (livestock production etc.), to natural resource management (soil fertility, water conservation etc.), and to Socio-cultural dimensions of community life (food security & nutrition, savings, health, HIV/AIDS, literacy training, livelihoods etc.). African countries implementing the approach include Kenya,

Uganda, Tanzania, Zimbabwe, Zambia, Malawi, Ethiopia, Ghana, Nigeria, Gambia, Egypt, Lesotho, Swaziland and Mozambique.

Challenges in field school adoption and implementation

In its introduction to the eastern African region the approach first faced challenges in the fact that national governments had adopted the training and visit extension approach into their national extension systems. It took time to convince governments to adopt the participatory, discovery-based approach (the FFS). Through pilots, and the outcome of an empowered farmer, the approach was gradually taken up in the region.

The fear by extension staff on possibility of losing their jobs to the empowered FFS graduates who were now running farmer-led FFS groups was real. However, the fear was dispelled when extension staff appreciated their new roles as facilitators rather than teachers towards a more specialised engagement and division of responsibilities with the FFS graduates.

The use of FFS from its original scope of IPM (Asia-setup) to its diverse usage in fields beyond agriculture posed a debate on its scope and quality during the international learning workshop held in Jakarta Indonesia (CIP-UPWARD,2003). The fears and concerns by the participants, posed the question, “*What are the implications of applying the FFS to other thematic areas?*” Responses to the above question provided the guidance to where the approach is to date, and included:

- i. The focus on farming and natural system may be forgotten
- ii. Farmers involved in FFS can learn about other topics more easily
- iii. More scope for research
- iv. Universities offering and/or developing programs on FFS methodology
- v. Knowledge generation by both farmers and scientists
- vi. Flexible curriculum
- vii. Developing strong linkages and network of facilitators and institutions
- viii. Danger of diluting the process
- ix. Further training of facilitators
- x. Need for well-trained facilitators who can respond to emerging new situations
- xi. Undergoing season-long TOT (training of trainers).

Organizations using the approach would themselves need programmatic re-orientation for them not to -for example, target farmers with preset extension messages typical of the blue-print approach.

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2. FUNDAMENTAL THEORIES UNDERPINNING THE FIELD SCHOOL APPROACH

Introduction

This session presents a review of the theories and concepts that underlie the learning activities found in a field school. An analysis is made of the field school approach using a framework based on critical theory and provides why FS has a broader impact than simply changed practices among farmers.

Theoretical foundation of learning and Field Schools

The field school (FS) approach is anchored on the theories of constructivism, adult learning, experiential learning, action learning/ research and group dynamics.

Constructivism is a theory on learning that suggests that people construct their own understanding and knowledge of the world, through their experiences and reflection on those experiences. Theories of adult learning, experiential learning and action learning are built on the foundation of constructivism. The building blocks of the initial field school programmes were based largely on the lessons that emerged from new thinking in adult and literacy education. Experiential learning (learning by doing) approach ensures that learners acquire experience through a continuous and cumulative process of resolving problems, and conflicts with the environment in everyday life.

Theory of adult learning (Andragogy)

Malcolm Knowles (Knowles 1968) used constructivist ideas to develop the theory of adult learning (andragogy). Andragogy applies to education of adult learners, as opposed to pedagogy which refers to education of children and youth. Andragogy considers differences in learning between children, and adults who have many years of experience. It avers that adult instructors should focus on actual interests of learners instead of focusing on what instructors believe are learners' interests. Andragogy is anchored on five assumptions that describe the characteristics of adult learners: (1) *independent self-concept* - responsible for and direct own decisions and lives; (2) *readiness to learn* – focus on learning things that they need to know and able to do as a means of coping effectively with their real-life situations; (3) *adult learning experience* - have accumulated a reservoir of life experiences of varying quality that is a rich resource for learning; (4) *orientation to learning* - life-centred or problem-centred with immediate interest in application of knowledge rather than subject-centred orientation to learning; and, (5) *motivation to learn* - internal pressures (immediate needs e.g. quality of life, self-esteem and job satisfaction) rather than external pressures for learning are critical motivators.

Education grounded in Knowles' concepts emphasize the following directives: (1) honour and give voice to learners' experiences; (2) compare and share learners' experiences; (3) assist learners in actively seeking links between specific past experience and their current situations; (4) analyse and reconstruct (if need be) learners' experiences; and, (5) help learners to form links between their experiences and their beliefs about themselves, how things work, what is important, and what things mean.

A facilitator in a field school should take into account the following traits of adult learners: (1) learn best by sharing their experiences; (2) learn throughout their lives; (3) have multiple roles and responsibilities in learning; (4) participation in learning is voluntary, and exhibit diverse learning styles; (5) like their learning to be problem-oriented and have immediacy of application; and, (6) prefer to be directed towards their own specific situations.

Kolb's theory of experiential learning

Experiential learning can be described as a process by which the experience of the learner is reflected upon, and new insights or learning emerge that can be tested. The learner is empowered in solving problems and making decisions based on their own unique experiences, situations and needs. Experiential learning, discovery-learning, and learning by doing are terms often used interchangeably. Experiential learning first became popular in adult /education to celebrate and legitimize people's own experience in their knowledge development (Fenwick 2001). David Kolb developed a simplified and harmonised model of experiential learning in which the process begins with an experience (concrete experience), followed by reflection (reflective observation). The reflection is then assimilated into a theory (abstract conceptualization) and finally these new (or reformulated) hypotheses are tested in new situations (active experimentation). The model is a recurring cycle within which the learner tests new concepts and modifies them as a result of the reflection and conceptualization.

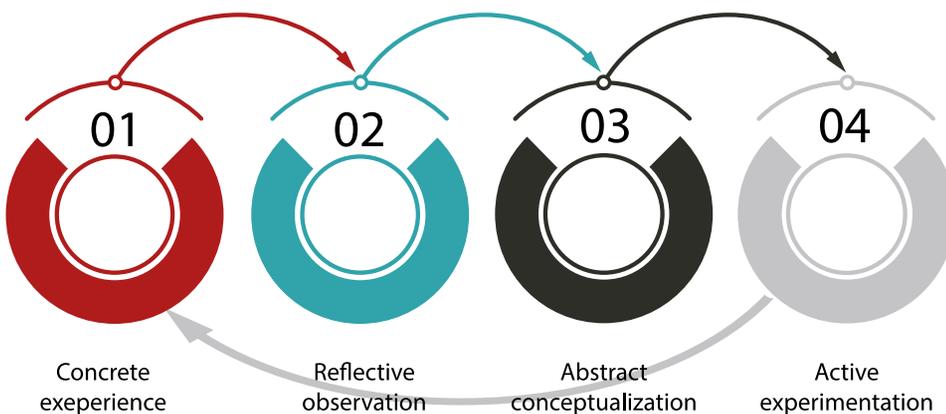


Figure 2: Kolb's learning cycle (source: adapted from, Kolb 1984)

Experiential learning is highly relevant for agricultural extension as it provides a means to work with groups to find their own solutions to problems through testing and experimentation of ideas and practices. In field school, experiential learning can be defined as learning beginning from a given experience followed by reflections on the experience, discussion, analysis, and evaluation of the experience. This process enhances participants' synthesis of learning, encourage discoveries, enhance analytical, observation and decision-making skills.

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3. PRINCIPLES OF FIELD SCHOOLS APPROACH

Introduction and principles of Field Schools

Field schools were initially based on natural science (e.g. crops, livestock, and forestry etc.) with rice IPM as the entry point. Currently, they have expanded beyond IPM to cover other thematic areas in the social sciences such as advocacy, HIV/AIDS, and gender among others. To clearly understand the guiding principles of the field school approach, it is important to examine the key features and characteristic of the methodology.

It is important to note that the fundamental theories described in Chapter 2, namely cognitive development, communication theory, adult learning, action learning, Kolb's experiential learning cycle, are key in driving the field school principles. Thus, the principles, features, and characteristics of field schools are all anchored on adult learning theories as demonstrated below. Kolb's theory of experiential learning also supports the field school approach. This is clearly explained in chapter 5 when you read about the Agro-Ecosystem Analysis in the steps of implementing field school. These two ideas – that new learning must be built upon past experiences, and that we learn better when we are actively involved in the learning process, form the foundation for the field school learning approach. Below are the principles that guide the field school approach.

Principles of the Field School approach

Participants decides what to study.

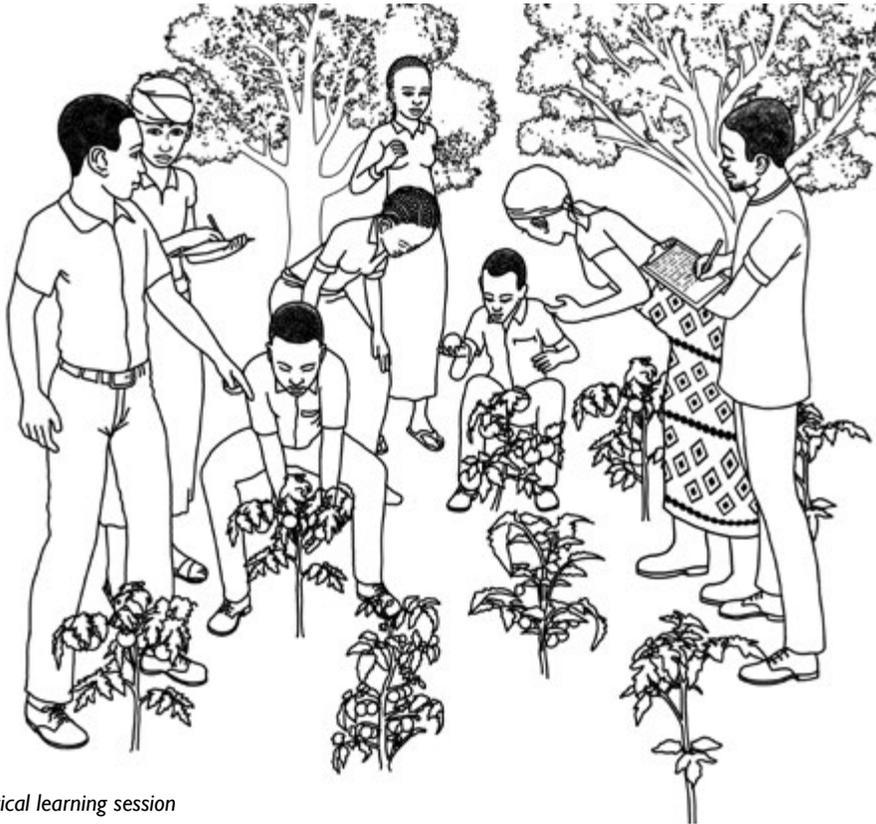
The decision on what to study rest with the members in field school and not a facilitator or an extension agency. This ensures that the information is relevant to local needs. The facilitator's job is to guide participants through the learning process by creating hands-on exercises. These exercises give participants new experiences to help them make better decisions about farming, livestock practices, and other thematic areas of their interests. Thus, the process is farmer focused and driven.

Learning is by doing (experiential learning)

Experiential learning is fundamental to the field school approach. The basic assumption of experiential learning theory is that learning is always rooted in prior experience. Any attempt to promote new learning must take previous experiences into account. It is also widely accepted that people learn best by doing. Thus, the saying, "Tell me, and I forget. Show me, and I remember. Involve me, and I understand."

Farmers, pastoralists or agro-pastoralists do not change their behaviours and practices just because someone tells them what to do or how to change. They learn better through experience than from passive listening at lectures or demonstrations. Discovery-based

learning is an essential part of the field school as it helps participants to develop a feeling of ownership and to gain the confidence that they can reproduce the activities and results on their own.



A practical learning session

Learning is field/enterprise based

One critical component of field school is a study field for a group study. A study field enables participants to carry out experiments without personal risks thus allowing them to make management decisions they might not otherwise attempt. It is important to take note that the term “field” for non-agricultural thematic areas such as advocacy, and HIV/AIDS, may imply the area of study or activity location. In the case of agriculture-based study, fields are located at a convenient distance from all members.

The herd, the crops, and the landscape form the main learning ground, around which all field school activities are organized. Farmers, pastoralists/agro-pastoralists learn directly from what they observe, collect, and experience in their surrounding instead of through text books, pictures or other extension materials. Participants also produce their own learning materials (drawings and illustrations etc.) based on what they observe. The advantages of these home-made materials are that they are consistent with local conditions, inexpensive to develop, and owned by the learners.

Learning is based on facilitation, not teaching

The role of the facilitator is crucial for successful learning and empowerment since field school does not focus on teaching but on guiding field school members through the learning process. To foster the learner-centred process, the facilitator remains in the background, listening attentively and reflectively, asking questions and encouraging participants to explore more in the field, and present their ideas. The facilitator must stimulate field school members to think, observe, analyse, and discover answers by themselves.

Trained facilitators guide the learning process, not by teaching but by mentoring and supporting the participants to take responsibility for their own learning. In the discussions, the facilitator contributes and moderates the group to reach a consensus on what actions should follow. Facilitators are trained in a formal Training of Facilitators (TOF) course developed by experienced field school master trainers. Researchers and subject matter specialists are invited to provide technical and methodological backstopping to the field school groups and also to work in a participatory and consultative way with the participants.

Problem based -curriculum driven process

Problems are presented as challenges, not constraints. Field school groups learn different analytical methods to help them gain the ability to identify and solve any problem they may encounter in their daily life.

4. Characteristics of Field Schools

The following are some of the main characteristics of the Field School approach.

Farmers as experts

Farmers “learn by doing” - they carry out, for themselves, the various activities related to the particular enterprise they want to study and learn. This could be related to annual crops, soils or livestock production. Farmers conduct their own comparative studies of different treatments, and in doing so, they become experts on the particular practice they are investigating.

Training follows the seasonal cycle

Training is related to the seasonal cycle of the practice being investigated. For annual crops, this would extend from land preparation to harvesting; for livestock, from calf to calf; and for poultry, from chicken to chicken. For tree crops and conservation measures such as hedgerows and grass strips, training would need to continue over several years to see the full range of costs and benefits.

Farmers generate their own learning material

Farmers generate their own learning materials, drawings and posters, based on observations in the field and on experiments and field trials. These materials are always consistent with local conditions, and because they created them, learners know their meaning. Even illiterate farmers can prepare simple diagrams to illustrate their points.

Group capacity building

Through the training, farmers acquire skills on communication, problem solving and discussion methods. Successful activities at the community level require that farmers can apply effective leadership skills and have the ability to communicate their findings to others.

Regular group meetings

Farmers meet at agreed regular intervals. The frequency of meetings is determined by the enterprises farmers chose to study and the activities in the enterprise cycle. For annual crops, meetings may occur weekly or bi-weekly throughout the cropping season. For other farm/forestry management practices, the time between each meeting would depend on what specific activities need to be done, or be related to critical periods of the year when there are key issues to observe and discuss in the field.

Non-negotiable characteristics of Field Schools

An international learning workshop held in Indonesia in November 2002, proposed that practitioners in the field school approach should ensure quality of the process as they expand. They would have to maintain the following non-negotiable characteristics of field school. (CIP-UPWARD.2003).

Empowerment

- Group discovery learning
- Systems approach
- Life education
- Self-help and self-propelling
- Farmer-centred
- Competent facilitators

Curriculum development

- The community should choose topics
- Training based on farmers' limited knowledge
- Training based on basic needs of farmers
- Participants are involved in curriculum development

Systematic training process:

- Observation
- Group discussion and analysis
- Conclusion and action plan(s)
- Agro-ecosystem analysis
- Regular and frequent meetings

Education Principles

- Skills is the goal, not information
- Discovery learning
- Learning by doing
- Science-based
- Experiential and/or problem-based learning
- Experimentation and study plot
- Non-formal education process

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5. STEPS IN FIELD SCHOOL IMPLEMENTATION

Introduction

The field school implementation is systematic and elaborated in a ladder-like simplified illustration that entails eight steps. Originally, there were nine steps formulated by practitioners. However, these were later revised and merged into eight. The steps are anchored on theories such as adult learning, participation, and Kolb's experiential learning.

Classical Steps of Field Schools

The original nine steps had training of facilitators as its first step, and ground working as the second, while the modified eight step approach starts with the latter. Organizations planning to initiate a Field School (FS) in an area, would first want to engage the gate keepers (e.g. the Country Director of Agriculture, or relevant positions of authority) to explain their intention and seek the support of Ministry of Agriculture staff to facilitate the field Schools. In a scenario where this is approved but staff had not been trained in the Field School approach, the first step would be to organize training of facilitators for a 1-3 weeks preceding ground working and establishment of the Field Schools.

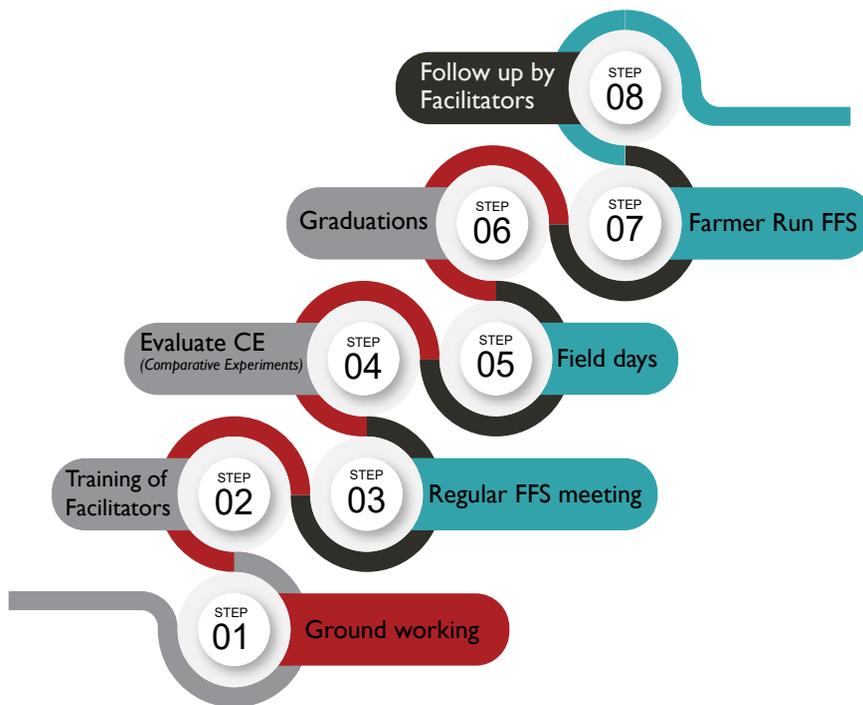
On the case of the modified eight steps, a multi-disciplinary team of researchers will make contact with the county director of agriculture by letter, and arrange for a pre-visit. This meeting will enable them to explain their intentions and agree on a day to meet farmers and conduct the ground working exercise. Through this process, they will identify the interested farmers/groups and their priority problems. Interested farmers (25-30 members) are then enrolled into a school. The director or linking authority is then asked to provide staff to attend a training of facilitators who upon completion, go back to the identified groups and initiate the FFS that meets regularly (weekly basis) depending on the enterprise of study.

Steps in the implementation of a field school

Implementing a successful field school requires that those involved in its establishment and management have the right mind set (attitude change) to deal with the challenges and demands of the approach. The steps described below act as a guide and a monitoring plan for field school implementation. While it follows through the eight modified steps, practitioners have identified some common themes that would enable comprehensive understanding and implementation of a field school.

Modified classical steps

Figure 3: Classical Steps in Field School implementation.



Source: Mweri, 2005

Step 1: Ground working

The objective of ground working is to determine the actual needs of the community/ farmer groups, which will eventually form the basis for developing the field school curriculum and the field trials. It is a collective term for activities conducted at the village to prepare or pave way for the introduction of a new concept or programmes in the given area. The success of field school is directly related to the quality of ground working activities conducted. Some of the ground-working activities include:

- Identification of facilitators
- Identification of field school participants
- Identification of a study field site
- Identification of focus enterprises
- Identification of priority problems
- Identification of solutions to identified problems
- Establishment of farmers' practices

Step 2: Training of Facilitators

This is an important step in the establishment of a field school. The TOF may be conducted for a short duration as a workshop, or a season-long depending on resources. The trainer is responsible for the TOF timetable and ensures there is an ongoing “school” within the proximity of the training venue to expose trainees on hands-on aspects (learning by doing).

TOF will handle the following:

- Crop/livestock production and protection technologies
- Field guides on how to effectively deliver crop/livestock production and protection topics using non-formal education methods (NFE)
- Participatory technology development (PTD) also lately referred to as participatory comparative experimentation (PCE) with emphasis on the approaches and developing guidelines on conducting (PCE)
- Non-formal education methods with emphasis on what, when and how to use NFE in FFS
- Group dynamics
- Special topics to be addressed at every stage of training.
- Participatory planning and curriculum development

After facilitators have undergone a successful training on the approach, they then initiate a problem diagnosis exercise that is geared towards establishing study plots based on the farmers’ identified needs/problems. A curriculum is then developed from the problem diagnosis.

Curriculum development

The field school curriculum is integrated to include such topics as soil and water management (SWM), crop and animal husbandry, horticulture, and land husbandry. These are considered alongside the farmer’s environment, lifestyle, sources of incomes, financial management, labour requirements, risks and uncertainties, and education. In addition to this holistic approach to the development of field school curriculum, three broad categories (i.e. technical, learning process, and organization and management) are used to provide a responsive structure to the process. Each category is further disaggregated into three subdivisions, also referred to as principles.

Technical Contents

- Lead towards a better understanding of ecology.
- Enable farmers to make their decision.
- Relevant to local needs and conditions.

Learning Process

- Experimental, discovery based.
- Non-hierarchical, a partnership between trainer and trainees.
- Focus on quality of learning and not just quantity.

Organization and Management

- Decentralized responsibilities to drive empowerment.
- Encourage collaboration among different organizations.
- Make use of existing resources as far as possible.

Establishment and management of a field school

Farmers that have enrolled into the field school usually plan and agree when they should meet for their field school sessions. With the help of a facilitator, the group draws up a time schedule and allocates duties.

Step 3: Regular meetings

The type of enterprise determines the frequency of meetings by the participants. For annual crops, a group could undertake 1-3 seasons of studies. For land and water management, one may need a sequence of seasons (2-6) to observe the benefits, effects and impact. The learning process on holistic farm resources management and wider micro-catchment dimensions can be addressed through complementing the study plot by observations on members' farms and the community territory.

Special topics

This refers to topics of interest (of the farmers group) that are not part of the study topic for the season. In some cases, special topic is also referred to as topic of the day. The field school participants usually demand for such topics alongside the main study topic. The facilitator could initiate such special topics by inviting guest speakers to handle topics that deal with health (i.e. HIV/AIDS), group cohesion, micro-credit, gender, innovations, and opportunities and challenges of farmers. At the onset of the field school process, facilitators are encouraged to probe participants to determine their interest in other topics. This helps the facilitator to set a calendar for timely invitations to guests and to cover special topics when farmers are less busy.

Step 4: Participatory technology development (PTD) or evaluation of comparative experiments (CE)

At this stage, the collected data is analyzed, interpreted, and economic analysis undertaken. Presentations of the findings and recommendations are shared during field days, graduations, farmer run FFS, and follow ups conducted by facilitators.



Recording for progressive learning and analysis

Step 5: Field days

Field days provide an opportunity for non-participants to be exposed by the group to lessons learnt, skills, and knowledge gained in the process. The field school members display and explain the study plots and results, and other observations, which could include other means of communication such as songs and drama.

1. Observing



2. Analysing and recording



3. Presenting for feedback



4. Deciding on action to take



Exchange visits

Participants in the field school should create opportunities to conduct exchange visits to other programmes in the region, such as research stations, farmer innovators, and agricultural shows.

Step 6: Graduation

Members of the field school usually set some criteria of who qualifies to graduate; in most cases, they fall back to attendance records. The graduation event marks the end of the field school session (cycle/season) and is a festive event where farmers celebrate their achievements. Usually key stakeholders are invited in order to establish future support.

Step 7: Farmer run Field School

After graduation, selected farmers are supported to manage and sustain the established farmer field school. These farmers usually receive a short refresher course and follow-up training. The aim is to build capacities of farmers as facilitators, thus ensuring sustainability and reduced running costs. This approach is important when scaling-up field school at county or national level. The facilitator should in reality be “working themselves out of the job”, by building the capacity of farmers in the group to facilitate field school themselves. However, he/she will transition into a new job of supervising those farmer-led schools and identifying new curricula or new farmer groups.

Step: 8 Follow-up after field school (Post-FS)

Follow-up

At the end of a learning cycle and graduation ceremony, the field school in most cases continues as a farmers group. The group may have problems that were not addressed in the study cycle, hence the need to plan for post-FS. This could cover both technical and socio-economic activities. Such a follow-up activity may or may not require a facilitator to assist the group or funds for the study process.

Financing

The costs required for running a field school usually include farm tools and inputs for the trial plot, stationery for the learning sessions, and funds for payment of service providers such as extension staff. The field school will also need some land for their study plots and a place to hold meetings, although, these are usually provided to the group free of charge by volunteers from the group or community or local leaders.

How the field school is financed is critical since it influences sustainability of the efforts. There are different financing models (self-financing groups, grant systems, loans and revolving funds, savings and micro-financing) that have so far been tested in field school projects. Recently, there has been a focus towards self-financing schools. With the creation of coherent and well-facilitated groups, it is possible to progress from completely donor financed to partially donor financed, and eventually to self-financing.

Activities that can help to achieve the goal of self-financing include:

- Group savings
- Commercial group enterprises
- Volunteerism and cooperation
- Borrowing from micro finance institutions
- Taking risks
- Market-oriented farmer groups
- Negotiation (with service providers and private sector) for better terms regarding inputs, farm gate prices and advisory services
- Supportive policies.

Three phase implementation process:

The eight classical steps discussed above can further be sub-divided into three phases (see Figure 4):

1. Preparation phase
2. Implementation phase
3. Post-graduation phase

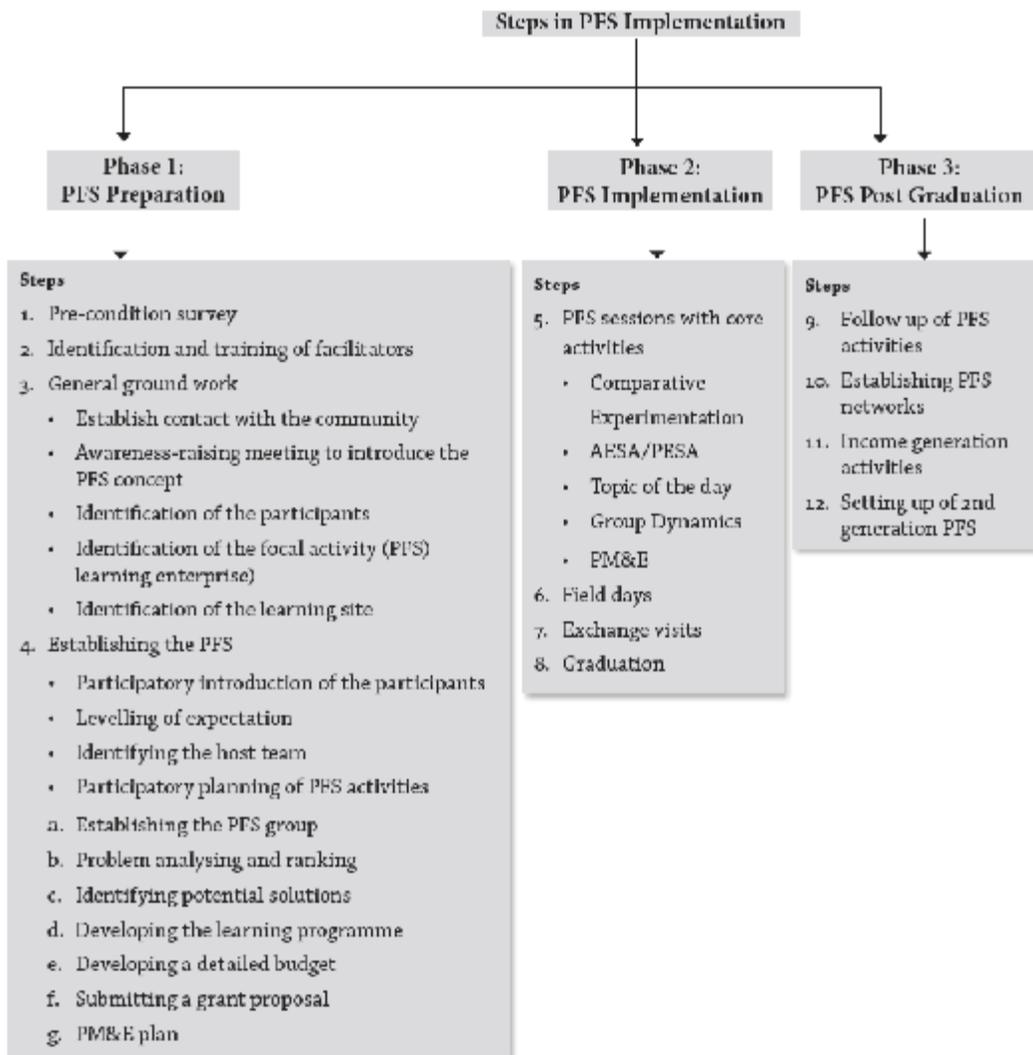


Figure 4: Key phases in the implementation of Field Schools

Source: *Pastoralist Field Schools Manual* pg.26

Each phase has a set of associative activities that need to be spelt out clearly and explained. The facilitator will emphasize on the sequencing of the set of activities to the participants. The implementation steps could be described as the foundation of the field school which further determines its strength. There exist various field schools manuals that describe the classical steps in a way to suit the enterprise being addressed. For example in the Pastoral Field School's Training of facilitators manual (FAO, 2013 pp.25-29), the three phases are articulated as above.

The Agro-Ecosystem Analysis

The Agro-Ecosystem Analysis (AESA) is the cornerstone of the field school approach. It addresses the interactions between components of the ecosystem (e.g. plants, soil, water, livestock and the wider environment), and the functioning or performance of the system. The AESA helps to identify strengths, weaknesses, opportunities and threats within the ecosystem (nutrient depletion, erosion, pests, etc.). Farmers in the field school undertake AESA with the aim of improving their decision-making process based on field observations. It also helps in monitoring yields and other impacts. Farmers conduct AESA as they visit the study plots/farms by observing the ecosystem, including interactions and ecological processes; by sampling, recording the comparison, and analysis of information for decision-making, and taking action based on facts. Thus, AESA is a monitoring tool in field school (see Monitoring and Evaluation Chapter 7). A sample of AESA chart is presented in Appendix I.

Concept of AESA

AESA demands that a field activity has clearly define learning objective i.e. to:

- Improve decision-making skills through a field situation analysis by; observing, drawing and discussing
- Improve decision-making skills by presenting small group decision for critics in the large group.

The two Steps can involve a field visit for data collection for 30 minutes, and being able to thereafter visit the hall, and generating the AESA chart.

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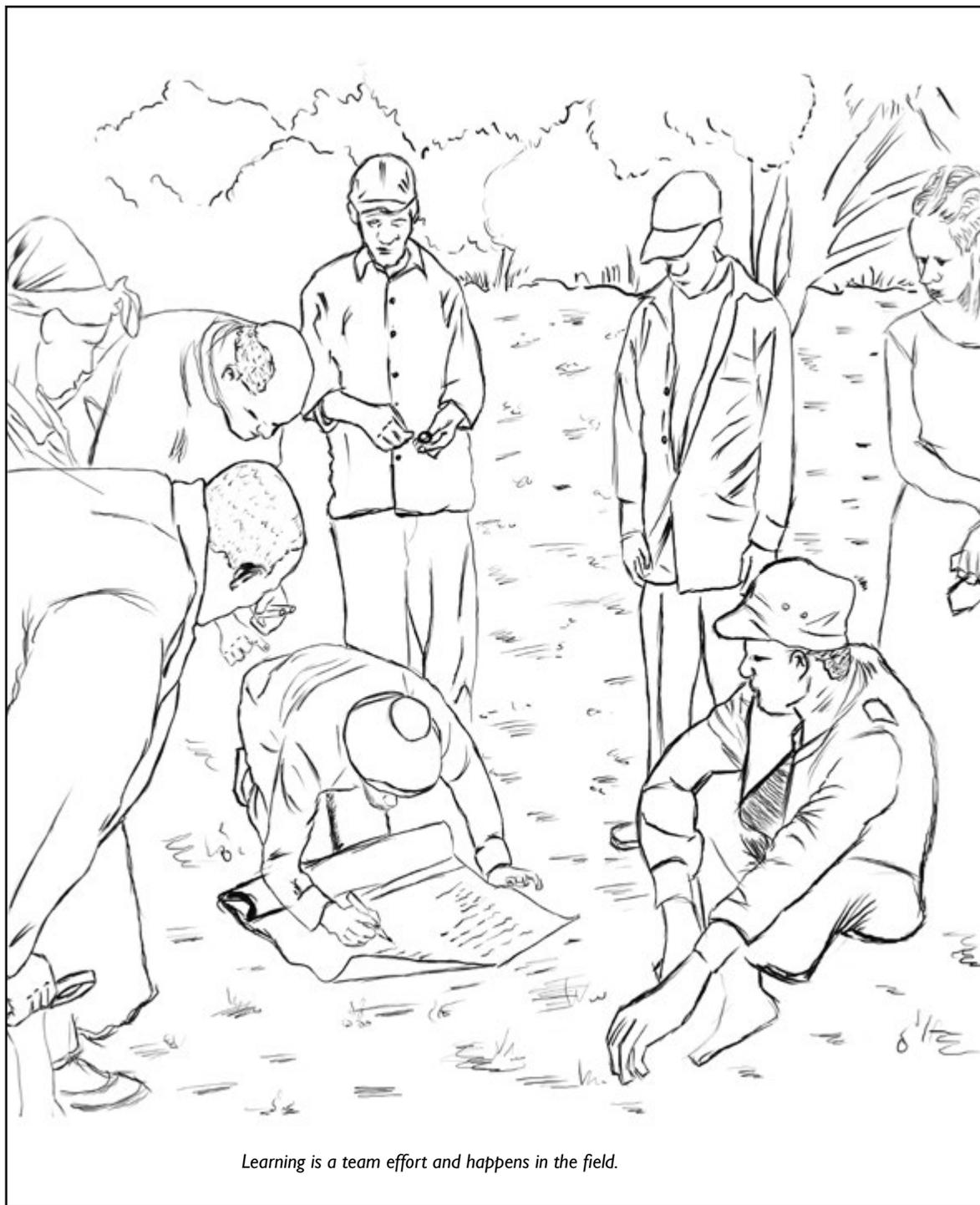
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Learning is a team effort and happens in the field.

6. GROUP MANAGEMENT IN FIELD SCHOOLS

Introduction

The stages of group development are sequential and developmental. A group will proceed through five stages namely; **Forming, Storming, Norming, Performing and Adjourning** only as far as its members are willing to grow. Group cohesiveness seems to depend on how well group members can relate in the same phase at the same time. Each member must be prepared to make certain compromises at each step for the group move to the next stage. Issues and concerns must be resolved in each stage before the group can move to the next stage. If the group is not able to resolve such issues, the dominant behaviour will become either apathy or conflict, resulting in group's disintegration. Facilitators must be sensitive to the needs of group members in various stages of group development. By referring to Tuckman's group development model, a facilitator can gain some insight into the inevitable stages through which a group must pass before attaining the benefits of stage four which is the **performing stage**. This insight is useful both in planning group-learning situations and for monitoring a group's progress while it is in session.

Rationale for group approach in field school

The group approach is an essential element of field school. The following entails the rationale for group approach in field schools:

- a) Field school groups engage in a process of hands-on field-based learning over a season/production cycle as a time-bound activity, with a beginning and an end.
- b) Groups pool resources together; e.g. savings and lend money to their members, where the loans and savings will be used to buy agricultural inputs.
- c) They cooperate in working together on activities.
- d) Adapt agricultural production practices, or experiment with alternative production technologies.
- e) They access markets and inputs collectively.
- f) Extension packages/agricultural advisory services can reach many people.

Characteristics of field school Groups

- a) The groups are registered with local authorities, have by-laws, a constitution, and structured leadership.
- b) Field school groups can either be existing or new

- c) Field school group is divided into sub-groups (host teams) to enable the group members equally participate in experiential learning.
- d) The groups are enterprise-based formed under common interest and based on identified focal enterprise.
- e) Field school group size should comprise of 25-30 members for easy of management and increased participation on hands-on field-based learning
- f) The group mainstreams gender equity by bringing men, women and youth together in field school activities
- g) The group meets regularly at an agreed place/time with a facilitator, observe, talk, ask questions, and learn together.

Requirement of well-functioning group in field school

A well-functioning field school group is one that has basic capabilities and procedures for internal democratic management. These include how to develop a shared vision, define common objectives, build mutual trust and responsibility, resolve conflict, and sustain learning. For this to happen, field school groups must work as teams, and have strong leadership structure. To enhance this further, group can use groups dynamic exercises to create a pleasant learning environment, facilitate learning and create space to reflect on their undertakings. All the aforementioned issues help to make a group strong, cohesive and able to sustain its undertakings. The saving and loan mechanisms of groups not only contribute to group's cohesiveness, but also enhance sustainability.

Conditions for sustainability of field school groups

- a) Groups have gone through all the stages of development - forming, storming, norming, performing and transformation
- b) They have viable focal enterprise sustaining income generation and able to diversify entrepreneurships
- c) Groups are cohesive, members agree with each other
- d) Group savings and lending is functioning properly
- e) Groups may belong to other functional networks, associations or farmer institutions to enhanced linkages and networks
- f) Groups establish functional Public-Private Partnerships (PPP).

Field School -Networks

The first Farmer Field School (FFS) Networks emerged in Western Kenya during 2000 as a result of exchange visits and communication between farmers, facilitators, trainers and project staff. Similar networks have subsequently emerged elsewhere in Kenya, Uganda and

Tanzania. These FFS Networks were formed by farmers who graduated from farmer field schools. The main reason for their formation was that FFS graduates wanted to continue activities generated by the FFS process, build local institutions for FFS implementation, continue with farmer-led FFS and benefit from becoming a larger voice in articulating their demands. The networks are characterized as FFSs clustered in a registered or non-registered association or not-for-profit company. To date, the FFS Networks in Eastern Africa support more than 2,000 FFSs with close to 50,000 direct beneficiaries.

FFS networks in eastern Africa have clearly shown how farmers themselves have been able to build bottom-up producer organizations during and after projects ended. Through this process the farmers themselves realize their own empowerment. Their leadership is well organized and as an outcome of passing through the FFS training, the networks are also well structured. This transpires into the networks being empowered to demand for services from private and public agricultural service providers, as well as, input and output market access through group bulking.

This self-emergence of FFS networks depicts FFS as an efficient and effective approach to organize and empower farmers. However, mechanisms and strategies for these FFS networks to access national and international markets have not yet been fully developed, and further training and support in business skills is required (Okoth et al (2003)).

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7. PARTICIPATORY MONITORING AND EVALUATION FOR FIELD SCHOOLS

Introduction

Monitoring and evaluation processes are essential in field schools. While monitoring is conducted from the beginning of implementation of the field school to keep the field school learners on track and adapt to circumstances that may arise along the way, evaluation is conducted mid-way or at the end of an FS session/programme to assess the overall results and performance of a field school programme. Results in this case refer to the outputs, outcomes and impacts generated from the activities. Specifically, the evaluation should detect whether or not the learning process has occurred and led to gaining the intended knowledge, attitudes and skills related to their training. Evaluation is also a means to identify strengths and weaknesses of the learning approaches/methodologies used, and relevance of the contents covered. To implement the field school approach, both the participants and facilitator need to continuously assess whether they are making any positive changes and actually achieving the goals they set. Participatory monitoring and evaluation (PM&E) is an effective management tool to enhance learning and stimulate corrective action.

Monitoring, Evaluation and Learning (MEL) should be participatory- engage all programme stakeholders who are actively involved in the field school activities either as participants, facilitators, programme managers or policymakers, and collaborate closely with them on constantly trying to find solutions. The aim is to improve the quality of all aspects of the field school activities, including planning, the choice of quality indicators, data collection and feedback.

Adopting a participatory approach to MEL serves both to increase the efficiency of the programme being evaluated by providing useful feedback, and to strengthen the field school learning process by giving community a sense of ownership and responsibility in running the affairs of the project.

Participatory Monitoring and Evaluation (PM&E) tools have been developed to help field school practitioners (mainly project staff, facilitators and participants) to actively observe and analyse situations and performances, and help them understand what they are observing. The common tools for PM&E that suit the field school include sketches and maps (e.g. the agro-ecosystem analysis (AESAs) sheet), semi-structured interviews, focus-group discussion, daily activity analysis/diaries, change or success stories, transect walk, existing records, historical trends and time lines, direct observation, ballot box test and evaluation wheel. These tools can be used for many different purposes as indicated below.

Monitoring and evaluation of field school performance

The field school facilitators need to report on field school performance to their supervisors, colleagues, donors, community opinion leaders and any other interested parties. This requires some form of M&E. What the facilitator ought to monitor is largely dependent on the objective(s) of the specific field school project, as well as the needs of the different stakeholders (field school participants, implementing organization, donor, etc.). Table I below shows some of the general parameters for the evaluation of any field school project.

Table I: Some parameters for evaluating field school projects

- Changes in farmers' skills/knowledge
- Evidence of adoption of appropriate technologies
- Change in productivity
- Change in farmers' income level
- Changes in socio-cultural practices and social status
- Changes in quality and quantity of human nutrition
- Evidence of spread of field school message
- Changes in extension/research systems
- Establishment of farmer institutions

Monitoring and evaluation of an field school session

The monitoring of activities in the weekly field school sessions allows the field school group to gain an overview of progress, and to enhance members' confidence and motivation; draw lessons and stimulate corrective actions, thereby improving the quality of the next field school. Members are also able to get an early warning of problematic activities and processes that will need corrective action. Regular monitoring also empowers the field school group by creating opportunities for them to reflect critically on their own progress, the direction of field school, and to decide on improvements.

Monitoring and evaluation of field comparative experiments

Experimentation in field school is usually carried out with the aim of determining the comparative effects of certain actions. It is a process of collective investigation with the purpose of initiating activities or testing solutions for local problems. The main basis for experimentation in field school is to create a learning process through which field school group use their sessions to test, monitor, and evaluate new ideas, technologies or innovations for improving productivity or sustainability of their livelihood systems.

The Agro Eco-System Analysis (AESA) tool is the cornerstone of the field school methodology. It aims to enhance observational, analytical and decision-making skills of those undertaking the experimentation. When AESA is applied on specific enterprise, for instance in pastoral context, it is known as PESA and if applied in health, it is known as HESA. The purpose of using AESA is for field school participants to learn to make regular observation of the livestock-herd-pasture–ecosystem, analyse problems and opportunities encountered and to improve decision making skills regarding land or herd management. By carrying out AESA regularly in the field school, participants develop a mental checklist of indicators to be observed when monitoring their land or herd practices.

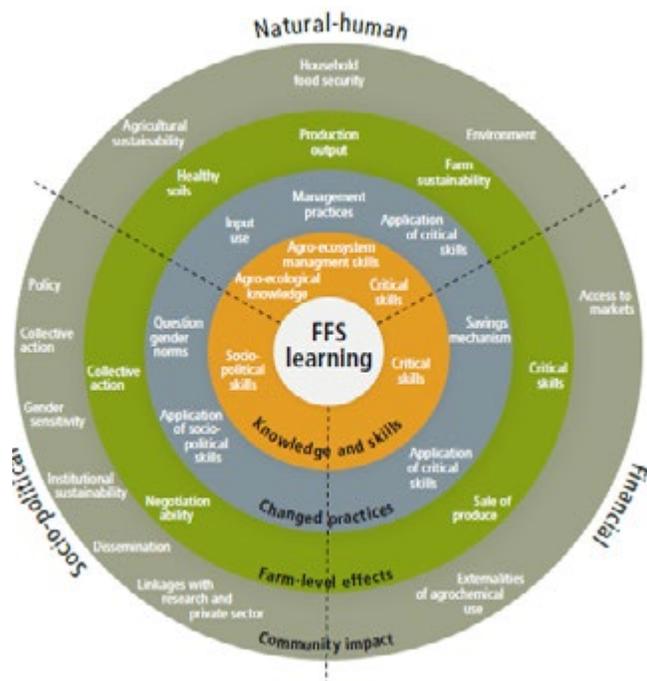
Impact Assessment of field school

Impact assessment activities aim to inform various interested groups about whether an FS or FS programme has brought about the desired effects, and whether these effects can be attributed to the programme. Impact assessments of field school have always been a challenge because of the wide range of impact parameters and because evaluation can be conducted at different levels (farm-level, programme level, policy level, etc.).

Impact assessment frameworks

Different frameworks have been designed to assess the impacts of field school. One of the widely-used framework for programmes, and impact assessment of field school covers major impact target areas in a matrix of impact levels. It follows the cause-effect logic for the impact of the programme framework against three impact domains namely, the natural-human impact, the financial impact and the socio-political impact domains. In other settings, the sustainable livelihood framework has also been used (Fig 5).

Fig 5.: Impact Assessment Framework (Source: FS guideline Document pg. 87 of 112)



The assessment needs to be set up in a way that captures changes and impacts in select thematic areas, reflecting the complex social context, the community, its members (women and men separately) and other social groups or aspects if relevant. It is advisable to use external institutions if an authoritative study is needed in order to address the question of credibility liable to arise if the study is carried out only by stakeholders involved in the field school programme. Such external institutions could be universities or research institutions. On the other hand, choosing to use a participatory impact assessment engages stakeholders at various levels (e.g. participating farmers, project/programme staff, etc.) to conduct the study. The advantages of using a participatory approach include ownership and opportunities for learning, particularly if farmers are also involved.

Tools and methods for qualitative and quantitative impact assessment of field school and field school programmes

It is recognized that monodisciplinary studies with predetermined objectives are no longer considered sufficient to evaluate development interventions centred on people's empowerment, such as the farmer field schools. Contributions from several disciplines and the use of a combination of tools to carry out quantitative and qualitative assessment are needed to address the overall values of the FFS programmes as shown in Table 2. For instance, the findings from formal surveys using the "double delta" approach can be supported by in-depth case studies focusing on selected aspects, which cannot be done with formal surveys.

Participatory impact assessments are also used to assess FFS and FFS programmes. However, credibility of the findings may be questioned if the study is carried out by stakeholders involved in the programme. On the other hand, formal surveys can be costly depending on the design of the study, the number of respondents and the credentials of the external institution that will be contracted to implement the impact assessment (FAO, 2016).

Table 2: Tools and methods for qualitative and quantitative impact assessment of FS and FS programmes

Impact level	Impact target area	Type of study	Tools and methods	
			Qualitative	Quantitative
Knowledge and skills	<ul style="list-style-type: none"> • Agro-ecological /livestock/ fisheries knowledge • Agro-ecosystem /livestock/ fisheries management skills • Critical skills • socio-political skills 	Field-level study	<ul style="list-style-type: none"> • Questionnaires • Use of specimens • Simulations/ scenarios • Observation of ecosystems (e.g. AESA) • Field visits; demonstrate decision making process • Specimens 	<ul style="list-style-type: none"> • Ballot box tests • Observation of experimental plots
Changed practices	<ul style="list-style-type: none"> • Crop/ livestock/fisheries management practices • Input use • Pest control cost • Application of critical skills • Application of socio-political skills 	Field-level study	<ul style="list-style-type: none"> • Field observation • Questionnaires 	<ul style="list-style-type: none"> • Cultivation records • Local sales figures • Environmental assesment tools • Residue measurement
Farm-level effects	<ul style="list-style-type: none"> • Agro-chemical load • Production output • Farm sustainability • Economic benefits 	Field-level study	<ul style="list-style-type: none"> • Records • Questionnaire • Focus-group discussions 	<ul style="list-style-type: none"> • Data analysis
	<ul style="list-style-type: none"> • Collective action • Gender aspects - active participation in decision-making 	Social impact study	<ul style="list-style-type: none"> • Case studies • Focus group discussions • Individual interviews 	
Livelihood impact	<ul style="list-style-type: none"> • Dissemination • Producer health 	Field-level study	<ul style="list-style-type: none"> • Interviews with groups and individuals • Records • Questionnaires • Focus-group discussions • Observation of exposure 	<ul style="list-style-type: none"> • Community health self-reporting • Data from clinics
	<ul style="list-style-type: none"> • Collective action • Community empowerment • Social inclusion • Gender equality • Individual empowerment (wellbeing, self esteem) 	Social impact study	<ul style="list-style-type: none"> • Case studies • individula and focus group discussions • Storytelling • Participant observation • Photo visioning 	
	<ul style="list-style-type: none"> • Agricultural sustainability • Gender sensitivity of programme • Externalities of pesticide use 	Analysis of field study and M&E data	<ul style="list-style-type: none"> • Participant observation • Case studies 	<ul style="list-style-type: none"> • Stratified analysis of general data for Women/ Men
	<ul style="list-style-type: none"> • Environment 	Environmental case study	<ul style="list-style-type: none"> • Analysis of farming practices • Risk assessment models 	<ul style="list-style-type: none"> • Case studies over time + control; measuring background variables
	<ul style="list-style-type: none"> • Policy • Linkages with and impact on research and private sector • Institutional sustainability 	Mid - and end -of-term programme reviews	<ul style="list-style-type: none"> • Documentation 	

REFERENCES

Food and Agricultural Organization, (2016). *Farmer Field School Guidance Document*. Planning for quality program Pp.29-33

FUTURE READING

Food and Agricultural Organization, (2013). *Pastoral Field School Training of facilitators’ manual*, Waddington, H, Snilstveit,

Hombrados, B., Vojtkova, J., M., Phillips, D., Davies, P. & White, H. (2014). *Farmer Field Schools for Improving Farming Practices and Farmer Outcomes: A Systematic Review*. Campbell Systematic Reviews 2014:6 DOI: 10.4073/csr.2014.6 Impact Assessment of Pastoralist Field Schools

Appendix: Sample of AESA Chart

AGRO – Ecosystem Format For Cow

Aesa number
Week/date
Sub-group name

GENERAL INFORMATION

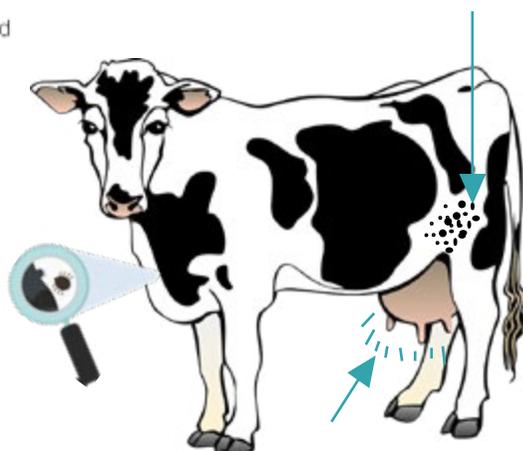
Breed
Name/tag
Sire name and breed
Dam name and breed
Date of birth and Age
Time of observation
Weather condition
Last treatment: date and drug used

OBSERVATIONS

Hair/coat
Body condition
Rumination
Movement/temperament
Respiration
Temperature
Ecto-parasites
Discharges
Dung
Urine
Wounds
Eyes condition
Mucus membrane color
Lymph nodes
Housing and shading conditions
•Presence of other animal/insects
Noises

PARAMETERS

Body weight
Last weight
Weight gain:
Daily milk yield
Milk yield status:
(improving or decreasing)
Number of calves
Date of serving
Date last calving
Pregnancy status
Calving interval
Feed quality
Feed quantity
Supplement
Water quality
Water quantity



RECOMMENDATIONS

How to improve the AESA records

- Parameter to be included
- Quality of observation

What need to be done to improve productivity?

Which treatment should be done?

This Reader has been developed to address the stakeholders' needs, and is a compilation of materials on Field School methodology sourced from existing farmer field school (FFS) publications such as manuals, journal articles, and books. It was developed through a writeshop process facilitated by IIRR. The writeshop involved representatives from universities, FS hub team members, FS experts and practitioners from eastern Africa.

The FS Reader provides the audience with a common understanding of the salient aspects of the FFS approach. The Reader introduces users to the fundamentals of FS methodology and provides specific references for further reading. It is expected that this Reader will contribute to the mainstreaming of participatory and experiential learning processes and knowledge on the FFS approach in tertiary education system in eastern Africa. It is also hoped that academia and especially students interested in researching or learning about FFS will find this Reader intellectually stimulating, informative, and resourceful.



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