

# Climate Resilient Farmer Field Schools Handbook



2020



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# Abbreviations and Acronyms

AESA	Agro-ecosystem Analysis
CF	Contract Farming
CFS	Climate Field School
CGS	Crop Growth Stage
CIS	Climate Information Services
CR-FFS	Climate Resilient Farmer Field School
CSA	Climate Smart Agriculture
DAP	Days After Planting
FAO	Food and Agriculture Organisation of the United Nations
FFS	Farmer Field School
GAP	Group Action Plan
GHGs	Green House Gases
GR	Green Revolution
IPM	Integrated Pest Management
IPM-FFS	Integrated Pest Management Farmer Field School
IPPM	Integrated Pest Production Management
LLL	Linking Local Learners
PGN	Practical Gender Needs
PM&E	Participatory Monitoring and Evaluation
PRA	Participatory Rural Appraisal
PTD	Participatory Technology Development
SGN	Strategic Gender Needs
SOP	Standard Operational Procedures
ToF	Training of Facilitators
ТоТ	Trainer of Trainers

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# Preface

The CRAFT project developed this climate-resilient farmer field school Guidebook and associated crop-specific curricula to improve farming practices for selected climate-resilient value chains and agribusinesses supported by CRAFT. The Guidebook was prepared as a cumulative output of a series of Training of Trainers' sessions conducted between July and December 2019 for trainers drawn from different cooperatives, SMEs and extension workers – both public and private, working under varied conditions and contexts. The purpose of the assignment was to provide training services (i.e. Training of Trainers (ToT); and Master Trainers (MToT) on Climate Resilient Farmer Field School (CR-FFS) methodology. Using the FFS approach, with an additional climate field school module, the training focused on integrating climate-resilient agricultural practices in selected value chains, i.e. climate resilient farmer field school (CR-FFS) and build capacity of trainers on the basics of facilitating interactive learning sessions.

The Guidebook is designed to be a training model for climate-resilient farming, in which sessions are conducted "on the farm," following an experiential learning model in an environment that allows for demonstration, practice, and application of the material on the farmers' own crop plots. Much of the content focuses on the reduction of climate risk in the production of staple crops in East Africa. Each session outlined in the Guidebook and the accompanying cropping curriculum includes a variety of activities to accomplish the session's objectives, along with detailed instructions for trainers. When planning and facilitating the training sessions. Alongside the traditional FFS methodology and guidelines, facilitators and trainers using this Guidebook are encouraged to as much as possible apply climate lens in their messaging. Trainers are also encouraged to establish a close transdisciplinary collaboration with relevant experts, for example agronomists and agro-meteorologists in the locality of their assignment, for sessions that draw on their expertise. This will help to combine agrometeorological thinking and knowledge with traditional knowledge for better outcomes.

Since people tend to filter and absorb knowledge through existing cultural models and aspirations for desired outcomes, the most promising strategy to better assist growers'/producers' is to enrich their knowledge on the risks and consequences of climate change. The purpose of the Guidebook is to assist growers to discover their own vulnerability issues through continuous dialogues and knowledge exchange. It is also meant to train growers on the measurement of rainfall and the observation of weather and climate implications for fields and crops in a standardized way as the basis of a Climate-Resilient Farmers' Field School. The general objective of the training workshop is to empower participants with knowledge and skills in CR-FFS methodology, to specifically:

- i. Equip trainees with knowledge and skills in Climate Smart Farmer Field school methodology
- ii. Provide participants with the right tools for facilitating CR-FFS learning
- iii. Acquire skills to identify the right stakeholders in CR-FFS
- iv. Prepare the learners on how to plan better a CR-FFS implementation
- v. Prepare a climate resilient crop curriculum for selected crops
- vi. Share knowledge, skills and experience in different farming systems to improve production.

The training process is through a mixed approach of brainstorming, small group work, large group work, practical and plenary sessions. Limited PowerPoint presentations are used during the sessions to bring in some theory based complex concepts such as experiential learning, climate science and some agronomic information.

- The group works are mostly used to ensure the participants get acquainted with the common Participatory Rural Appraisal (PRA) tools commonly used in FFS;
- Plenary sessions are used to sharpen the facilitation skills and stimulate debates among participants;
- Field based practical is to bring the learning to the real world so that participants would have the actual feel;
- PowerPoint presentation is aimed at providing a snapshot of theories and scientific concepts.

The main goal is to sharpen the decision-making skills of participants when faced with production constraints, including the use of climate information, that prevent them from closing yield gaps. Lessons from the trainings reflect a strong need to work more closely with meteorological agencies to ensure that farmers are guided to collect agrometeorological data which they can interpret easily and utilize for their agricultural production purposes.



# Climate Resilient Farmer Field School Preparation for CSA

### **Climate Resilient Farmer Field School (CR-FFS) Objectives**

- To support the establishment of Small, Medium Enterprises (SMEs) and Cooperative farmer groups that have strong motivation to apply climate information as an input for making and taking climate informed agribusiness decisions, strategies, plans and actions; and to protect the environment through climate change mitigation
- To strengthen understanding of weather, climate, climate variability, climate change, climate forecasts, climate monitoring and climate information applications
- To assist farmers make Agro-ecosystem Analysis (AESA) decisions based on climate information

FFS facilitators will be taken through the various units of preparatory activities which precede the FFS implementation. The module introduces the facilitators to community mobilization for development, organizing learners to learn, problem and solution seeking methods; participatory planning, monitoring and evaluation; and costing of a FFS. The schematic layout of a FFS setup is given in **figure 1**; this should be understood as systematic events in setting up an FFS.



#### Figure 1: Schematic layout of a FFS set up

The schematic set up is also important for programmers to understand especially in terms of resource allocation.

## Unit 1: Introduction to climate resilient Farmer Field School for CSA

## Levelling of expectations

Levelling of expectation is a continuous process to avoid disappointment and drop-out among FFS participants. The facilitator should make an effort at a very early stage to manage emerging unrealistic expectations by writing them as part of the rules or regulations for the group under formation.

**Objectives:** By the end of this topic the facilitator will:

- i. Be able to discover what participants want to get out of the FFS course
- ii. Become aware of unrealistic expectations and set rules with the group to manage them
- iii. Be able to plan, monitor and evaluate with the group, the expectation of the FFS

Materials: Flip charts, marker pens, pins/clips.

#### Duration: 1 hour.

#### Methods/Steps:

- 1. The facilitator welcomes the group and appreciates them for participating in the FFS. He can ask the participants to introduce themselves to the **whole group** or in **sub-groups**.
- 2. The facilitator asks the group reflect on their expectations with past FFS, displaying previous expectations and highlighting what has been achieved.
- 3. In sub-groups of four to five participants, the facilitator asks the participants to discuss what their current expectations are from the FFS/ NGO using FFS and of the facilitator and what their role in the FFS will be.
- 4. The sub-groups write their answers on a flip chart and present them through a representative to plenary.
- 5. The facilitator and the group summarizes the expectation, and collectively discuss each expectation to establish whether it is realistic and achievable within the FFS cycle.
- 6. The facilitator asks the group what must be done with the unrealistic expectations (expectations outside the FFF mandate) and then the achievable expectations are incorporated as part of the FFS programme.
- 7. The facilitator once again thanks the participants and invites them to the formation meeting of the FFS group that follows.

### Session 1: Farmer Field School Background and principles

Objectives: By the end of this session, participants will be able to:

- i. Understand the rationale behind the establishment of the FFS approach?
- ii. Conceptualize what FFS is
- iii. Appreciate the objectives of FFS
- iv. Understand its evolution and the various contexts of FFS
- v. Understand the key elements /non-negotiable principles of FFS

Materials: Pre-test and post-test questions, flip charts, markers, masking tape, and projector (where available)

#### Duration: 3 hours

#### Methods/steps:

- 1. Brainstorm with participants on their understanding of FFS
- 2. Share some cases e.g. the case study of Indonesia and discuss with participants what made it successful
- 3. Present and explain the main definitions of FFS
- 4. Present the trends, contextual changes of FFS (introduce the Climate Field School variants, trends and contextual changes)
- 5. Ask participants for relevance in their context

#### Background to FFS (Duveskog, 2008)

#### Case study: Origin of FFS

40 years back, the Green Revolution (GR) was launched in Indonesia with the aim of improving the productivity of small farmers. By improving access to water, improved varieties, and other inputs, the GR helped to double average rice yields between the 1960s and 1990s.

In the 1970s it became increasingly apparent that pest resistance and resurgence caused by the indiscriminate use of insecticides posed an immediate threat to the gains of the Green Revolution. At the same time, research was being conducted that demonstrated the viability of biological control of major rice pests.

However, gaps still existed between the science generated in research institutions and common farmer practice conditioned by years of aggressive promotion of pesticide use. Over the ensuing years, several approaches were tried to bring integrated pest management (IPM) to small farmers - particularly rice farmers - in Asia, with mixed results. Some experts claimed that the principles of IPM were too complex for small farmers to master, and that centrally designed messages were still the only way to convince farmers to change their practices.

By the end of the 1980s, a new approach to farmer training emerged in Indonesia called the 'Farmer Field School' (FFS). The broad problem which these field schools were designed to address was a lack of knowledge among Asian farmers relating to agro-ecology, particularly the relationship between insect pests and beneficial insects.

#### The Farmer Field School Approach

The Farmer Field School (FFS) approach emerged out of a concrete, immediate problem. At the end of the 1980's, farmers in Indonesia were putting their crops, their health and their environment at severe risk through massive abuse of highly toxic pesticides promoted aggressively by the private sector and government. Pest species were becoming resistant and in some cases resurgent. What was called for was a large-scale decentralized programme of educating farmers so that they become "experts" in managing the ecology of their fields – bringing better yields, fewer problems, increased profits and less risk to their health and environment (Dilts, 2001). The Integrated Pest Management Farmer Field School (IPM-FFS) and a corresponding large-scale Indonesian programme were developed in response to these conditions. The genesis of integrated pest management (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. FFS alumni are able to not only apply IPM principles in their fields, but also to master a process enabling them to help others learn and apply IPM principles and organise collaborative activities in their communities to institutionalise IPM principles. A good Farmer Field School process ensures these outcomes. The educational concepts underpinning the FFS approach are drawn from adult non-formal education. These concepts have been found to be relevant across the many countries and cultures in which the FFS approach has been used and have proven to be empowering for farmers.

#### From FFS to Climate Field School: Climate response farming

Inspired by the FFS methodology, a Climate Field School (CFS) concept was formulated in Indonesia in 2005/2006 as a variant of FFS but emphasizing climate information applications in AESA processes<sup>1</sup>. Practically this is a climate module in FFS, leading to a Climate-Resilient Farmer Field School (CR-FFS). The purpose was to promote adaptive application of climate forecasts to crop farming decisions. The main objective of CFS is to increase farmers' knowledge on the application of climate information in their decision making. In an era of increasing meteorological and hydrological uncertainty, climate and weather information systems play an important role in helping farmers adapt to climate shifts and extreme weather events. In this regard, improving access to and expanding the application of climate and weather information is critical. Participants are exposed to every step of the climate and weather information service value chain, from the accurate measurement of rainfall to the application of different forecast products to improve crop yield.

Key facets of the value chain are (1) raw data collection and organization, (2) product development, (3) communication and dissemination, (4) application and use, and (5) benefit realization. Participants then apply the Climate Information Service (CIS) knowledge into practice through field-based pilot activities in which they experiment with a range of planting techniques, varying approaches to integrated pest management, and the utility of different seed varieties.



The objective of Climate Field School (CFS) module is to educate and train farmers to increase their knowledge and skills, and to influence their attitude to use climate information in decision making for a more resilient agriculture. Participants learn how climate & weather information can be useful for operational purposes of farming including timing of planting, timing of harvest, and caring of crop plants to control pests and diseases. Farmers learn how to sufficiently downscale climate and weather information, and how to interpret and apply the climate information for practical application in farming situations.

#### Areas of CFS

- Weather monitoring and forecasting
- Crop-weather calendar monitoring and cropwater relations management
- Pest and disease management based on weather information
- Drought management

## Image 1: FFS trainees at one of the trainings use the problem tree to analyse the challenge of drought

Climate Smart Agriculture (CSA) is an approach to guide the management of agriculture in the era of climate change. It is an approach for transforming agricultural production systems and food value chains to support sustainable development and to ensure food security under climate change. The concept was first launched by FAO in 2010 in a background paper prepared for the Hague Conference on Agriculture, Food Security and Climate Change. FAO defines climate-smart agriculture (CSA) as agriculture that 1) sustainably increases agricultural productivity and incomes, 2) enhances resilience (adaptation) [of agricultural and food security systems to climate change at multiple levels], 3) reduces/removes greenhouse gas/GHGs (mitigation) where possible, and enhances achievement of national food security and development goals.

The concept arose out of the need to simultaneously tackle three objectives in agriculture, namely:

- Sustainably increase agricultural productivity and incomes
- Enhance resilience and adaptation of livelihoods and ecosystems to climate change
- Reduce GHG emissions from agriculture and/or removing GHGs from the atmosphere, where possible



Figure 2: Triple win situation under CSA

#### Three interlinked pillars of CSA:

- 1. **Productivity:** CSA aims to sustainably increase agricultural productivity and incomes without having a negative impact on the environment. A key concept related to raising productivity is sustainable intensification
- 2. Adaptation: CSA aims to reduce the exposure of farmers to short-term risks, while also reducing their sensitivity (i.e. strengthening their resilience) by building their capacity to adapt and prosper in the face of shocks and longer-term stresses. Particular attention is given to protecting the ecosystem services provided by agro-ecosystems, services which are essential for maintaining productivity and enhancing ability to adapt to climate change.
- 3. Mitigation: Wherever and whenever possible, CSA should help to: reduce GHG emissions and/or remove GHGs for each calorie or kilo of food, fibre and fuel produced.

The approach seeks to reduce trade-offs among competing priorities and promote synergies between interventions by taking these objectives into consideration when making decisions at all levels, about short- and long-term strategies to address climate change. CSA approach provides a procedure to help stakeholders at all levels identify agricultural strategies suitable to local conditions. CSA activities can range over a very broad spectrum, depending on the relative importance of its three objectives – food security, adaptation, and mitigation – in a given country.

#### How CSA is implemented:

CSA involves the assessment and application of technologies and practices, the creation of a supportive policy and institutional framework and the formulation of investment strategies. CSA systems include different elements such as:

- 1. The management of land, crops, livestock, aquaculture and capture fisheries to balance short-term needs for food security and livelihoods with priorities for long term adaptation and mitigation;
- 2. Ecosystem and landscape management to conserve ecosystem services that are important for food security, agricultural development, adaptation and mitigation;
- 3. Services for farmers and land managers that can enable them to better manage the risks and impacts of climate change and undertake mitigation actions; and
- 4. Changes in the wider food system including demand-side measures and value chain interventions that enhance the benefits of climate-smart agriculture.

Designing a CSA approach requires active involvement of the private sector, agri-food value chain actors and the public sector. This involvement will facilitate access to financial services needed for investment in identified CSA technologies, practices and processes, and to establish an enabling policy and regulatory environment for the private sector to stimulate the scaling up of promising cases. Research institutions and rural agricultural extension services will need to be included in the policy-making process. They will also need to generate and disseminate information needed for decision making.

## What is Farmer Field School?

The term "Farmer Field School" (FFS) is understood to mean the following:

- Platforms and "school without walls" for improving decision making capacity of farming communities and stimulating local innovation for sustainable agriculture;
- FFS offers community-based, non-formal education to groups of 20-30 farmers through self-discovery and participatory learning principles. The school brings together farmers who live in the same village/catchment and thus, are sharing the same ecological settings and socio-economic and political situations. FFS provides opportunity for learning by doing;
- It is a participatory approach to extension, whereby farmers are given opportunity to make a choice in the methods of
  production through discovery-based approach;
- It is composed of groups of farmers who meet regularly during the course of the growing seasons to experiment as a group with new production options. After the training period, farmers continue to meet and share information, with less contact with extensions;
- FFS aims to increase the capacity of groups of farmers to study local microclimate and test new technologies in their own fields, assess results and their relevance to their particular circumstances, and interact on a more demand driven basis with the researchers and extensions looking to help where they are unable to solve a specific problem amongst themselves.

In summary, FFS is a participatory non formal adult learning where farmers and trainers debate observations (including climate monitoring), apply their previous experiences and present new information from outside the community. The results of the meetings are management decisions on what action to take. Thus FFS as an extension methodology is a dynamic process that is practiced and controlled by the farmers to transform their observations to create a more scientific understanding of the crop / livestock agro-ecosystem. A field school therefore is a process and not a goal.

In general, FFS consist of groups of people with a common interest, who get together on a regular basis to study the "how and why" of a particular topic. It is particularly suited and specifically developed for climate monitoring and field studies, where hands-on management skills and conceptual understanding (based on non-formal adult education principles) is required.

#### **Objective of FFS**

The ultimate aim of the field school is to improve farmers' knowledge and decision-making abilities so they can build up sustainable agricultural systems that preserves environmental integrity, increases economic benefits and promotes social equity.

The specific objectives of farmer field school are:

- To empower farmers with knowledge and skills to make expert decision in their own fields;
- To sharpen the farmers' ability to make critical and informed decisions that renders their farming profitable and sustainable;
- To sensitize farmers in new ways of thinking and problem solving by making farmers aware of their agro-ecosystem;
- Help farmers learn how to organize themselves and their communities (building social networks of experience).
- To build each farmers' capacity to analyze their production practices, to identify main production constraints and to

test and adopt solutions through farmer-led participatory research;

- To promote learning through exchange of experiences and knowledge among farmers (indigenous local knowledge)

   Indigenous local "climate" knowledge needs to be included at this point, and emphasized not just a passing mention;
- To exchange experience and knowledge between specialists and farmers (indigenous and scientific knowledge);
- To promote learning by encouraging farmers to directly experiment on their own fields;
- To identify appropriate practices and technologies that will solve farmers' felt production problems;
- To promote extension services through a catalytic role facilitated by researcher and extension agent;
- To strengthen the role of farmers in the chain of researcher-extensions- farmer;
- To include farmers in decision making regarding the generation of agricultural practices and technologies.

#### Evolution and the various contexts of FFS

The topics covered in Farmer Field Schools can vary considerably – originally it was IPM in rice, now organic agriculture, animal husbandry, soil husbandry, groundwater management, human health, to income-generating activities such as handicrafts.

From 1991 to 1994, with support from the FAO Inter-country IPM Programme, rice IPM-FFSs spread from Indonesia to Bangladesh, Cambodia, China, India, Lao PDR, 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 also vegetables in both low and highland systems. NGOs also became involved in further spreading and developing FFS approaches: CARE Bangladesh developed such things as rice-fish.

IPM-FFS; Thai Education, pioneered "IPM in Schools"; and World Education Indonesia promoted farmer adaptive research approaches. These and other innovations including gender advocacy, health impact studies, field ecology, farmer-led action research and farmer planning were taken up by FAO and national programmes in order to strengthen and deepen the FFS model (CIP-UPWARD, 2003).

In 1990, an initiative of farmers who graduated from the first round of FFS, resulted in the first Farmer-to-Farmer FFS in Indonesia being started and by 1993, Farmer-to-Farmer FFSs were established in Bangladesh, Cambodia and Vietnam. From 1995 to 1999, the Farmer-to-Farmer Programme took roots in China, Lao PDR, Nepal and Sri Lanka (CIP-UPWARD, 2003) and a farmer-led FFS is now a standard element in most FFS programmes around the world.

As a result of the popularity of the IPM-FFSs in Asia, there was a strong movement to copy and adapt the approach to other situations. The concept has now developed far beyond IPM in rice. FFSs are now active in Asia, Sub-Saharan Africa, Latin America and the Caribbean, Near East and North Africa, and Central and Eastern Europe, and also in the United States and Western Europe (Denmark), reaching a total of 87 countries by 2008.

Further spread has taken place with the focus of the FFS moving from primarily rice IPM in Asia to vegetable and cotton IPM (Ooi, 2003) in Asia to potato IPM in Latin America, cotton, rice, tree crops (cocoa) and vegetable IPPM in Africa, vegetable and fruit IPPM in the Middle East, the control of Western Corn Rootworm - a quarantine pest (Jiggins et al., 2005) – in maize in Eastern and Central Europe and now towards mixed systems in East Africa with crops, poultry and dairy cows (LEISA, 2003a and 2003b; AGRIDAPE, 2003; CIP-UPWARD, 2003).

Agricultural topics in the context of FFSs that do not follow a specific crop that developed more recently include Soil Fertility Management (Mureithi et al., 2003; Rijpma et al., 2003), Land and Water Management (Rusike et al., 2004; Hughes and Venema, 2005; FAO/IIRR, 2008), Groundwater Management (APFAMGS, 2004-8), Conservation Agriculture, Land Degradation, Agroforestry (Ochoa, 2003), Food Security, Nutrition, Fishing (Bartley et al., 2004) and Biodiversity (PEDIGREA, 2003-7; Meijerink et al., 2005).

More and more topics are outside the agricultural field, which include Integrated Vector Management (Van den Berg and Knols, 2006), Community Forestry (Miagostovich, 2004), FFSs Networks for Marketing (Khisa and Heinemann, 2004), Health and HIV/AIDS through Farmer Life Schools (Vuthang, 2003; Chayya et al., 2004) and Junior Farmer Field and Life School (FAO, 200X) and FFSs for Illiterates and Advocacy (Rahadi and Widagdo, 2003).

Waves of adaptations in FFSs have occurred from a focus on a single constraint (pest management) of a single crop (rice) to an emphasis on the multiple dimensions of crop management to cropping systems to resource management to sociocultural dimensions of community life. 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 concern is for the groups itself to determine (CIP-UPWARD, 2003).

The report of the international FFS Learning Workshop (CIP-UPWARD, 2003) presents a good overview of FFS adaptations and institutionalisation.

#### Principles of Farmer Field Schools

In the field school, emphasis is laid on growing crops or raising livestock with the least disruption on the agro-ecosystem. The training methodology is based on learning by doing, through discovery, comparison and a non-hierarchical relationship among the learners and trainers and is carried out almost entirely in the field.

The four major principles within the FFS process are:

- Observe, monitor and record local climate indicators and variables;
- Grow a healthy crop;
- Observe fields regularly;
- Conserve natural enemies of crop pests;
- · Farmers understand ecology and become experts in their own field.

#### Core Elements/ Concepts of the Farmer Field School Approach

Below is a list of elements that commonly appear in the generic FFS approach (Gallagher, 2003).

**Learn by doing:** Farmers 'learn-by-doing' i.e. they carry out for themselves the various activities related to the particular farming practice they want to study and learn about. This could be related to annual crops, or livestock/fodder production. The key thing is that farmers conduct their own field studies. Their training is based on comparison studies (of different treatments) and field studies that they, not the extension/research staff conduct. In so doing they become experts on the particular practice they are investigating.

**The Field is the Learning Place:** All learning is based in the field. The sorghum field, barley farm, or grazing area is where farmers learn. Working in small subgroups they collect data in the field, analyse the data, make action decisions based on the analyses of the data, and present their decisions to the other farmers in the field school for discussion, questioning and refinement.



Image 2: Farmers participate in a FFS in Karagwe Tanzania on common bean

**Extension Workers as Facilitators Not Teachers:** The role of the extension worker is very much that of a facilitator rather than a conventional teacher. Once the farmers know what they have to do, and what they can observe in the field, the extension worker takes a back-seat role, only offering help and guidance when required. Presentations during group meetings are the work of the farmers not the extension worker, with the members of each working group assuming responsibility for presenting their findings in turn to their fellow farmers. The extension worker may take part in the subsequent discussion sessions but as a contributor, rather than leader, in arriving at an agreed consensus on what action needs to be taken at that time.

Scientists/Subject Matter Specialists work with rather than lecture Farmers: The role of scientists and subject matter specialists is to provide backstopping support to the members of the FFS and in so doing to learn to work in a consultative capacity with farmers. Instead of lecturing farmers, their role is that of colleague and adviser who can be consulted for advice on solving specific problems, and who can serve as a source of new ideas and/or information on locally unknown technologies.

**The Curriculum is integrated:** The curriculum is integrated. Crop husbandry, animal husbandry, horticulture, land husbandry is considered together with ecology, economics, sociology and education to form a holistic approach. Problems are confronted in the field through integrated principles.

**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 fodder production, it would include the dry season to evaluate the quantity and quality at a time of year when livestock feeds are commonly in short supply. For tree production, and conservation measures such as hedgerows and grass strips, training would need to continue over several years for farmers to see for themselves the full range of costs and benefits. Apart from crop phenology tracking and IPM/AESA observations, this seasonal cycle will need to include crop-weather monitoring cycle. Local climate monitoring and forecasting is crucial to understanding site agro-ecosystem dynamics.

**Regular Group Meetings:** Farmers meet at agreed regular intervals. For annual crops, such meetings may be every 1 or 2 weeks during 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.

Learning Materials is Learner Generated: Farmers generate their own learning materials, from drawings of what they observe from the field trials themselves. These materials are always consistent with local conditions, are less expensive to develop, are controlled by the learners and can thus be discussed by the learners with others. Learners know the meaning of the materials because they have created the materials. Even illiterate farmers can prepare and use simple diagrams to illustrate the points they want to make.

**Group Dynamics/Team Building:** Training includes communication skills building, problem solving, leadership and discussion methods. Farmers require these skills. Successful activities at the community level require that farmers can apply effective leadership skills and have the ability to communicate their findings to others.

Climate Field Schools are conducted for the purpose of creating a learning environment in which farmers can master and apply specific production management skills. The emphasis is on empowering farmers to implement their own decisions in their own fields.

#### Training of Trainers /Training of Facilitators (TOT/ToF)

#### Goal:

The goal of a Training of Trainers (TOT) process is to give new facilitators the background knowledge, skills and practical experience to facilitate *Farmer Field School (FFS)* and technical assistance to target communities.

#### **Objectives:**

By the end of the TOT and mentoring process, learners will be able to:

- i. Understand how to facilitate adult learning sessions;
- ii. Enhance understanding on FFS methodology of ground working, process of formation, and formalization;
- iii. Gain a deeper understanding in the planning, practical process of FFS and monitoring of implementation;
- iv. Acquire key basic science concepts of FFS to facilitate the farmers with basic science knowledge. The basic science must include climate science and crop-weather monitoring. This must be emphasized, and resources allocated to make climate and weather issues a practical part and parcel of AESA, not just given a passing mention.
- v. Acquire knowledge on livelihood and business orientation in FFS.

#### Duration: 3 weeks

Facilitators in FFS on annual crops typically undergo one full season of "hands-on" training growing a crop. Ideally, all staff should first develop competence as a facilitator before supervising and training others. FFS programs require staff at four different levels: facilitators, supervisors, master trainers, program leader. These levels depend on the scale of the programme, funds availability and the human resource availability. The basic "building block" of a FFS program is the facilitator.

#### Methods/Steps:

FFS requires hands-on training cascaded with both the process and technical subject matter covered simultaneously and blends of special topics that has indirect bearing to production but directly affects the farmers' livelihoods.

Typical FFS season long training simulates real-world farmers' field school season-long activities, to expose the learners to the various hands-on aspects embedded therein and enable them to appreciate the methodology for subsequent application. The season long training that simulates real-world experiences must include climate (crop-weather) monitoring. So, simple gadgets and methods for crop-weather observation will need to be captured in the training. The training is intensive and full of practical sessions (at least 60%) and a community demonstration field schools to enhance facilitation skills. The participants are taken through various concepts and participatory rural appraisal tools (PRA) with emphasis on relating their applicability in their own local context. In addition to the technical good agricultural practices, specific inclusions on farming as a business (enterprise selection, profitability analysis, farm budgets, enterprise planning and enterprise records); marketing and value chain analysis; saving mobilization and cross cutting issues are made. These areas are dealt with in detail as the core of the field school curriculum in other sections.

#### Facilitation skills

**Basic Principles of Facilitation** 

- A facilitator is a guide who walks all learners through a process together, not the seat of wisdom and knowledge.
- That means a facilitator isn't there to give opinions, but to draw out opinions and ideas of the learners.
- Facilitation focuses on HOW learners participate in the process of learning or planning, but not WHAT gets achieved.
- A facilitator is neutral and takes no sides.

What a facilitator must know

Content – What	Process – How
• Task(s)	Methods
Subject(s) for discussion	How relations are maintained
• Problem(s) being solved. For a Climate-Informed CR-FFS	Tools being used
these problems must include climate-related problems	
• Decision(s) made. These decisions must include climate-	Rules or norms set
related decisions	
Agenda items.	Group dynamics
Goals and objectives	Climate

#### **Common PRA tools in FFS**

#### 1. Weather readings (simple rain gauge)

#### a). Simple Symon's rain gauge



## b). The Digital Hygrometer [Combined Thermometer and Hydrometer]



**2. Resource map diagram:** A diagram presents information in a readily understood visual form and has a dual use. First, the act of constructing a diagram is in itself an analytical procedure, which enables those preparing it to clearly understand the dynamics they are trying to record. Second, the diagram becomes a tool of communication and discussion among different people.

(*i*) *Map*: This is very useful for creating an alternative database for the design of village plans by the local people. People can draw maps of their village and locate the services, facilities and infrastructure according to availability and access to different groups, thus facilitating the identification of needs, problems and solutions. Different village groups can draw different maps to depict their perceptions, problems and needs. A number of maps by all sections of people in a village can help in prioritizing and preparing village plans of action.

People in the village can draw maps on the ground, floor or on paper (these can later be transferred to paper by the facilitator/ PRI actor). Social, demographic, health, natural resources or farm maps can be drawn to construct three-dimensional models of their land. The part to be played by the decentralized development actors in this exercise is that of patient listening and motivating people to participate by accepting and respecting their knowledge.

(*ii*) *Transect walk:* Can be used to substantiate and support a map. A transect is a systematic walk with villagers through the village, observing, listening to villagers' descriptions, asking relevant questions, discussing ideas, identifying different zones, local technologies, introduced technologies, seeking problems, solutions and finally, diagramming/mapping the transect walk and its findings. This helps to:

- Build rapport with local people;
- Substantiate and support the diagrammed facts;
- Identify locations of the problems and opportunities for development.

#### 3. Seasonal calendar

An extended version of the crop calendar representing all the major changes within the rural year, such as rainfall patterns and other major climatic changes, cropping, livestock cycles, labour demand, etc. This helps in identifying lean periods for resources and in timing the supply of farm inputs and alternative employment initiatives. Many participatory approaches have been used in India for this purpose, either the locally known Hindu calendar months or festivals and fairs. People in the Indian countryside are more familiar, comfortable and accurate with these benchmarks than the Western calendar. Seasons and months can be related to festivals that are known and generally celebrated by the large majority of the local population.

#### Other diagrams dealing with time trends

Long-term changes in rural areas can be represented in diagrams such as historical profiles and graphic time trends. The local people's accounts of the past, of how things close to them have changed - ecological histories, land use and cropping patterns, customs and practices, trends in fuel use, etc. can be represented with approximate dates before and after well-known events. Although secondary data may be available on these, a local perspective facilitates the design of development initiatives.

Another useful tool is the historical transect. This depicts local knowledge of the state of natural resources over a period of time. This can be initiated for various sectors of the rural economy to produce a series of diagrams reflecting people's perceptions and priorities.

**4. Venn diagram:** A Venn diagram shows the relationship between individuals, groups and institutions in a community as perceived by the people. It is made up of touching or overlapping circles of various sizes, with each circle representing an individual or institution. The size of the circle indicates their importance and the overlap indicates the degree of contact or inclusion in decision making. This will help in the formulation and implementation of development initiatives at the local level, as well as in identifying marginalized individuals/groups in the community

**5. Prioritization matrix:** This is used to involve people in prioritizing their needs and type of development initiative suited to local needs. Villagers use seeds to give scores to development initiatives, either individually scoring or in small groups and aggregating for the community as a whole. This will facilitate a process of democratic prioritization by the entire community, ensuring people's involvement in their own development. This is a very important tool for micro-planning by the PRIs at village level.

#### The concepts of adult learning in Farmer Field School (FFS)

The FFS approach is an innovative, participatory and interactive learning approach that emphasizes problem solving and discovery-based learning.

#### **Objectives:**

In this session, participants will be aware of

- i. What motivates adults to learn
- ii. Principles of adult learning
- iii. Success factors in facilitating adult learning

## Duration: 2 hours

Materials: Masking tapes, flip charts and markers.

#### Method/Steps:

- 1. Brainstorm for five minutes
  - What you hope to get out of this Module

- Why have you come for the FFS
- What do you feel you have to offer to the Module
- Do you feel the learning objectives are feasible
- 2. Small group discussion: In a small group discussion, pick examples of farming practices or technology and discuss the experiential learning cycle

#### Key Trainers' notes

#### What motivates adults to learn

- Adults will commit to learning when the goals and objectives are considered realistic and important to them.
- Adults want to be in control of their own learning and will resist learning activities they believe are an attack on their competence;
- Adult learners come to learn with a wide range of previous experiences, knowledge, self-direction, interests, and competencies;
- Adult learning has ego involved. Professional development must be structured in such a way as to get support from peers and to reduce the fear of judgment during learning;
- Adult learners need to see that the professional development learning and their day-to-day activities are related and relevant;
- Adult learners need direct, concrete experiences in which they apply the learning in real work;
- Adults need to participate in small-team activities during the learning to move them beyond understanding to application, analysis, synthesis, and evaluation;
- Small-team activities provide an opportunity to share, reflect, and generalize their learning experiences;
- Adults need to receive feedback on how they are doing and the results of their efforts.

#### Principles of adult learning

- 1. Readiness
  - Adults must themselves be ready and willing to learn before learning can increase knowledge.

#### Implications for Trainer.

- The course is for participants' benefit.
- The training can help solve or avoid a problem. The new knowledge will provide new opportunities as well as personal or professional growth.

#### 2. Experience

• Adults already have a wealth of knowledge and experience.

#### Implications for Trainer.

- Should take account of this; otherwise risk losing participants' interest and insulting them.
- Exploit this unique resource.
- Provide opportunities for participants to contribute and share their experiences.
- Allows trainer to manage course appropriately.

#### 3. Autonomy

Adults have the power to make their own choices.

#### Implications for Trainer.

- Allow as much autonomy as possible; otherwise participants may feel undermined and alienated.
- Provide lots of opportunities for participation in the training session e.g. games, simulations, discussions etc. where participants can figure things out for themselves, reflect on materials and potential uses, etc.

#### 4. Action

Adults need to see how new skills will be put into action in their work. If not, they will lose interest; learning will decrease.

#### Implications for Trainer.

- Clearly explain how and when skills learned can be applied to the participants' own work.
- Incorporate an environment close to participants' work setting for practical exercises.

#### Experiential learning Cycle (Kolb's cycle)



Figure 3: Kolb's Cycle

Kolb experiential learning theory typically expressed as four-stage cycle of learning, in which 'immediate or concrete experiences, including climate-related experiences, provide a basis for observations and reflections, including experiences with the weather events.

These 'observations and reflections' are assimilated and distilled into 'abstract concepts' producing new implications for action which can be 'actively tested' in turn creating new experiences. Kolb used the term "experiential" as his theory is based more on reflection of experiences. While others use "experimental" when referencing experimental-inquiry techniques that require learners to test hypothesis (experiment) about content knowledge.

FFS learning being adult learning acknowledges the interest of adult learners and adopts the cycle of experiential learning to create/ draw learners experience, reflect, think, and act. A typical FFS experiential learning cycle is reflected in the agro-ecosystem analysis (AESA). The learners get the feel of the farm situation through observation, reflect on it, synthesize their reflection and act on their conclusion.

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# **Unit 2: Farmer Field School Groundwork and Entry Point**

## Session 2: Entry into the community

"Ground working" in FFS refers to the series of activities the facilitator must do before the group can be formed. The main goal of ground working is to determine the suitable needs for FFS (refine the context).

Objectives: By the end of this session, participants will be able to know:

- i. Steps in conducting FFS ground working
- ii. Initial survey,
- iii. Awareness meeting,
- iv. Levelling expectations and
- v. Selecting FFS participants.

#### Key Trainers' notes:

FFS has evolved over time and is now applied to wide fields and disciplines. Organization must prepare to build the capacity needed for the context of the FFS. It is recommended that capacity building in the methodology should be done by an experienced master trainer to manage a TOT workshop at least for 14 days. For annual crop IPPM FFS, a five-day training to introduce facilitators to the methodology, process of ground working, group governance and FFS planning just after the harvesting season, during the dry season. Enough time should be given to facilitators to prepare the targets community for FFS and raise a group with well levelled expectations. The second 5 days TOT workshop should be held just before the season commences to synchronize the farmer field school activities with the season long activities to prepare facilitators to guide technically the FFS experimentation, programme the learning, budget FFS, field day, exchange visits, participatory monitoring and evaluation. The last 5 days TOT workshop should be held during the growing season three weeks after planting and should cover the post-harvest handling; marketing and post implementation follow up activities.

Workshop Phases	1	2	3
Months	Jan/May (1 week)	Mar/Jul (1 week)	Apr/Aug (1 week)
Activities	FFS planning	FFS Action	FFS follow up

#### **Initial survey**

A project using FFS predetermines the general needs of location where projects have to be implemented. Criteria for site selection is agreed in advance. However, owing to the uniqueness of FFS, Facilitators are encouraged to validate conditions suitable for FFS interventions.

Objectives: By the end of this topic facilitators will be able to know

- i. The process of seeking communities' leaders' opinions and approval of an FFS
- ii. How to identify opportunities for community support?
- iii. How to initiate community meeting?

#### Materials: Pen, letters and notebook

#### Duration: 8 hours

#### Methods/Steps:

- 1. If you are new in the area, make an appointment with the local opinion leaders/chiefs.
- 2. Visit the leaders at their homes or offices or attend the local development committee meetings.
- 3. Initiate a conversation on the activities going on in the community, the successes and problems and, if you think the conditions are suited for an FFS, explain your intentions.
- 4. Level expectations by stressing that FFS are a training methodology and do not provide materials, gifts or presents, and that the FFS aims to work with willing and committed (livestock/crop) farmers to learn how to solve their production constraints.
- 5. Once you have the consent and you are confident that there is a potential for an FFS you can plan the date and site for the awareness raising meeting.
- 6. If you do not know the area, have a walk around the community to become aware of its environmental and cultural characteristics.

Facilitator should observe and note the following:

Main economic activities in the areas, settlement pattern, natural resources, land use, markets, other service providers, social setups, gender patterns and institutions and infrastructures.

### Community awareness raising meeting

Before setting up of an FFS in a community, awareness meeting should be created for consensus building, raising interest and clarifying perception of the community on the project.

**Objectives:** By the end of this session, the facilitator will be able to understand:

- i. How to introduce FFS methodology to community of target
- ii. What the people expect of community projects and manage wild perceptions
- iii. How to identify interests from the community and seek for actions.

Materials: Flip charts, pens, markers, a spider specimen and a display board.

Duration: 45 minutes.

#### FFS Entry point (Community Based Climate Change Adaption<sup>2</sup>)

FFS entry point defines the priority of the community relative to the pressing problems, in this case a climate-related problem. This priority needs to be selected with climate-related problems in mind. That point needs to be emphasized at this point. FFS is centred on problems which are agriculture related, hence the entry points are related to agriculture. The problems are defined relative to the farmers' interest, i.e. effects on crops, livestock or agriculture land. In a climate change focused intervention, the entry point is focused on the climate induced problem(s)/issue(s).

Objectives: By the end of this topic, the facilitator will be able to

- i. Facilitate the identification climate induced problems which affects the value chains of [named crop as selected by the CR-FFS]
- ii. Facilitate the prioritization of the most pressing climate induced issues of economic importance to [named crop as selected by the CR-FFS] value chains
- iii. Ensure both the community and the facilitator have an opportunity to discuss and agree on the focal field-based activity to the problems identified.

Materials: Flip chart, markers (different sizes and colours), cards, manila papers, pens, notebooks.

#### Duration: 3 hours.

#### Methods/Steps:

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The following steps are should be taken to clearly articulate the problem.

1. Search for Background information to gain an understanding of the area, its conditions and problems. Project documents, governments, local businesses (input and output markets) and community organisations normally have reports, maps and other useful documents.

- i. Using a problem tree, identify and define a clear and precise climate induced problem, do not state climate change as the problem. The problem statement should be of a much lower order, typically an issue that is within the ability of one adaptation initiative to tackle.
- ii. Define the problem in terms of how climate change will impact a key agriculture at the local level. For example: Increased frequency of prolonged dry spell due to climate change adversely affects productivity of agriculture commodities reducing livelihood opportunity.
- iii. Avoid the temptation to describe the causes of the problem in the problem statement itself. The reason this distinction is important is because it is highly unlikely that there is only one type of cause for the problem.
- iv. Guide the community to identify clearly define the solutions to the problem which are adaptive initiative.
- v. The articulation of the problem statement entails a detailed analysis of the added contribution that climate change presents for a variety of vulnerabilities.
- vi. It is also helpful in determining the normative response and the associated barriers that need to be overcome in order to effectively manage the problem and achieve the preferred solution.
- vii. The facilitator guides the community to identify the range of causes of the problem. The facilitator should carry out the 'question and answer' process until they have exhausted the number of causes for each problem. They should also bear in mind that there are inter-linkages between causes that need to be identified and considered.

UNDP (2010). Designing Climate Change Adaptation Initiatives: A UNDP Toolkit for Practitioners. UNDP Bureau for Development Policy

- viii. There is scientific consensus that climate change is human induced. It is imperative that we understand the effects climate change will have on our environment and society. This is important to appropriately design and introduce strategies, plans, and measures to reduce adverse impacts. In order to understand vulnerability at local levels, recognition and understanding of three key components exposure, sensitivity, and adaptive capacity is required. The following questions can facilitate that process.
- ix. What are the projected hazards and perturbations caused by climate change?
  - What will happen to temperature patterns?
  - What will happen to rainfall events?
  - Are extreme events likely to increase in frequency and/or magnitude?
- x. What specific sensitivities to climate change and its projected hazards and perturbations exist?
- How will current sectors of society (population, agriculture, water, energy, tourism, fisheries,
- xi. How will health and biodiversity be affected by these hazards and perturbations?
  - Are there current socio-economic trends that interact with and could amplify these sensitivities?
- xii. What is the level of adaptive capacity?
  - How will society cope with and manage these changes? Will it be able to make changes through policies and activities that minimize adverse impacts (or make the most of the opportunities presented)? Or, will the expected changes increase their vulnerability?
  - Can adaptation take place at the sector level, or is there a need for more structural changes within society (e.g., economic diversification)?

Identifying the normative response will most likely entail the following activities.

- 1. Conduct an initial stakeholder consultation to review the results of the causal chain analysis.
- 2. Brainstorm with stakeholders to formulate the normative response.
- 3. Map out the ideal plan of action in the context of the previously identified problem and immediate, underlying, and root causes.
- 4. Differentiate between responses that are required to manage climate change related issues and responses that would be required as part of business-as-usual development.
- 5. Recognize that multiple initiatives may be required to address the identified problems.
- 6. Narrow in on the required responses based on Steps 1 and 2. At this point of the process, it is more important to map out what the required response is, rather than to focus on which response can be more easily implemented through a single initiative.
- 7. Determine further information necessary to prioritize the identified responses.
- 8. Plan wider stakeholder participation as part of an iterative dialogue to establish the normative response.

Barriers can be a combination of information constraints, institutional failures, capacity constraints, economic constraints, and political factors. They are specific to the national, sub-national, and local level conditions.

- Weak institutional capacity of relevant public and private entities to support/facilitate necessary behavioral adjustments;
- Rapid turnover in Ministries, Directorates, and others;
- Weak governance and shortage of staff with relevant skills and necessary mandates;
- Lack of political will;
- Absence of necessary climate-resilient development strategies and supportive policies;
- Unreliable/inadequate information to support necessary decision-making (from basic data to results of policy relevant analytical and feasibility assessments);
- Financial constraints to support implementation;
- Overlap of responsibilities between institutions leading to inefficient and ineffective implementation of adaptation measures;
- Local communities' limited awareness regarding the issues, limited access to information/knowledge;
- Enforcement difficulties for policies that have been designed and introduced.

#### **Climate Monitoring and Applications Entry Point**

CSF in practice: Objectives

- i. To learn by doing, on how weather & climate information can be used during planting season in specific demonstration plot
- ii. To help farmers make their own weather observations, measurements and predictions, and compare with official forecasts and act on the results.
- iii. To observe and record rainfall and plant growth
- iv. Integrate cultivation techniques with climate and weather information

The module to comprise field observation, pre-test, lecture, workshop and field tours. It includes knowing the importance

of climate in plant growth and development, familiarization on forecast implementation, usage of climate parameters and instruments, learning to integrate weather and climate information into agricultural planning and risk management. Provide each CR-FFS with a simple rain gauge and link them to the nearest Agro-Met Station. Through the Agro-Met station, farmers will get forecast of local weather conditions and compare with available indigenous weather prediction information to make informed decisions based on local climate characteristics. This they do by adapting their farming practices throughout the season. This involves adapting their choice of crops, crop varieties, planting and other cultural measures, while at the same time managing and manipulating the soil, water and microclimate where possible.

The weather forecast information from the Station will be simplified into ordinary language, translated into local dialects and disseminated by the CR-FFS in the local community weekly, monthly, quarterly and seasonally. The weather forecast/advisory from the Agro-Met station, together with indigenous weather monitoring at the CR-FFS site, will be the basis of scheduling farming activities in the CR-FFS.

#### Steps in CFS AGROMETA Training

Demand for more accurate climate information and services is increasing with increased climate risk, to help in better agricultural water management and weather-based pest and disease control.

Training topics may include but are not necessarily limited to the following:

- 1. Climate change & variability and its impact on agriculture
- 2. Agrometeorological instruments and observation
- 3. Agrometeorological variables and measurements
- 4. Interpreting agrometeorological data
- 5. Basics of crop microclimate and crop growth
- 6. Agrometeorological forecasting and service, downscaling of seasonal forecasts, and forecast products,
- 7. Applications of remote sensing in agriculture
- 8. Agrometeorological advisories for farmers,
- 9. Agrometeorological products for selected crops
- 10. Standard Operational Procedures (SOPs) for using agrometeorological derived products/weather and climate information for issuing agromet advisories/warnings to farmers/policy makers.

Other points to note include:

- Length of cold spells and heat spells during the growing season
- Number of frost days, cold days, hot days
- Length of dry spells defined by applying drought indices
- Number of dry and heavy precipitation days during growing season
- Return periods of extreme and devastating weather and climatic events

### Methodology for Climate Information Module in Climate-Resilient Farmer Field School Curriculum.

Broad Objective: to establish sustainable end-to-end institutional system for the generation and application of locally tailored climate information, and to build capacity to apply the climate information in real-time.

#### **Specific Objectives:**

- To strengthen participants understanding of climate related risks in agriculture and in crop-specific management systems;
- To increase participants knowledge of the importance of climate in plant growth and development as well as its relationship with plant pests and diseases;
- iii. To familiarize participants with forecast implementation, climate parameters and instruments;
- iv To train participants to integrate weather and climate information in agricultural planning
- v. To create awareness among participants on climate change adaptation

#### Methodology:

Conducted once a week for a rainy season cycle. Every seven days CR-FFS farmers, CR-FFS facilitators and local subject matter specialists conduct meetings for:

- 1. Agrometeorological analysis (AGROMETA)
- 2. agro-ecosystem observation and analysis (AESA)
- 3. discussion/group dynamics
- 4. special topic

#### **Topics:**

- 1. Crop growth and development
- Basic agro meteorology, agro-climatology, weather monitoring and forecasting (parameters and instruments)

- 3. Climate related risks in agriculture, including risks of pests and diseases
- 4. Generation and applications of weather forecasts, and use of climate information products (forecast Interpretation, translation and communication)
- 5. Incorporating climate and weather forecast in decision making
- 6. Climate change adaptation and strategies in agriculture

#### Activities:

- 1. Climate Change
- 2. Weather Monitoring (Observation) & Agro-Eco-System Analysis
- Introduction to weather & climate elements, weather measuring instruments and simple measuring instruments
- Understanding seasonal climate and weather information & prediction
- 5. Climate extremes
- 6. Effect of Weather / Climate on Pests and Plant Diseases; Pest Prevention & Control using weather and climate information
- 7. Indigenous Knowledge/Local Wisdom
- 8. Harvest & Post-harvest Management
- 9. Utilization of Weather/Climate Data for agriculture purposes
- 10. Utilization of Climate/Seasonal information for integrated crop calendar
- 11. Crop Yield measurement & analysis
- 12. Simple Analysis of Agriculture Business
- 13. Group Dynamics & Team Building

## Identifying FFS Focal Activity (FFS Study Enterprise specific problem)

FFS focal activities define the common interests. The right FFS target is centred on common interest of farmers, i.e. share the same livelihood groups, village/catchment within common ecological systems, socio-economic and political situations. The entry point is focused on the common problem(s)/issue(s).

Objectives: By the end of this topic, the facilitator will be able to

- i. Ensure the FFS is targeting the climate induced issues in the value chain of [named crop as selected by the CR-FFS]
- ii. Ensure there is field based potential solution to the problem of these value chains
- iii. Ensure both the community and the facilitator have an opportunity to discuss and agree on the focal field based activity to the problems identified.

Materials: Flip chart, markers (different sizes and colours), cards, manila papers, pens, notebooks.

#### Duration: 3 hours.

#### Methods/Steps

- 1. Search for Background information to gain an understanding of the area, its conditions and
- 2. When the groups have completed the exercise, the matrix is analysed by all in a plenary session to see who is responsible for what.
- 3. The facilitator can use the following questions to enhance the discussion: "For this activity (e.g. weeding), which group is the most responsible?", "Which groups work together (share specific responsibilities)?" and "Which group(s) is/are the most important in crop production?"
- 4. Following the discussion and looking at the results of the matrix, the facilitator asks the group to choose which group(s) is/are important for crop production, then asks:
  - "Is this group the most suitable? I.e. to participate in an FFS the crop?" In addition, they discuss what the profile of an FFS participant looks like (i.e. responsible for crop, a small-scale farmer, committed to participate throughout the FFS sessions, share information, etc.)

- 5. Discuss who (specific people out of the whole group) should be the direct participants of the FFS (e.g. let each person write a name on a piece of paper of someone they think is qualified as an FFS participant). Explain that the entire family is an indirect member of FFS and that the direct FFS participants have the duty to pass on what they learn to other family members and neighbours.
- 6. Make a first list of the people that decide to participate in the FFS.

This is not the final meeting for the identification of participants. It is more for sensitizing community members to who should be participating.

## Tip:

An FFS takes place in the community, so it is important to target people who are involved in making decisions on the focal activity, if the community is to benefit from the knowledge and skills gained during an FFS. When selecting participants, it is easy to choose the loud, rich and educated, because they are visible in group meetings. The challenge is to reach the people who will benefit most from their participation.

It is also important to understand gender relations and cultural practices in respect to the focal activity (enterprise). For example, in where [named crop as selected by the CR-FFS] value chain is involved women rarely participate in decision making for resource allocation. However, they are often responsible for undertaking the daily routines of crops husbandry.

To select the most appropriate FFS participant within a family (husband, wife, son, etc.) an FFS participant analysis needs to be performed, keeping in mind the selection criteria:

- Common interest (i.e. all members have the same enterprise interest [named crop as selected by the CR-FFS]
- The participant has experienced similar problems in the mentioned interest
- The participant has a level of decision making on the farm
- The enterprise is of particular socio-economic importance to all the participants
- Participants are from the similar educational and socio-economic level, since the learning process can be hampered by influential personalities (local chiefs or Members of Parliament [MPs]) who may impose their views and impede participation
- All participants live within a relatively short distance of the FFS learning site, preferably the same village
- There are no known conflicts between participants
- The participant must be willing to attend all sessions during the FFS season
- The participant must be willing to work in a team and share ideas with others, including non-members
- Participant must be willing to contribute financially, in material inputs or in personal time to the FFS work
- The participant must be interested in learning and not expect material benefits
- At least one participant must be willing to provide a learning site (field).

## Unit 3: Farmer Field School Formation and Formalization

## Session 3: FFS establishment

FFS offers community-based, non-formal education to groups of 20-30 farmers through self-discovery and participatory learning principles. Group formation is an important aspect of FFS establishment in facilitating learning.

Objectives: By the end of this session, the facilitator will be able to

- i. understand the process of groups formation
- ii. understand the process of formalization
- iii. facilitate the process of group governance

#### Duration: 3 hours

Materials: Flip charts, note books, pens, markers, masking tapes, papers

#### Methods/Steps:

- 1. The facilitator asks the participants to discuss the relevance of having FFS groups, the answers are recorded on flip chart, makes review with participants and pin the flip chart sheet on a wall.
- 2. Discuss with the participants why people form groups including need to solve problem, mobilise resources.
- 3. The participants discuss factors which make groups succeed or fail.
- 4. The facilitator discusses the process of group formation; forming, storming, norming, performing and adjournment (Bruce, 1965).

#### **Key Trainers notes**

Group Dynamics/Team Building: Group dynamics and team building activities will from time to time involve energizers and stage plays. This will help to develop communication skills building, problem solving, leadership and discussion methods. Farmers require these skills. Successful activities at the community level require that farmers can apply effective leadership skills and have the ability to communicate their findings to others.

Farmer Field Schools are conducted for the purpose of creating a learning environment in which farmers can master and apply specific production management skills. The emphasis is on empowering farmers to implement their own decisions in their own fields.

#### **Group Formation**

The forming stage represents a time where the group is just starting to come together and is characterized with anxiety and uncertainty. Members are cautious with their behaviour, which is driven by the desire to be accepted by all members of the group. Conflict, controversy and personal opinions are avoided even though members are beginning to form impressions of each other and gain an understanding of what the group will do together. Some believe this cautious behaviour prevents the group from getting any real work done. However, the focus for group members during the forming stage is to become familiar with each other and their purpose, not on work.

Typical outcomes of the forming stage include things like gaining an understanding of the group's purpose, determining how the team will be organized and who will be responsible for what, discussion of major milestones or phases of the group's goal (including a rough project schedule), outlining general group rules (including when they will meet) and discovery of what resources will be available for the group to use.

## **Group Formalization**

This is when group's anxiety, uncertainties, conflict and competition receive the clarity. Many of the activities will not take place in the field and topics like naming, mini groups, leadership, meeting, budgeting or constitutions may be new to the group.

Objectives: At the end of the topic facilitator will be able to facilitate

- i. The vision development,
- ii. Group structure,
- iii. Leadership and roles in the FFS.

#### Duration: 3 hours

Materials: Flip charts, note books, pens, markers masking tapes, papers

#### Methods/Steps

- 1. Working with the group, ask each participant to dream a dream of what they will be like after FFS implementation. Let the participants draw out their dreams and share it across. Group together similar dreams and count the dominant dreams of the members which is in line with development of vision. Clarify on any dreams which are not specific by contextualizing them.
- 2. The participants should list down all the ideas on how they think their dream can be attained. The facilitator should guide the participants to determine how simple, meaningful, achievable these ideas are in the real world given the time constraints. After agreeing with the participants the interim secretary records these as the groups objectives
- 3. Within the mini-groups, let the members formulate a name which brings together all their dreams which they hope to achieve. When the group has reconvened, let them review the various names whether they encourage unity, working together or motivate hard work. At the end, let the group suggest a common name for the group giving reasons why it should be adopted and develop consensus on the name for the group. However, let every mini-group maintain their own name.
- 4. Let the members review the conditions and criteria of becoming a member of the group. If the criteria and conditions require review they will have to do it at this point. During this process let the groups discuss the obligations and rights of members as well as types of membership. Have them suggest and agree on what will work best for the group and be sure this information is recorded and shared by the temporary group secretary.
- 5. Discuss with the participants on how group work should be organized and charge responsibilities to those who will take up their roles. It is critical at this point to know areas of responsibilities for members to decide the leadership. Most groups will need a chairperson, secretary and treasurer. The group can divide duties whichever way they want as long as all responsibilities are assigned. What is each officer's responsibility? Groups can also decide to create committees to organise certain events or examine topics. For the bylaws, the group should add details about the officers' roles. It should also decide the penalties for leaders breaking the rules.
- 6. The facilitator should guide the group through a participatory process to agree on the important types of meeting FFS should hold. Basically FFS meet to learn from their field, they meet to plan and resolve issues outside fields and they meet to save and lend. The facilitator guides the participants to develop procedures of meetings, meeting quorum, minutes and calling of meeting. Meeting days and times are scheduled for when everyone in the group can attend, including the women in the group. You may have to use gender-related PRA tools to demonstrate times of the day during which women have the most responsibilities.
- 7. FFS should be self-reliance; therefore, they should be able to mobilize their own resources. As a facilitator, you will know if a grant is available to finance the group's activities. In the Group Action Plan phase, the group will go into more detail on its budget, but for now the group should know roughly how much of its finances are coming from grants and how much are coming from membership fees. You should have already discussed financial recordkeeping with the group so it should have some ideas of the records it needs to keep. The secretary and treasurer's responsibilities should be outlined in the bylaws. In this section of the bylaws, the group must explain exactly how the financial records and the money will be kept. The treasurer and secretary are ultimately responsible for keeping financial records and controlling the money, but they need help. The group should decide on a mechanism to guide participants on how benefits from group transactions are to be shared.
- 8. If the participants are already practicing group savings or have already been introduced to the concept of savings, they will have to document a saving mechanism. Details of saving norms are then developed, for example, if it is a Village Savings and Loan scheme, what is the share value, welfare, frequency of saving meetings, how long will the saving cycles and the committees to manage savings last. In addition, they will decide on the savings and when bank transfers should be made. The participants should be guided on procedures of loans. Example, loans should be given against members savings only; interest shall be charged; seconding of person applying for loans; the length of loan repayment, etc.
- 9. The facilitator should guide the participants to discuss the common records the group will need to keep and who should be the custodian responsible for ensuring the existence of written records. These records may include participants register, minutes of meetings, visitors register, activity records, production records, asset register, financial records, etc.
- 10. Once the facilitator has gone through this formalization process, the facilitator guides the participants to run through components of constitution making. Together with the group they agree on a select committee to translate the documents generated in the previous sections to constitute it in to guiding rules (the constitution).
- 11. Remind members they should abide by the bylaws they have set by committing to pay membership fees and savings, they should plan how to meet these two group requirements. Also inform members that the group will elect its management committee during the next meeting so participation is important.

#### **Key Trainers notes**

#### Storming

The storming stage is where conflict and competition are at its greatest. At this stage the more dominant of the group members emerge, while other, less confrontational members stay in the comfort and security of suppressing their feelings just as they did in the previous stage. Even though these individuals stay quiet, issues may still exist. All members have an increased need for clarification. Questions surrounding leadership, authority, rules, responsibilities, structure, evaluation criteria and reward systems tend to arise during the storming stage. Such questions must be answered so that the group can move on to the next stage. Consequently, not all groups are able to move past the storming stage.

#### Norming

The norming stage is the time where the group becomes a cohesive unit. Morale is high as group members actively acknowledge the talents, skills and experience that each member brings to the group. A sense of community is established and the group remains focused on the group's purpose and goal. Members are flexible, interdependent and trust each other. Leadership is shared, and members are willing to adapt to the needs of the group. Information flows seamlessly and is uninhibited due to the sense of security members feel in the norming stage.

#### **Rules and guidelines**

The constitution and bylaws are the guiding documents for the group. The constitution lists the core principles/norms of the group. The constitution states what should be done by the participants and what they should not do. It must be clear, concise and precise on actions and course of actions to be taken for reinforcing and motivating participants.

Constitution making is a difficult process and should not be allowed to ruin the process of FFS establishment. It should be understood that it is a process which govern the development and formalization of FFS groups. Time should be given to discuss each process at a time while other activities are ongoing.

The constitution evolves as the group grows and becomes sustainable. Thus, there is room for amendment. The FFS members formulate the constitution not outsiders. It should be written in simple language understood by all members. In fact, the best method is to assist the FFS members to write the constitution in their local language. Each member should have access to the constitution for reference.

#### **Farmer Field School Structures and Leadership**

Now that the constitution has been made, the group needs to follow up on the activities it said it would do. One of the most important processes is electing the leadership of the FFS and establishing committees. Once this is done each member will know his specific duties.

Some members will be in charge of initiating the savings scheme. Others will have to open a bank account or register with the Community Development Office. Lastly, the records must be created so that members can begin putting information into them.

Objectives: By the end of this topic the facilitator will be able to:

- i. constitution and bylaws are properly enacted
- ii. ensure that there exists a clear governing structure of the FFS group
- iii. roles and responsibility are well defined

Materials: Flipcharts, markers, pamphlets for local banks

#### Duration: 2 hours

#### **Procedures:**

- The group charged with preparing and finalizing the constitution should present the final document to the group for consideration. Make sure that the leadership roles are especially clear because the group will be electing leaders in the next step.
- In the constitution, the group listed the leadership and committees it will need. It also noted how the group would decide upon leaders and committee memberships. Now, it must use these guidelines to select its leaders. In general, the desired qualities are:
  - · Chairperson: a dynamic, respected leader in the community
  - · Secretary: a person who can read and write with basic numeracy knowledge in order to assist with records
  - **Treasurer:** a person who can read and write with basic numeracy knowledge; the group should trust the treasurer because he/she will be in charge of the group's money
- 3. Hold a swearing-in ceremony with a community leader. This will instil pride in the new leaders.

- 4. Farmer Field School consist of a 20-30 members who form the general assembly of the group is the supreme governing body
- 5. Farmer Field School is led by the three executive positions described in step 2 and working committees depending on the range of activities to be undertaken
- 6. Farmer Field School's learning is organised by a mini group 4-6 members (host teams) who support the general group meeting on rotational basis

## **Unit 4: Planning for FFS Implementation**

Facilitator will elaborate on group formation and roles of the other groups, in addition to the role of the host team. Clearly explain the functions of the host team

#### Session 4: Group Action Plan - GAP

To develop a Group Action Plan (GAP) there are five activities to follow i.e. production constraints identification, analysis and ranking of constraints (these constraints must include climate and weather-related constraints) which can be solved using agronomic management; identifying potential solutions and solution options assessment (these solutions must be checked to align each of them with productivity and/or adaptation and/or mitigation objectives of CSA); developing the learning programme; developing a detailed budget; and developing a PM&E plan. Guidelines for each of these activities are presented below.

Objectives: By the end of this session, Facilitators will be able to

- i. To organise farmers on how to manage their learning and how to learn
- ii. Set out a clear path of identifying what the FFS will achieve and how they are going to achieve it
- iii. Create feelings of ownership among the FFS group and thus enhance commitment and sustainability
- iv. Pool resources, synchronise efforts and avoid duplication
- v. Increase accountability and transparency and thus permit monitoring and evaluation of the performances of the FFS

Materials: PRA tools such as pairwise ranking, problem solution option assessment, pebbles, flip chart, markers

#### Duration: 4 hours

#### Methods/Steps:

- From the enterprise selected during the value chain analysis, the participants brainstorm on the main production constraints and record them down (these constraints must include climate and weather-related constraints). The participants' then sort out constraints which can be solved using the agronomic management strategy. However, the entire problem mentioned formed training needs which must be attended to in the community.
- 2. Through prioritization tools (pairwise ranking, proportional piling, wedge methods), the participants score for the top priority problem (Session 3, PRA tools).
- 3. The facilitator introduces the problem/solution analysis table as illustrated in the following section. In a plenary session, the facilitator explains the different items to consider in analyzing potential solutions to the priority problem previously ranked. The FFS group discuss the signs (indicators/evidence) of the problem and identify the root cause. Then the strategies that farmers use to cope with the problem are discussed and the group brainstorms the possible recommended solutions.
- 4. Using matrix scoring to prioritize the solutions or assess the options to be tested in the FFS as shown in the experimentation. Each of the solutions is evaluated by looking at cost, productivity, sustainability, time constraints (ease of application) and easily accessible. With 25–100 stones, the participants decide upon significance or weight of each solution using the indicators. The facilitator guides the participants to decide the value of stones to reflect on the most critical factor they will consider selecting the proposed solution option given. For each solution, the score is calculated, then one can see which solution is considered of most interest to the FFS participants and the rest of the solutions can be ranked in order of interest. Then the solution with the highest scores will be pursued in the FFS. These form the basis of the learning programme.

#### **Key Trainers notes**

A Group Action Plan aims at addressing the specific problems the community members have encountered in their daily farming activities. Their goal is to solve these problems through the FFS. The GAP also incorporates other issues that affect farmers' livelihoods. FFS is a participatory approach wherein learners establish their agenda and curriculum for learning, often with strong cross-sectoral elements. Experience in southern Africa has shown that FFS interventions frequently produce a number of spin-offs or unpredicted effects when participants are allowed to lead and steer their own development process. This is largely positive, but it also makes high demands on the internalization of a flexible and open approach to programme management. This allows for frequent and continuous adjustment to planned activities to accommodate emerging needs and demands by project and programme beneficiaries.

#### **Stages of Group Action Plans**

The six stages are sequential with each activity unfolding the new steps to follow until a concrete plan for FFS implementation is established. The schematic process is presented in the figure.



#### Stage 1. Identify farmer production constraints

FFS is established based on production constraints (agronomic issues). At this stage the facilitator guides participants to make logical analysis of production problems from planting to maturity.

Objectives: By the end of this session, participants will be able to select real agronomic constraints, by

- i. Identifying crops of great importance to farmers livelihoods (food security, income generation or nutritional values)
- ii. Identifying the most significant agronomic challenges that affect the production capacity of farmers
- iii. Prioritising the production constraints which can be addressed through a season long study

Materials: PRA tools such as pairwise ranking, wedge methods, proportion piling, etc

#### Duration: 2 hours

- i. **Identifying crops:** The FFS members select enterprise which make significant contribution to their livelihoods, for example, is the enterprise of choice a staple crop which has the potential to contribute significantly to food security, or the main source of income or of high nutritional values. It could be an enterprise that already exist or has the potential to be introduced in the areas. A list of enterprises could be generated and then selected with a simple wedge approach. The selection is facilitated through questions; identifying which enterprise is least important from the long list until a select few priorities down the tip of the wedge are selected. It is the few selected enterprises whose agronomic constraints are prioritised.
- ii. Identify agronomic constraints: After selecting the priority enterprise, the facilitator leads the participants to generate a list of agronomic challenges faced in growing that enterprise. A long list would naturally come; however, the facilitator should be cautious in eliminating the obvious problem and preferably four to five problems would be appropriate for prioritisation. Ensure that the participants fully understand what agronomic challenges or issues are in a farm to avoid a wide range of problems that may not be eliminated by consensus.
- iii. Prioritising the agronomic Constraints: The challenges identified are selected through step by step process of consensus building using appropriate PRA tools. For Example, a pair wise ranking or proportional piling could be used depending on the familiarity of the facilitator and the participants with consensus building.

sorghum, beans, pigeon peas, groundnuts, sesame cassava sorghum Pigeon peas

Cassava Pigeon peas Sesame

### Pairwise ranking

Problems	Pest	Diseases	Soil infertility	Moisture stress	Poor variety	Scores	Rank
Pest		Disease	Soil infertility	Pest	Pest	2	3
Diseases			Soil infertility	Disease	Disease	2	2
Soil Infertility				Moisture stress	Soil infertility	3	1
Moisture Stress					Moisture stress	2	4
Poor Variety						0	5

From this ranking, a priority problem that has come up is the soil infertility as the main agronomic challenge facing sesame production.

#### Stage 2. Identify and assess solution options to the identified production constraints

As the first step in FFS action plan is about the problem, the second stage is assessing the why, the how a production constraint occurs and what potential actions would solve it.

**Objectives:** By the end of this session, participants will have developed solutions that will potentially address the agronomic constraints, by:

- i. Assessing how the problems occur
- ii. Assessing why they occur
- iii. Analysing the most appropriate solutions that could be tested

Materials: PRA tools such as weighted scores, problem solution matrix, proportion piling, etc

### Duration: 2 hours

**Problem-solution assessment:** Solutions are sourced from the knowledge of participants and technically recommended options. However, to be more appropriate deeper analysis of the problem, its symptoms and possible suspected causes (root causes or underlying causes) need to be established.

Prioritised constraints	Symptoms	Suspected root causes	Farmers' Coping mechanisms	Recommended solutions	
Soil infertility	Light green leaf and plant colour with the older	Nitrogen (N)	Apply mulch	Apply	
	leaves turning yellow, leaves that turn brown and die.	deficient		NPK,	
	Plant growth is slow, plants are stunted, and			DAP	
				Organic manure	
	Plants grow slow and stunted, and the older leaves have a purple coloration, particularly on	Phosphorus (P) deficient		Compost	
	the underside.			Plant teas	
	On the older leaves, the edges look scorched. Plants easily waterlog and are sensitive to disease infestation. Fruit and seed production impaired and of poor quality.	Potassium (K) deficient		Intercrop with legumes and marigold	
	The growing tips of roots and leaves turn brown and die. The edges of the leaves look ragged as the edges of emerging leaves stick together. Fruit quality is affected with the occurrence of blossom-end rot on fruits.	Calcium (Ca) deficiency			
	Older leaves are yellow in colour with interveinal chlorosis (yellowing between the veins) symptoms. Plant growth is slow and some plants may be easily infested by disease.	Magnesium (Mg) deficiency			
	A general overall light green colour of the entire plant with the older leaves being light green to yellow in colour as the deficiency intensifies.				
	Abnormal development of the growing points (meristematic tissue) with the apical growing points eventually becoming stunted and dying. Rowers and fruits abort. For some grain and fruit crops, yield and quality are significantly reduced.	Sulfur (S) deficiency Boron (B)			
L			l	1	

Experimental solution options assessment: using weighted scores matrix or proportional piling, the proposed solutions that could be tested in the experiment are selected. The parameters used in evaluating options include less costly, increases yield, easy to apply, provide sustained production benefits, useful to both men and women and do not harm the environment. These parameters are the key hypothesis of the experiment which the farmers evaluate in the on-farm trials.

Parameters \ Solution	Low cost x10	Increase yield x9	Easy to apply/ az x8	Sustained benefits x7	Gender equitable X6	Friendly to environment X5	Scores	Rank
Intercrop with Legume &marigold	10x10 =100	5x9 =45	10x8 =80	10x7 = 70	10x6 = 60	10x5 =50	405	1
Apply compost	3x10 = 30	10x9 = 90	7x8 = 56	10x7 = 70	8x6 = 48	10x5 = 50	344	2
Apply NPK	0x10 = 0	10x9 = 90	0x8 = 0	3x7 = 21	5x6 = 30	2x5 = 10	151	5
Apply compost teas	6x10 = 60	6x9 = 54	3x8 = 24	6x7 = 42	5x6 = 30	6x5 = 30	240	4
Apply manure	4x10 = 40	10x9 = 90	5x8 = 40	10x7 = 70	7x6 = 42	10x5 = 50	332	3

Thus, the first option for experiment in the FFS will be a trial of inter-crop of Legume + Marigold in sesame field.

#### Farmer managed On-Farm experiment (FFS Experiment)

FFS (IPPM) experiment: An experiment is a procedure carried out to support, disapprove, or validate a hypothesis. Experiments provide insight into cause-and-effect by demonstrating what outcome occurs when a particular factor is manipulated. Experiments vary greatly in goal and scale, but always rely on repeatable procedure and logical analysis of the results.

**Objectives:** By the end of this session, participants will have developed skills on how to set up on farm trials and evaluate it, by:

i. Understanding how to design experiments, measure results of an experiment and evaluate their performance

Materials: PRA tools such as transect walk, planting line, tape measure, pegs, note books, pens, pencils.

#### Duration: 2 hours

#### Methods/Steps

- 1. Reflect on the production constraints identified and the priority constraints selected
- 2. Reflect on the solutions proposed and consider them as general good agricultural practice
- 3. Discuss in detail with the participants the singled-out options agreed upon to be tested in the validation or comparative or trial experiment
- 4. Discuss with participants how experiments are organised (key elements of experiment)
- 5. Take a field walk and construct a transect across the proposed FFS site to assess the feasibility of the experiment sites, record your observation
- 6. Discuss the observation in a large group and qualify or disqualify the sites
- 7. Set the experimental plots in which the farmers will conduct their EASA

#### **Key Trainers notes**

- All experiments are based on well- defined problem; in this case, the FFS has a production constraint to solve. Hence the goal of the FFS will be to improve productivity of sesame as constrained by nutrient deficiency.
- The solutions proposed for the identified problem becomes the treatment that will be applied with the aim of solving the constraints much better than the other options. All other options identified if they fall within the good agricultural practices should be applied in the field with variations of only that treatment to be tested.
- Experiments are replicated to minimise biases, local variations and reduce the chance of false conclusion and a control is applied to set a bench mark for comparison and conclusion.
- Experiments are established at once to ensure uniformity and all activities in the experiment should be applied at once to minimise creation of local variations
- Experiments must be labelled clearly to include the treatment, date of planting, variety planted, and the objective of the experiment and the name of the group conducting it.
- FFS experiment should be kept very simple and if possible should be a single factor experiment, for example, intercropping with legume and marigold to improve nutrient deficiency for sesame.
- Data collection must be done routinely at a predefined interval (AESA data sheet) often weekly, each mini group (4-6 members) conducts separate data collection analysis and synthesised together to make a joint action under each treatment. The size of the experimental plots should be fair enough to accommodate 20-30 members during study.
- Evaluation of the experiment should be based on cost-benefit analysis. If the margin of benefit is small, that solution is not worth investing in
- Innovation, technology gap and new problems resulting from the experimental activities shall be utilised as additional basis for prioritising; problems and activities in future experiments to be established in the community.
- The experiment must run parallel to the growing season so that the good agricultural practices being applied on the experiment are taken up by the farmers who promptly apply it on their own farms. Mini groups once in a while monitor the members' activities to reflect whether learning is taking place.
- While participants conduct AESA on experimental plots, they are supposed to compare their observation with their farm performance and apply the same recommendations generated from their studies.
- During the evaluation while the group conducts the evaluation of their study plots, farmers should do the same for their own farms to see whether they are making improvement from the learning.
#### Note:

The validation or comparative studies in farmers' field schools are means to empower participants (both farmers and facilitators) with analytical skills to investigate cause/effect relationship of problems in farming systems. It stimulates learners to learn from each other at each stage of the intervention and draw lessons for their field practices. In addition, the participants develop analytical skills and attitudes in working within participatory framework in planning, organising, and evaluating development activities.

Experimental design: is a way to carefully plan experiments in advance so that your results are both objective and valid. The terms "Experimental Design" and "Design of Experiments" are used interchangeably and mean the same thing. Farmers may not handle appropriately a complex design, so a simple randomised design is preferred as shown.

Plot without treatment	Plot with Marigold+legume	Plot without treatment	Plot with Marigold+legume
Plot with Marigold+legume	Plot with Marigold+legume	Plot without treatment	Plot without treatment

#### Terms to note:

"Experimental Unit" is the experimental material (the farmers plots) to which a treatment (marigold + legume) is applied.

"Treatment" is the factor (also called an independent variable) is an explanatory variable (marigold + legume) manipulated by the experimenter.

Control performing the experiment with more care is one way to exert local control.

"Replication": is the number of experimental units that receive each treatment.

"Randomization": the assignment of study components by a completely random method, like simple random sampling. Randomization eliminates bias from the results "Randomization" means the use of a random device to assign the treatments to the experimental units.

Measuring result of an experiment: In FFS experiment, the measurement of the results is undertaken through the process of AESA. At this stage, the variables data is collected routinely and analysed to provide real time solution for realism.

In this, FFS would set up a trial of an intercrop of Legume + Marigold to validate the management skills, practices and knowledge that will improve nutrient requirement of sesame.

## **Unit 5: Farmer Field School Learning Programme**

## Session 5: Developing FFS Phenology and Season long activity – the FFS Curriculum

After the FFS groups have decided upon the priority production constraints; a proper programme for learning must be organized following the season long activities (see table 1 below).

The learning programme should link activities to objectives and put them in a logical order that works towards addressing priority problems in the field. To ensure that all key topics are dealt with in the FFS cycle, the topics for learning are derived logically from the participatory planning activities. To assist the development of a learning programme, logical steps and guidelines are provided below.

## Topic 1. Crop Phenology

Objectives: By the end of the session, facilitator will be able to lead participants to understand:

- i. The growth cycles (length to maturity) of [named crop as selected by the CR-FFS]
- ii. Stage of critical development
- iii. Distinguishing physical attributes at each stage (the defining characteristics of each growth Stage)
- iv. Important agronomic requirement
- v. Observable parameters of good health
- vi. Important management options to master (Good Agriculture Practices)
- vii. Record management

#### Methods/Steps:

- Ask participants to list down all varieties of [named crop as selected by the CR-FFS] they know or grow
- Ask participants to estimate the usual length it takes from planting to maturity
- Ask participants to discuss the different development stages and describe the unique features of the growth stages
- Ask participants to draw the physical appearance which describes the distinguishing features of the stage from the next
- Ask participants to discuss the problems often experienced at each growth stage (moisture stress, nutrient deficiency, sensitivity to pest incidence/common pests, weed tolerance/notorious weed, disease tolerance/ common diseases
- Brainstorm with participants on management practices often undertaken
- Facilitator chooses appropriate topics from planting; nutrient management; weed control; moisture management; disease and pest management; pre-harvest and post-harvest management.

#### **Key Trainers notes**

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One core element of FFS is that the learning is season long and follow through from seed (sowing) to seed (harvesting). Such learning is well guided by phenology of the crop. Phenology is the study of cyclic and seasonal natural phenomena, especially in relation to climate and plant and animal life. Such knowledge can be used for site and variety selection, farm design, planning of labour and tools requirements, and timing of cultural practices as part of farm management. The annual growth cycle of mature, drying [named crop as selected by the CR-FFS] is often divided into a vegetative and a reproductive cycle. On seasonal level, flowering, onset of fruit, ripening, bud dormancy, leaf senescence, and drying of fruits are typical responses to temperature, some can be alteration by stress factors such as drought, nutrient deficiency or excess, or infection by pathogens.

## Table 1: An example of a generic season long calendar for crop study/phenology

CGS (Crop Growth Stage)	Germination/ Seedling stage	Juvenile stage	Pre reproductive stage	Early, mid & late bloom (this section can be expanded depending on space)	Ripening, Drying, Full maturity, Initial & late Dry down (this section can be expanded depending on space)
Appearance (phenology/ morphology)	Drawing	Drawing	Drawing	Drawing	Drawing
DAP (Days after planting)	0 to 5 days 3 to 25 days	26-37 days after planting	38-44 days after planting	45-52 53-81 82-90 days after planting	107-112 113-126 127-146 days
Distinguishing attributes	Emergence Seedling 3rd pair true leaf length =2 <sup>nd</sup>	First buds	50% open flowers	5 node pairs of capsules Branches/minor plants stop Flowering 90% of plants with no open flowers	Physiological maturity (PM) All seed mature 1st dry capsules Full dry down
Nutrient required	Nitrogen and Potassium for quick establishment	Nutrient uptake high, Nitrogen most needed	Nutrient uptake still high	Moderate	Low
Moisture required	Moderate,	Adequate soil moisture	Adequate soil moisture	Adequate soil moisture	Low
Weed susceptibility	Very susceptible Less weedy	Very susceptible to weed	Less susceptible	Less susceptible	Less susceptible
Pest sensitivity	Highly susceptible leaf feeding insects, seed eating pests	Highly sensitive to leaf feeders and suckers	Sensitive to leaf feeders/ suckers Stem/stalk borers	Sensitive to most pest damage – stink bugs, Corn Earworms, Fall Armyworms, Sorghum Webworms, midge	Highly sensitive to birds and insects
Disease tolerance	Less tolerant Dump condition & cool temperature	Less tolerant to root and foliar diseases	Moderately tolerant	Moderately tolerable, sensitive to smurt	Less tolerant
Observable parameter	Coleoptile emergence, number of leaves, plant population, Soil moisture	Height, number of leaves, number of tillers and appearance of nodes	Number of nodes, Number of leaves, ligule of last leaf and swelling of ear	Flag leaf development, ear emergence, flowering/bloom, ear filling	Colour of kernel, colour if grains
Relevant topics	Seed selection Land preparation Timely planting Pre-plant fertilization Soil moisture management IPM	Pest management (IPM) Nutrient management Moisture management Maximizing yield potential	IPM, yield maximization, Soil and Water management	Pre-harvest and post-harvest handling, marketing	Harvesting and Post-harvest handling, marketing
Management practices	More moisture will shorten germination and seedling stages but will lengthen the rest of the stages.				

## Topic 2. FFS Schedule for season long activities:

Objectives: By the end of the topic, facilitator will be able to develop:

- i. Pre-season activities
- ii. Season Activities
- iii. Facilitation planning
- iv. Integration of agronomic topic and empowerment topics

#### Methods/Steps:

- 1. Brainstorm with participants on the preparatory activities of an FFS;
- 2. Discuss with participants the estimated number of sessions and the relevant topics facilitators when planned for;
- 3. Discuss the relevant concepts under each session and the learning tools required to facilitate the session;
- 4. Brainstorm with the participants on the relevant season activities they will undertake to facilitate the agronomy of the given enterprises;
- 5. Brainstorm with participants how to integrate technical agronomic topics with other empowerment topics in a given session;
- 6. Discuss with participants on the post season implementation activities and generate the relevant topics and sessions it will require to complete the activities;
- 7. Ask each participant to develop a comprehensive FFS season long activities calendar.

### **Key Trainers notes**

FFS group often meet on weekly basis, but the frequency of meeting may depend on the intensiveness of the crop management. An FFS day comprises of activities which are conducted in the field of experiment (recording observations), analysis of field activities, presentation and interpretation of the activities analysed and synthesis for recommendation of actions required as lesson learning.

A typical FFS day is presented in the table below

Time	Duration	Activity	Objectives	Responsible person
Start 7:30am	20minutes	Opening roll call and brief recap	Record attendance & review past activities	Host team
	70minutes	AESA	To learn the condition of their farm and take	All
			critical management decision	
	30minutes	Group Dynamics	To establish group cohesion	Host team
	60 minutes	Topic/exercise of the day/special	Promote discussion and learning	Facilitator/ Subject Mat-
		topics		ter Specialist
	20 minutes	Review day's activity	Evaluate the group's achievements	Facilitator / host team
	10 minutes	Follow-up enterprise management	To apply the management recommended to	New Host team
		activities	improve the farm condition	
	10 minutes	Plan for the next meeting	To encourage participants, decide collectively	Facilitator, Secretary,
			on the next learning	Treasurer
	30minutes	Review of records (production, fi-	To monitor progress	Host team/Facilitator
		nancial, savings, etc.)		
	End 11.30	Closing prayer		

The farmer field school day is derived from the facilitator's main calendar which guides the activities. The calendar maps out what shall be done, why, when, where, who and how. The calendar design template is given below:

session	Crop Growth	Days after	Activity/Topic	Objectives	Key concepts	Tasks/	ΤοοΙ
	Stage (CGS)	Planting (DAP)				methods	
1	-	-	Ground working	Identify FFS pre-	Know the com-	Village walk	Map, GPS
				condition	munity		
n	Emergence	0	Site selection	Site matching for	Healthy soils	Soil survey	Soil color
				cereals			chart
nx	-	120	Group Marketing	Reduced transac-	Cooperative	Small and	Records
				tion costs		large group	charts

Note: The pre-season activities take place before planting takes place, hence the CGS and DAP are left blank. These are activities such as ground working, community meeting, etcetera. While the season activities start with planning for planting the enterprise until harvesting. The post implementation starts with post-harvest handling.

# **Unit 6: CFS Participatory Monitoring and Evaluation**

## Session 6: Participatory monitoring, evaluation and learning in CFS

Involving everybody in monitoring and evaluation of CFS interventions ensures that farmers take the lead in managing their own affairs. It also ensures that experience and lessons learned are fed into planning of future activities. This section provides a guide for CFS groups on how to plan and implement a simple system for assessment of impact and achievements. It as well introduces most significant change story method of capturing personal stories of change that are collected and interpreted at regular intervals of time.

Objectives: By the end of the session, facilitator will be able to guide participants to:

- i. Understand why and how farmers can benefit from participatory monitoring, evaluation and learning.
- ii. Develop and implement a simple monitoring plan.
- iii. Gain knowledge of how to apply tools and methods for gathering information

#### Methods/Steps:

- 1. Facilitator discusses the key changes participants expect, what shows changes are being made, how they are being made.
  - The farmers are encouraged to reflect on what problem they prioritised in their farming
  - How they agreed to solve the problems (reflect on step by step approaches)
  - Ask the farmers, what have we done, did it work, what did not work, do we have evidence of what we did?
  - Did the same thing work for individual members?
- 2. Semi-structured interviews are used to gain face-to-face information from individual farmers or a small group. To identify a focal activity, ask the following types of questions: "Is it a valued economic activity?", "Is it culturally accepted?", "Is it controversial?", "Is it suitable in the area?", "Does the focal activity (enterprise) have problems?", "Are there solutions for these problems?", "Is there a potential for development in that community?" and "Are the potential solutions self-sustaining?"
- 3. The sequence of steps to reach the overall goal should be linked to the problem analysis the CFS group carried out at the start of the CFS (see module 2). This process ensures that the problems identified as the core issues correspond to the objectives of the group.
- 4. Similarly, the activities should tackle the causes and reasons of the core problem. One CFS group can be involved in several activities aimed at reaching various results and objectives. However, all objectives should contribute to the same overall goal. In some cases, the CFS group activities are part of an already formulated larger project which already has a defined goal strategy. In this case it is important that the group review the strategy and analyse and revise it according to farmers' preferences and perception of the project.

## Topic 1. Monitoring

The monitoring plan will provide you with information and guidance on;

- How are we going to monitor the desired parameters and which tools or methods are we going to use to gather the desired information?
- Who should participate in the monitoring and what will be the roles and responsibilities of various stakeholders?
- Where will the monitoring take place; in which location and at what level.
- With what resources will the monitoring take place, financial, facilities and material manpower and expertise?
- When will it be monitored, when to start and finish in relation to the CFS cycle and how often should the monitoring be repeated?

#### **Key Trainers notes**

#### How to conduct participatory Monitoring and Evaluation framework in CFS

This approach encourages farmers to become more reflective and conscious about different strategies for improving productivity and managing scarce resources. PM&E becomes an internalised process for local communities who use this approach in order to make decisions regarding production, investment, and technology choice. In this context, participatory monitoring is linked to project planning and management, leading to decision-making and identifying alternative action strategies.

A Climate Field School (CFS) is typically involved in a range of activities with the aim of achieving certain objectives and goals, such as increased food security or improved household incomes. Each group usually also has rules specifying how the group and its members behave. However, how can the CFS group know if it is achieving those objectives and moving towards the goal? And how can the group know if the rules and routines applied are effective? To answer these questions CFS group need a system that provides for reflection and analysis of experiences and that helps improve future activities.

Participatory monitoring and evaluation (PM&E) provides the basis for such a system.

Without regular observation, reflection and corrective measures you cannot be sure where you are heading. Further, to determine whether a new practice tested in the CFS is better than the conventional method it is important to monitor and observe differences between the two. However, in a group activity are often complex and nobody feels responsible for monitoring. So certain rules have to be introduced for the monitoring to take place. Thus, a monitoring and evaluation plan has to be developed.

Example: Process indicators (focus on CFS learning activities)

Parameter Indicator	Indicators
CFS weekly learning sessions	Attendance rate/drop-out rate
	Number of CFS sessions held
	Number of AESAs carried out
Farmer to farmer exchange of information	Number of study tours
	Level of interaction with farmer innovators
	Number of field days held
Group experimentation	Number of CFS trials on soil/water options
Group dynamics/team building	Number of group dynamics per session
	Self-confidence among members to present in front of the group
	Number of poems and songs developed
Performance of facilitator	Participants' satisfaction at end of each CFS session

Impact indicators (Impact among individual CFS participants)

Parameter Indicator	Indicators
Improved livelihood status	Type of housing (mud, brick, iron sheet)
	Number of livestock (cows, goat, sheep)
	Number of children in school
	Number of status-related household assets
Household food security	Number of food-secure months/year
	Amount of stored food
	Number of meals per day
Farmer empowerment	Number of CFS members attending community meetings
	Number of outreach strategies (drama, poems, songs)
	Number of women in CFS leadership position
Increased profitability of farming	Yield per unit area (bags/acre)
	Cost of production
	Income of farm produce as percentage of total yearly income
	Household expenditure on high-value items
Conservation of land resources	Percentage of land areas with signs of reduced erosion
	Number of trees planted in the last year
	Area of degraded land reclaimed
Increased soil health	Soil colours
	Root penetration in the soil
Efficient use of water resources	Number of household buildings with roof water-harvesting structures
	Percentage of land with measures to control/harvest runoff
Adoption of sustainable farming practices	Percentage of farmers practising improved soil and water practices
	Land area under improved technologies(impact at group level)
Income generation	Income from group plots
	Level of group savings
	Involvement in income-generating activity
Building of farmer organization	Level of networking with other CFS groups
	Level of communal action

## Topic 2. Pre-test and post-test

One tool is a test that members take at the beginning and the end of the CFS. The pre-test, taken at the beginning of the CFS, records how much the group already knows about the study enterprise and identifies knowledge gaps. The post-test, taken at the end of the CFS, shows how much the group has learned from the CFS process.

**Objectives:** By the end of this topic, the facilitator will be able to

- i. Record participants' knowledge about the study enterprise at each growth and development stage
- ii. Measure the level of knowledge acquired at each stage of the crop growth and development

**Materials:** Manila paper or cardboard; Marker pens, paper bags, masking tape, rubber bands, etc.; and Plastic bags, live, dead or preserved specimens.

#### Duration: 2 hours

#### Methods/Steps:

- 1. Develop pre-set objective questions with 4 5 options; at least 10 questions for that growth stage. Write the questions precisely and meaningfully on piece of manila card with markers; each question on separate card. Write the options for each question on a manila card, each option on a separate colour of manila card.
- 2. Prepare 5 ballot boxes under each question and explain to participants, each question has one correct answer options marked on manila card as placed against the ballot boxes.
- 3. Cut manila cards into pieces as ballot paper and mark as number 1 to the last number of participants say 30. Mark this numbers against the name of the participants in their membership register.
- 4. Distribute the ballot papers to the participants according to the assigned number of each participant; make sure each participant gets ballot papers which equals the number of questions.
- 5. Explain to the participants how to answer the questions. For each question only one ballot paper should be placed in any of the ballot boxes for what you consider the correct answer. If you don't know or you are not sure place your ballot paper in I don't know or not sure option box.
- 6. If the numbers are high, the facilitator can make two or more polling stations with ballot boxes and questions and asks volunteers who can read correctly to assist as agents at each polling station.
- 7. Voting should be done secretly and therefore one person at a polling station at a time and no discussions are encouraged at a polling station.
- 8. For every completed question voted, the facilitator changes to the question at the polling station and also changes the multiple choice options on the polling boxes and explain them to the participants before voting.
- 9. The facilitator makes counts of each answer after every voting and displays the results for correct answers and incorrect answers.
- 10. At the end of the exercise, the facilitator discusses with the participants how much they know about the enterprise and that the exercise shall be repeated at the end of the growth stage to measure changes in the knowledge achieved.
- 11. Discuss the questions and answers with the participants. Ask the members why they chose the answers they did. While the answer sheets will give you a baseline of the participants' knowledge, a discussion with the group will give you information on how to develop the learning programme to check the group's strengths and weaknesses.
- 12. The facilitator then analyses each participant who voted correctly or wrongly for each questions to identify individual support and guidance.
- 13. The facilitator can conclude on who is less knowledgeable or more knowledgeable and also which topic is well known and not known by the participants

Name	Qn 1	Qn 2	Qn 3	Qn 4	Qn 5	Qn 6	Qn 7	Qn 8	Qn 9	Qn 10	Score
Apio	Х	V	V	V	Х	Х	V	V	Х	Х	5
Aleni	V	Х	V	Х	Х	Х	Х	V	V	Х	4
Birungi	V	Х	V	Х	V	V	V	V	V	Х	7
Kumagum	x	Х	V	Х	V	V	Х	Х	V	V	5
Score	2	1	4	1	2	2	2	3	3	1	

#### **Key Trainers notes**

- The facilitator should prepare the questions at home/office. The questions must be practical and based on the availability of the specimens and materials. They should not be formulated from textbooks.
- The samples should be fresh/live and maintaining their colours, with evident symptoms and characteristics.
- The facilitators should arrive earlier to prepare and collect specimens on the day of this exercise.
- If possible, ask for help from a colleague or a farmer facilitator in undertaking the session.
- Take care when disclosing the results of the ballot. Do not disclose to those members who do not want to know the results

#### Topic 3. CFS Evaluation

**Objectives.** By the end of this topic facilitator will be able to organize participants to:

- i. Assess and evaluate the result of study at the end of the season;
- ii. Enhance members' capacity to analyse at the end of CFS.

Materials: All the AESA sheet kept from day one to the end, flip charts, prepared flip charts form for analysis

#### Methods/Steps:

- 1. Facilitator welcomes the participants and informs them of the end of studying activities which also marks the end of the season.
- 2. The facilitator also informs the participants that what they tested in their experiment will be evaluated as per the solution option assessment which was set before the start of the experiment.
- 3. The facilitator brainstorm with the participants on the criteria they used to choose the solution option of the experiment.

Evaluation Criteria	Plot 1	Plot 2	Plot 3	Control
Increased productivity				
Less cost of production				
Easily accessible				
Easily applicable				
Sustains the soil productivity				
Socially equitable				
General Comments				

4. Once each group has their identified criteria and evaluated, run the cost benefit analysis for the plots as shown in the following matrix.

Evaluation criteria	Plot 1	Plot 2	Plot 3	Control
Yield				
Price of product				
Cost of inputs				
Profit (Y.P-COI)				

- 5. Facilitator presents in the plenary session and lets the participants identify advantages and disadvantages of each plot and treatment. Each criterion must be analysed and noted in the column for comment.
- 6. Discuss among the group why those results came about, and the benefit and disadvantage of each practice applied in the plots.
- 7. Finally discuss how experiment using AESA contributed to the analysis and decision making.
- 8. Prepare experiment analysis report.

# Climate- Resilient Farmer Field School Implementation

In this module, the CFS facilitators will be taken through the various units of concepts applied in CFS activities implementation. The facilitator in order to run a CFS successfully must be well conversant with important concepts which build a CFS. The concepts which are key to field schools' implementation centre on agroecology of a particular value chain commodity, participation of members in testing alternative options to production, economical decision options in farming and then social equity.

## This module discusses in details the following concepts:

- i. The concept of agroecology
- ii. The concept of participatory experimentation
- iii. The concept of farming as a family business
- iv. The concept of gender

## Unit 7: Introduction to the Concept of agro-ecosystem

Explain agro-ecosystem (AESA) concept from first principles to demystify it = beginning with Agriculture, Ecology, Agroecology, System, Ecological System (Ecosystem) to Agro-ecosystem.

## Session 7: Agro-Ecology

Agroecology – 'the application of ecological concepts and principles to the design and management of sustainable agroecosystems' – has three facets: (1) a scientific discipline involving the holistic study of agro-ecosystems, including human and environmental elements; (2) a set of principles and practices to enhance the resilience and ecological, socio-economic and cultural sustainability of farming systems; (3) a movement seeking a new way of considering agriculture and its relationships with society.

Objectives: By the end of this session participants will be able to understand:

- i. Ecosystem
- ii. Agro-ecosystem
- iii. Agro-ecosystem analysis
- iv. Principles of Integrated Pest Management

## Topic 1. Understanding ecosystem

Objectives: By the end of this session participants will be able to understand the

- i. Types of interactions within communities of living organisms; living organisms and the non-living
- ii. The importance of these interactions for the crop production

Materials: Notebook, pen/pencil, container.

#### Duration: 45 minutes.

#### Methods/Steps:

- 1. Divide participants into small groups.
- 2. Each group will go make movements around and observe the living and the non-living things in the environment, where they are located, what they are connected with.
- 3. After 20 minutes of observation, discussion and note-taking the group returns to the session hall.
- 4. Each group then makes a sketch showing all the things they observed and draw lines to show how things are connected and illustrate how they affect each other.
- 5. In a plenary session, each group presents and explains their drawing to the other groups.

## Questions

- What did you find?
- Where did you find them?
- What connection did you observe among the things you observed?
- What do you think would happen if some of the things you observed were absent?

#### **Key Trainers notes**

- Ecosystems are complex systems involving individual organisms, their physical surroundings, and interactions between the organisms and between the organisms and their surroundings.
- Organisms both cooperate and compete in an ecosystem; the interrelationships and interdependencies of these individual organisms may generate ecosystems that are stable for hundreds or even thousands of years.
- In the Ecosystems curriculum, the main concepts are energy transfer, matter recycling, the causes of decomposition, symbiotic and mutual relationships, and issues of balance and flux in ecosystems.
- In order to live, all organisms (plants and animals) need nutrients and energy. The energy needed by organisms is released from matter and nutrients through the process of *respiration*.
- Organisms called *autotrophs* or *producers* plants, blue-green algae, and photosynthetic bacteria make their own food by carrying out the process of photosynthesis.
- All other organisms, called *heterotrophs* or *consumers*, depend on producers for nutrients and energy. *Herbivores* are consumers which eat only plants. *Carnivores* are consumers which eat other animals. *Omnivores* are consumers which eat both plants and animals. *Scavengers* feed on dead organisms, plant or animal. *Decomposers* break down the complex compounds of dead plants and animals into more simple molecules that they can absorb. Consumers which eat only plants are called *primary consumers*. *Secondary consumers* eat primary consumers. *Tertiary consumers* consumers.
- Think about the trophic levels and food chains (Ask participants to draw food chain and food web)
- There are many interdependencies in ecosystems. Symbiosis refers to the interaction of two species that live together in more or less direct contact. There are different ways such interactions can affect species. In the case of mutualism, both organisms benefit from their interaction. In the case of parasitism, one organism benefits at the expense of the other: the parasite benefits by living off the other organism, but the other organism usually suffers as a result of this interaction. There are other forms of symbiosis as well, such as commensalism and competition.
- The states of balance and flux are important in ecosystems. At the level of populations (instead of individuals), predators help to keep the populations of prey in balance. This balance is important for the prey population: it helps the prey population live within the limits of resources available to them in the ecosystem. When reasoning about balance, it is easy to get caught up in the idea that only balance is good. Certainly, balance is what enables stability. However, flux also plays a natural and important role in ecosystems. Flux creates new opportunities within an ecosystem and enables new species to become established.
- Balance in ecosystems can be hard to observe when a system is actually in balance. It is when that balance is disturbed (sometimes by human impacts) that the complex sets of interactions that result in balance become obvious. Because ecosystems often entail a fair amount of flexibility, initial impacts may not appear to affect the system until it is far too late to undo the disruption.

#### Topic 2: Understanding agro-ecosystem

**Objective:** By the end of this session participants will be able to appreciate ecological processes which occur within a farm/ managed ecosystem

Materials: Notebook, pen/pencil, container.

Duration: 45 minutes.

#### Methods/Steps:

- 1. Let the small groups return to a farm/field.
- 2. Each group will go to the field and look around as far, and as close, as the eye can see, list all the living and non-living things that can be seen, and discuss between them how they are connected or how they affect the plant in the field/ farm.
- 3. After 20 minutes of observation, discussion and note-taking the group returns to the session hall.
- 4. Each group then makes a sketch showing all the things they observed and draws lines to show where they were observed on the plants or in relation to the plants.
- 5. In a plenary session, each group presents and explains their drawing to the other groups.

#### Questions

- How many connections did you find?
- What would happen to all other things if we started to remove one element by element?
- What things do we often try to change in our fields?
- What other things in the environment would each of these changes affect?
- How often do we think of these connections and effects when we are making our daily decisions in the fields?

#### **Trainer's notes**

To deal with global problems of hunger and malnutrition, natural resource degradation, loss of biodiversity, and rural decline, alternative visions for land use and natural resource management are needed; as present practices and systems are making slow or no progress in achieving these objectives. Agroecology is a new combination of policies, institutions, technologies and values, linking individual interests and efforts with those of the communities and societies they live in, better balancing the competing aspirations for raising agricultural productivity, ensuring ecological sustainability, and promoting rural vitality.

An **agro-ecosystem** is the basic unit of study in agroecology and is somewhat arbitrarily **defined** as a spatially and functionally coherent unit of agricultural activity, and includes the living and non-living components involved in that unit as well as their interactions.

An agro-ecosystem simply put is a farm ecosystem. The concept provides a framework with which to analyse a food production system as a whole including their complex sets of inputs and outputs and their interconnections of their component parts.

Three dimensions of understanding an agro-ecosystem framework are:

- Economic dimension
- Environmental/ecological dimension and,
- Social/equity dimension

#### Topic 3: Agro-ecosystem analysis (AESA)

The health of a plant is determined by its environment. This environment includes abiotic factors (i.e. sun, rain, wind and soil nutrients) and biotic factors (i.e. pests, diseases and weeds). All these factors can play a role in the balance, which exists between herbivore insects and their natural enemies. If we understand the whole system of interactions, we can use this knowledge to reduce the negative impact of pests and diseases.

#### **Objectives:**

- i. By the end of this session participants will be able to make
- ii. Good field/farm observation
- iii. Analytical recording
- iv. Good analysis of the observation regarding the entire field/farm
- v. Make logical critical farm management

#### Duration: 45 minutes.

#### Methods/Steps:

- 1. Define AESA and briefly explain its 4 parts. Inform the group that it is the main decision-making tool for FFSs and that it involves regular field observations. The first of those observations will be during this session.
- 2. Use an exercise to illustrate the importance of making good observations. You can use the exercise to the left.
- 3. Explain that observation forms the basis for good management of the FFS's enterprise. Making proper observations is the first step in making good decisions.
- 4. It's time to take the group out into the field so that the mini groups can do observations.

Explain the two field observation processes - spot and general observation

#### Activities

- 1. Go to the field in groups. Walk across the field and choose 10 plants randomly. Observe keenly each of these plants and record your observations:
  - Plant: observe the plant height, number of tillers, crop stage, deficiency symptoms, etc.
  - Pests: observe and count pests at different places on the plant.
  - Defenders: observe and count parasites and predators.
  - Diseases: observe leaves and stems and identify any visible disease symptoms.
  - Rats: count numbers of plants affected by rats.
  - Weeds: observe weeds in the field and their intensity.
  - Water: observe the water situation of the field.
  - Weather: observe the weather condition.
- 2. While walking in the field, manually collect insects in plastic bags. Use a sweep net to collect additional insects. Collect plant parts with disease symptoms.
- 3. Find a shady place to sit as a group in a small circle for drawing and discussion.
- 4. Kill the insects with some chloroform on a piece of cotton.

- 5. Each group will first identify the pests, defenders and diseases collected.
- 6. Each group will then analyse the field situation and present their analysis in a drawing (AESA drawing).
- 7. Each drawing will show a plant/hill representing the field situation. The weather condition, water level, disease symptoms, etc. will be shown in the drawing. Pest insects will be drawn on the left. Defenders (beneficial insects) will be drawn on the right. Write the number next to each insect. Indicate the plant part where the pests and defenders were found. Try to show the interaction between pests and defenders.
- 8. Each group will discuss the situation and make a recommendation.
- 9. A member of each group will now present their analysis in front of all participants. Make sure that a different person will present each week.
- 10. The facilitator will facilitate a discussion by asking guiding questions.
- 11. The facilitator also makes sure that all participants (also shy persons or illiterate persons) become actively involved in this process.
- 12. Formulate a common conclusion. The whole group should support the decision on what field management is required.
- 13. Make sure that the required activities (based on the decision) will be carried out.
- 14. Keep the drawing for comparison in the following weeks.

#### Questions

- Can you summarize the present situation of the field?
- What aspect is most important at this moment?
- Is there a big change with last week? What kind of change?
- Is there any serious pest or disease outbreak?
- What is the situation of the beneficial insects?
- Is there a balance in the field between pests and defenders?
- Where you able to identify all pests and diseases?
- Do you think the crop is healthy?
- What management practices are needed at this moment?
- When will it be done? Who will do it? Make sure that responsibilities for all activities are being discussed.
- Are you expecting any problems to emerge during the coming week? What problems? How can we avoid it? How can we be prepared?
- Can you summarize the actions to be taken?

#### Key Trainer's notes

The AESA process is a four stage activity process as described below:

**1. Field observation:** While the farmers gather the data in the field they do it by careful observation of the agro-ecosystem of the plant. E.g. they would select 10 stations (plants) in either zig zag pattern across the plot or diagonally across the plot. Care is taken not to choose plants at the boundary, under trees or near a physical feature within or near the field. The observation is made by mini group who have their own secretary to record and discussion, samples of what is not clear for the farmers are collected for further identification and analysis.

AESA Data Collection Sheet for [named crop as per group choice]											
Group:											
Date:				A	ESA Se	ession No.					
Weather Condition							Time				
	Tem	D		R	ainfall						
Days after planting	Days after planting			Cr	Crop growth stage						
Parameters	Stati	ons					I		Tota	I	
a) Pests Image 3: Diagram of the plant under study	1	2	3	4	5	6	7	8	9	10	
b) Natural Enemies											
Crop development parameters											
General Information											

**2. Analysis/reflections and preparation of AESA sheet:** The raw data is analysed by the farmers in a simple form and presented on a poster known as an AESA sheet. The data sheet entails the following:

- 1. The name of the group,
- 2. The AESA sheet number,
- 3. The condition of the day,
- 4. The time and date the data was collected,
- 5. The background information of the garden.

In the middle of the page, there is a picture of the crop drawn to represent the physical appearance at the time.

Interaction with pests often presented as picture and the number observed at a particular location on the plant or its surrounding is presented on the middle left side of the picture.

The beneficial or natural enemies are presented through drawings and numbers are presented on the middle right side of the picture.

The plant performance observable parameters such as height, stem size, leaf numbers, etc. are presented on the top righthand side of the sheet.

General observations which are mainly qualitative are recorded on the lower left-hand side of the sheet.

While the recommendation or management decisions are recorded on the lower right-hand side of the sheet as presented in the box.

## Generic AESA SHEET #

#### MODRITA FFS 7:42am

#### General Information:

- Cropping system: Monocrop
- Crop variety: Maksoy
- Spacing: 75\*30cm.

- Growth parameters:
- Height, 70cm
- Branches,3 (average)
- Fruits, 5 (average)



#### General field observation:

- Staking not well done
- Yellowing of leaves with black spots
- Wilting of flowers
- Weedy in some plots
- Rotting of fruits
- Clear signs of pests and disease destruction

#### Management recommendation:

- Removal of affected or rotten fruits and bury
- Uprooting of affected plants
- Handpicking of the caterpillars in the morning or evening
- Application of ashes on the leaves
- Timely weeding of the plots
- Timely staking of the plants

- 1. Synthesis/Abstract conceptualisation: Normally done by the help of a technical facilitator after all the mini groups have made their presentation. They discuss issues relating to how realistic the decisions recommended would benefit the farmers looking at the economic, social (labour and ethics) and environmental factors. In the synthesis comparison is as well drawn from the various performance indicators by discussing the differences observed under different treatments. Furthermore, the mini-groups clearly refine their observations in accordance to the growth development stages with focus on only what is economically important to growth stage. Thus the group will have only two AESA sheet corresponding to the treatments from which the data has been collected.
- 2. **Recommended action/Active experimentation:** Once the recommendations have been accepted and agreed upon by the entire group as logical, immediate actions are suggested and taken before the next period of observation. This implies that the urgency of the action depends on the critical level observed and reflected upon.

Decision making in Integrated Pest and Production Management requires a thorough analysis of the agro-ecosystem. Participants in IPM training will have to learn how to observe the crop, how to analyse the field situation and how to make the proper decisions for their crop management. This process is called the Agro-Eco-System Analysis (AESA).

## **Topic 4: Understanding Integrated Pest and Production Management**

"IPPM" in the very traditional sense usually refers to Integrated Pest Management: a biologically intensive method of managing pests. It means the careful consideration of all available pest control techniques and subsequent integration of appropriate measures that discourage the development of pest populations and keep pesticides and other interventions to levels that are economically justified and reduce or minimize risks to human health and the environment. IPM emphasizes the growth of a healthy crop with the least possible disruption to agro-ecosystems and encourages natural pest control mechanisms.

Objectives: By the end of the topic participants will be able to facilitate the participants to master:

- i. The four principles of IPPM
- ii. The various steps of conducting IPPM
- iii. Know how to establish an FFS IPPM Validation study

#### Methods/Steps:

- 1. Ask participants to discuss what they know about pest;
- 2. Brainstorm with participants on what farmers do when it comes to pest control;
- 3. Brainstorm whether participants are familiar with IPPM approaches;
- 4. Discuss with participants the principles of IPPM and generate what activities are conducted under each principles;
- 5. Discuss with participants how they conduct experiments.

#### **Key Trainers notes**

#### **IPPM Principles explained**

Sustainable agriculture requires that today's production needs are met while *improving* the production resource base for future generations. IPPM, as a corner stone of sustainable agriculture, seeks to improve farmer practices in order to create higher profits while *improving* environment quality and community health. In order to do this IPPM implementation is based on four practical principles:

- Grow a healthy crop
- Conserve natural enemies
- Observe fields regularly
- Farmers become experts

These principles describe the main actions of IPPM implementation. Specific processes that take into consideration the variation of each field and farm family backup each principle, so that management is able to be done on a field-by-field, season-by-season basis. Each principle is described below:

**Grow a Healthy Crop** means using varieties resistant to major pests and diseases but well adapted to the local environment. The principle also includes using proper fertilizers (chemical and organic), irrigation, and soil management which are critical for healthy plants. A healthy crop can *resist* diseases and *compensate* for damage caused by diseases and insects so that plant injury does not always lead to yield-losses. A robust healthy crop is the first step in IPPM methods, and foundation for an optimal yield.

**Conserve Natural Enemies.** In all agricultural ecosystems, there are predators (e.g. insects, spiders, frogs, etc.), parasites and diseases which attack eggs, larvae, nymphs, pupae, and adult stages of insect pests. These "natural enemies" are the "friends of farmers" and occur naturally in all rice paddies, orchards and vegetable fields. They biologically control most insect pests most of the time.

Learning to recognize and manage these natural enemies is one major focus of IPPM training so that they are not destroyed by unnecessary applications of herbicides, insecticides and fungicides but are allowed to work for the farmer's benefit.

**Observe Fields Regularly** is necessary to assess crop development, diseases, weeds, rats, and insect pest populations. In most cases, an experienced IPPM farmer does this observation during a short time (usually less than a few minutes per field) while carrying out other crop maintenance activities (irrigation, etc.). Observations should determine how the crop is growing and if there are pests or diseases causing yield-loss; remembering that not all injury causes yield-loss. Natural enemies are usually present and sufficient to keep pests at low numbers. Weather conditions, soil nitrogen levels, and degree of host plant resistance will determine if diseases will subside or become more serious. In the case of rats, community level dynamics determine rat infestations and control programs. IPPM Farmers must be knowledgeable of these factors to properly and economically manage crops. In some cases natural enemies, plant resistance and plant compensation cannot prevent yield-losses due to weeds, rats, insects, or diseases. Proper assessments must be made to effectively and profitably manage the use of inputs such as labour, quality seed, resistant varieties, fertilizers, drainage systems, community organizing and pesticides in order to ensure profitable production. Observation skills and decision making is key to becoming an expert IPPM farmer and require field level practice for most farmers and extension staff.

As earlier mentioned in the previous session, AESA is a tool in implementing the principles of IPPM.

#### Steps in conducting an IPPM in Farmer Field School

These steps are well planned during the phenology development and successively adjusted during the season

- Proper identification of damage and responsible "pest": Cases of mistaken identity may result in ineffective actions. If
  plant damage due to over-watering is mistaken for a fungal infection, a spray may be used needlessly and the plant
  still dies. If a beneficial insect is eating aphids on a sickly plant, the insect might be killed because of "circumstantial
  evidence", and make the problem worse.
- 2. Learn pest and host life cycle and biology: At the time you see a pest, it may be too late to do much about it except maybe spray with a pesticide. Oftentimes, there is another stage of the life cycle that is susceptible to preventative actions. For example, weeds reproducing from last year's seed can be prevented with mulches.
- 3. Monitor or sample environment for pest population: Preventative actions must be taken at the correct time if they are to be effective. For this reason, once you have correctly identified the pest, you begin monitoring BEFORE it becomes a problem. For example, in farms with volunteer crops, similar pest may be expected to appear, scouting may be carried out before FFS starts. Some of the things you might want to monitor about pest populations include:
  - Pest present/absent?
  - Distribution all over or only in certain spots?
  - Increasing or decreasing in numbers?
- 4. Establish action threshold (economic, health or aesthetic): In some cases, a certain number of pests can be tolerated. Sesame plants generally can tolerate a small load of aphids without being economically damaged.
- 5. Choose appropriate combination of management tactics: For any pest situation, there will be several options to consider.
- 6. Evaluate results: Did your actions have the desired effect? Was the pest prevented or managed to your satisfaction? Was the method itself satisfactory? Were there any unintended side effects? What will you do in the future for this pest situation?

# Unit 8: Introduction to the concept of experimentation (participatory technology development)

## Session 8: Validation or comparative experiment for IPM

#### Introduction

Experimentation or Participatory Technology Development – PTD – in FFS takes the form of either comparative or validation of technology. The previous step taken in FFS group action planning is a process of collective and collaborative inquiry with the purpose of initiating community action on solving IPPM problems. The validation or comparative studies in farmers field schools are being implemented to empower participants (both farmers and facilitators) with analytical skills to investigate into cause – effect relationship of problems in farming practices and thereby stimulate them to design a set of actions for participants learn from other farmers response at each stage of intervention and draw lessons for future field school programs implementation strategies. In addition, the participants develop analytical skills and attitudes in working within participatory framework in planning, organising, and evaluating development activities.

**Objectives:** By the end of this session participants will understand:

- i. How to set up an experiment field,
- ii. How to monitor and evaluate participatory experiment,

#### Duration: 60 minutes

#### Activity: Transect walk,

#### Methods/Steps

- 1. Reflect the production constraints identified and the priority constraint selected
- 2. Reflect on the solutions proposed and consider them as general good agricultural practice
- 3. Discuss in details with the participants the singled out option agreed on to be tested i the validation or comparative or trial experiment
- 4. Discuss with participants how experiments are organised (key elements of experiment)
- 5. Take a field walk and construct a transect across the proposed FFS site to assess for the feasibility of the experiment sites, record your observation
- 6. Discuss the observation in a large group and qualify or disqualify the sites
- 7. Set the experimental plots in which the farmers will conduct their EASA

#### **Key Trainers notes**

- All experiments are based on well identified problem; in this case, the FFS has a production constraint to solve. Hence the goal of the FFS will be to solve the production constraint, hence increasing productivity.
- The solutions proposed for the identified problem becomes the treatment that will be applied with aim of solving the constraints much better than the other options. All other options identified if fall with the good agricultural practices should be applied in the field with variations of only that treatment to be tested.
- Experiments are replicated to minimise biases, local variations and reduce the chance of false conclusion and a control is applied to set a benchmark for comparison and conclusion.
- Experiments are to all established at once to ensure uniformity, all activities in experiment should applied at once to minimise creation of local variations
- Experiments must be labelled clearly to include the treatment, date of planting, variety planted, and the objective of the experiment and the name of the group conducting it.
- FFS experiment should be kept very simple and if possible, should be a single factor experiment, for example, row cropping in controlling a given pest or disease
- Data collection must be done routinely at a predefined interval (AESA data sheet) often weekly, each mini group (4-6 members) conduct separate data collection analyse separately and synthesised together to make a joint action under each treatment. The size of the experimental plots should be fair enough to accommodate 20-30 members during study.
- Evaluation of the experiment should be based on cost-benefit analysis. If the margin of benefit is small, that solution is not worth investing in
- Innovation, technology gap and new problems resulting from the experimental activities shall be utilised as additional basis for prioritising; problems and activities in future experiments to be established in the community.
- The experiment must run parallel to the growing season so that the good agricultural practices being applied on the experiment are taken up by the farmers who promptly apply it on their own farms. Mini group once in a while monitor the members' activities to reflect whether learning is taking place.
- While participants conduct AESA on experimental plots, they are supposed to compare their observation with their farm performance and apply the same recommendations generated from their studies.
- During the evaluation while the group conduct the evaluation of their study plots, farmers should do the same for their own farms to see whether they are making improvement from the learning.

## Unit 9: Introduction to the concept of farming as a family business

## Session 9: Farming as a family Business

#### **Objectives:**

- i. Participants will be able to understand
- ii. What Business means
- iii. Understand farmer as a businessperson
- iv. Manage the farm business
- v. Analyse the farm profitability
- vi. Plan successful farming business
- vii. Conduct marketing of the business

## Topic 1: What is a business?

Objective: By the end of this topic participants will be able to identify the key components of a business

Duration: 20 minutes

Materials: Flip chart, markers, note books and pens

#### Activities:

- 1. Ask participants to reflect if they are business people (3 min)
- 2. Ask each participants to write down what they do in their business (1 min)
- Help the participants to identify key elements of a business, note clearly "inputs, production process and marketing" (6 min)
- 4. Discuss with the participants with example of a business like "making chapatti by the roadside" (1 min)
- 5. Using the example above identify the inputs, process of making chapatti and the marketing of chapatti (3 min)
- 6. Ask participants, "are you also a businessperson?" (1 min)

#### Wrap up what a business is (10 minutes)

Any venture in commerce which supplies goods, works and/ or services in a market with an aim of generating a profit. It must be understood that, in a business inputs are processed to produce a product. It is the product which is marketed at a given price to the consumer who demands it at a profit.

From this definition, any undertakings aimed at generating profit to the owner by processing the input invested through skills to produce a marketable product.

#### Quick concluding question: Is Farming a business?

#### **Topic 2: Entrepreneurs**

**Objective:** By the end of this topic, participants will be able to identify their business skills that make will make them successful entrepreneurs.

#### Duration: 25 minutes

Materials: Flip chart, markers, note books and pens

#### Activities:

- 1. Brainstorm: Who is an entrepreneur (3 min)
- 2. During the brainstorming record on flip chart characteristics of entrepreneurs (3 min)
- 3. Summarise the key characteristics of entrepreneurs with participants (4 min)
- 4. Does a farmer fit in our description of entrepreneurs, debate? (5 min)

#### Wrap up with characteristics of entrepreneurs (10 minutes)

An entrepreneur is someone who undertakes innovations and finances business intelligence in an effort to transform innovations into economic goods and ultimately profit.

Some qualities of an entrepreneur include

- Information seeker
- Opportunity seeker

- Goal setter
- Systematic planner
- Quality and efficiency oriented
- Persistence
- Risks taker
- Relationship builder

Entrepreneur is one of the important factors of production. The factors of production include Land, Labour, Capital and Entrepreneurship.

Entrepreneur brings together all other factors for production - Land (including all natural resources), Labour (including all human resources), and Capital (including all man-made resources). He uses the other three factors, brings them together, organises and coordinates them so as to earn maximum profit.

## Topic 3: Farming as a business

The idea of farming as a business emerged from the need that subsistence farming cannot cope up with the demands of agricultural products for commercial and industrial purposes. Subsistence farmers undertake farming to meet the goal of household food Security. They only commit surplus of what they produce to the market to meet other domestic needs.

**Objective:** By the end of this topic participants will be able to identify the limitation of subsistence farming to meet the household wellbeing.

#### Duration: 35 minutes

Materials: Flip chart, markers, note books and pens, manila cards

#### Activities:

- 1. Distribute 6 cut pieces of different colour manila cards to each participants and ask the participants to take personal examination and answer the following questions: (10 min)
  - What is my goal in farming (only give the top most preferred goal for your farming)
  - What do I produce best as a farmer (you may have many, but select the best)
  - What inputs do I use in my farm (list all the known inputs you use)
  - What do I do to produce the product I need (list all the process for production)
  - Who are the buyers of my products (list all buyers and potential buyers)
  - Do I always make profit from my farm or not (Either "Yes", "No" or "Don't know")
- 2. Collect the response and review together with participants under guidance of (5 min)
  - Farm inputs
  - Farm production Process
  - Marketing (products, customers and profits)
- 3. Write on 7 different coloured cut out pieces of manila cards the criteria for assessing subsistence and commercial farming. Divide the participants randomly in 3 groups; distribute at least 2 cards per group for self-assessment as commercial or subsistence. (3 min)
- 4. Ask the group to make plenary presentation as the rest scrutinise (6 min)
- 5. Brainstorm with participants' households needs that constitute wellbeing and then discuss whether subsistence farming would meet them. If it not, brainstorm on how to improve it.

# Wrap up the comparison of farming subsistence and commercial farming and then changing farmers' farming objectives (10 minutes)

Factors	Subsistence	Commercial
Objective	Aimed at food security	Aimed at profit optimization
Risk behaviour	Risk averse	Risk takers
Record keeping	Mental records or basic	Written records
Customer	Not customer targeted	Customer targeted
Cash	Social orientation /income generation	Market oriented, price sensitive
Investment	Family input, local inputs	Cash investment, improved inputs
Skills	Limited to family skills	Access to technical skills

In order for a farming family to meet the basic needs for decent shelter, health services, food secure, education, clothing, etc., a farming family must change farming goal towards profit maximisation. This implies commercialising the farming to business undertakings. A farmer should understand that they are entrepreneurs who are taking business opportunities to make more profits and must improve their management

#### Why practice farming as a family business?

Among most farmers in Uganda, family is the unit of production providing most of the production inputs (family land, family labour, family capital and family as entrepreneur). In line with this observation, challenges have emerged on benefit sharing, dwindling family resource basis, changing focus of youth to urban centres, commercialization of land and lack of farming skills to adapt climate change and life trends.

Increasing beneficial engagement of family unit (women, men, girls and boys) in farming should be shifted to maximum profit - hence the concept of farming as a family business.

This should be done when it comes to farm decisions; the entire family member should be involved on what enterprise to invest in, the family goal, resources to invest, role sharing and benefit sharing at the family.

This motivates the youth in agriculture, promotes sustainability, increase family resource base and utilize all the family skills and minimizes costs of production.

#### Topic 4: Farm business management

Farm business management is important for farm resource allocation to optimise the benefit between the scarce resources and family farm business goal. Farmer Field School aims at empowering farmers in making rational farm decision to ensure optimum profit.

Objectives: By the end of this topic participants will be able:

- i. Develop realistic family farm business objectives, example, maximize farm profit and improve standard of living of their families.
- ii. Identify the means available to achieve the objectives, i.e., the factors of production.
- iii. Take rational decisions of the farm profit influencing factors such as biological, technological, social, economic, political and institutional factors.
- iv. Identify alternative uses of resources or factors of production.

#### Duration: 60 minutes

Materials: Flip chart, markers, note books and pens, manila cards

#### Method/Steps:

Break up the group into sub groups, discuss the following questions and present:

- Why does family undertake farming business do? (10 minutes)
- How do families ensure that they satisfy those reasons (10 minutes)
- What do you consider in selecting profitable enterprises? (10 minutes)
- What management decision do you need to maximize profit (10 minutes)

#### Wrap up the session (20 minutes)

Family farm business has mainly two goals:

- 1. Increased profit from the family business
- 2. Improve wellbeing of the of the family

Family farms combine the hired and family resources skilfully to produce products which meet their goals Family farms select enterprise that would help them to maximise their profit and achieve maximum profits.

Weight	Criterion	Reason
10	Profitability	The ultimate goal of an enterprise is to earn maximum profits; this criterion gets the highest weight.
9	Market availability	Availability affects profitability.
8	Start-up costs	The entrepreneur/group does not have a lot of capital, so one re- quires an enterprise with low start-up costs.
7	Turn around period (Business cycle/ Duration to Maturity)	The money made in the enterprise needs to be used to pay back the SHG members' loan as soon as possible.
6	Risks	The entrepreneur/group is comfortable with risk-taking after attend- ing entrepreneurship training. Thus, this is weighted lower than most criteria.
5	Skills	The group has developed skills it can use in each of the 5 catego- ries (enterprises). Thus, skills get the lowest weight.

#### Farm management decisions a farmer takes

Farmer goal in farm business is to maximise profit and improve wellbeing. This can be achieved through:

- Improving yield and reducing losses
- Fetching attractive prices (market premium)
- Reducing the cost of production
- Managing risks

## Topic 5: Farm Budgeting

Farm budgeting is a process of estimating costs, returns and net profit of a farm or a particular enterprise. Budget is a statement of estimated income and expenditure.

**Broad Objective:** By the end of this topic, participants will be able to identify the inputs, production and marketing activities in a farming business

Specific Objectives: By the end of the topic, the facilitator will be able to organise participants to:

- i. Identify the key budget items
- ii. Know why those items are needed
- iii. Identify the funding source of the budget

Materials: Flip charts, masking tapes, calculators, note books, pens

#### Steps/Methods

- 1. Identify all the inputs farmer use in the production of barley or sorghum (2 min)
- 2. Identify all the activities performed in the process of transforming the inputs to products (2 min)
- 3. Identify all the marketing activities performed in taking the product into the market (2 min)
- 4. How much does each input cost and the total amount required for the farm business? (2 min)
- 5. How much does each production activity cost and the total amount needed? (2 min)
- 6. How much does each marketing activity cost and the total amount needed? (2 min)

#### Activities:

- 1. Brainstorm with participants on the main items the FFS need for operation
- 2. Discuss with participants why those items are required
- 3. Discuss with participants on their willingness to provide the budget items
- 4. Brainstorm on the cost of each items
- 5. There will be 8 different elements you will need to budget for:
  - Field inputs: These include fertilisers or seeds for farming projects.
  - General tools: These include hoes and wheelbarrows. Some members already have these items and are willing to let the FFS use them. This can be part of their material contribution to the group.
  - Stationery: The learning process will require some pens, paper, crayons, masking tape, markers, flipcharts, manila cards, scissors and other basic materials.
  - Comparative field experiments: The experiments cost money. *How much will the group need to do a proper experiment?*

- Field days: The FFS needs to be a good community member. *How much will it cost to host the community at the site for at least one day?*
- Exchange visits: The group should set aside money to visit other FFSs for a day.
- Facilitation: You and the group need to agree upon how many guest speakers you will have throughout the FFS process. Use the learning programme to guide you. *What is a reasonable amount for the guests' transportation and lunch?* Facilitation should not cost more than 50% of the total grant.
- Graduation ceremony from the FFS: The group will need money for invitations, certificates, transport, food and drink and anything else it deems necessary.

#### Duration: 35 minutes

#### Key Trainers notes:

This is not a budget for the FFS business enterprise. It is for the cost of the FFS to run its experiments and overall learning programme through a season. In FAO Funded IPM FFS, the beginning phase of the FFS is supported by a grant, but it will still need to collect member fees to meet the costs of its activities. After the FFS becomes fully independent it will use savings and a revolving credit fund to continue its work.

- Field inputs
- Stationary and supplies
- Field days
- Graduation
- Exchange visits
- Facilitation Fees
- Facilitator (Amount per week x number of meetings)
- Special topics facilitator (Amount per visit x number of meetings)
- Rain gauge
- Atmospheric thermometer

#### Total budget Calculation (20 minutes)

Family farm business budget has two parts:

- 1. Fixed costs are those cost which does not change during production cycles
- 2. Variable cost are those costs which changes with increase in production of products during a production cycles

In order to do the budgeting group members must seek for information of the cost of the inputs, production activities and market activities

Family farms should get explicit information of the business they want to undertake.

#### The budget for 1 acre of barley

The estimated total cost of producing an acre of barley is UGX 637,000/=

- This refers to the total amount of money a family farm would expect to spend in a season on producing an acre of barley.
- If the farmer intends to row more than the cost are adjusted according to quantity of input, amount of production and marketing activities to get the estimated total cost of production.

Resources	Description	Quantity	Unit	Unit cost	Total cost
Fixed costs in barley production					
Land	Hire	1	Acre	50,000	50,000
Land preparation	Land opening	1	Acre	80,000	80,000
	2 <sup>nd</sup> land preparation	1	Acre	10000	10,000
Farm input	Seeds	40	Kg	1000	40,000
	Fertilizer	50	Kg	2,200	110,000
	Pesticides	1.5	L	18,000	27,000
	Herbicides	2	L	15,000	30,000
	Gunny bags	7	Bags	1000	7,000
Sub total			·		354,000
Variable costs in barle	ey production				
Activities	Sowing labour	10	Person	3000	30,000
	Spraying labour	1	Person	5000	5,000
	Fertilizer application	5	Person	3,000	15,000
	Harvesting labour	5	Person	5,000	25,000
	Transport	2	Person	5,000	10,000
	Threshing	5	Person	3,000	15,000
	Drying	1	Person	5,000	5,000
Marketing	Transport	2	Person	5,000	10,000
	Market dues	7	Ticket	500	3,500
	Loading	1	person	5000	5,000
	Offloading	1	L	18,000	18,000
Sub total					141,500
Total					637,000

## Let us look at sorghum estimated total cost of production for an acre

The estimated total cost of producing an acre of sorghum is UGX 668,000/=

- This as well refers to the total amount of money a family farm would expect to spend in a season on producing an acre of sorghum.
- If the farmer intends to row more than the cost are adjusted according to quantity of input, amount of production and marketing activities to get the estimated total cost of production.

Resources	Description	Quantity	Unit	Frequency	Unit cost	Total cost
Fixed costs in sorghum production						
Land	Hire	1	Acre	1	50,000	50,000
Land preparation	Land opening	1	Acre	1	20,000	20,000
	2 <sup>nd</sup> land preparation	1	Acre	1	50,000	50,000
Farm input	Seeds	4	Kg	1	3000	12,000
	Fertilizer (DAP)	25	Kg	1	2,500	62,500
	Fertilizer (Urea)	25	Kg	1	2,500	62,500
	Pesticides	1.5	L	1	30,000	45,000
	Gunny bags	7	Bags	1	1000	7,000
Sub total	Sub total 309,000					
Variable costs						
Activities	Sowing	10	Person	1	3000	30,000
	Weeding	10	Person	1	3000	30,000
	Spraying	1	Person	2	5000	10,000
	Fertilizer application	5	Person	2	3,000	30,000
	Harvesting	7	Person	1	3,000	21,000
	Transport	2	Person	1	5,000	10,000
	Threshing	5	Person	1	3,000	15,000
	Drying	2	Person	1	5,000	10,000
Marketing	Transport	2	Person	1	5,000	10,000
	Market dues	7	ticket	1	500	3,500
	Loading	1	person	1	5000	5,000
	Offloading	1	L	1	5,000	5,000
Sub total 179,500						179,500
Total 668,000						

Having come out with this, a family farm can take decision on inputs, activities and marketing operations that it can control to minimise high cost in production.

Note that, an acre of barley yields only 700 kg on a farmer field and the price of barley per kg averages UGX 1000/=

The total revenue one would expect would be = 700 kg x 1000/= equals UGX 700,000

If we remove the estimated total cost of production (UGX 637,000/=), the family will get a profit of (UGX 700,000 – 637,000) = UGX 63,000.

Similarly, Sorghum yield about 700 kg per acre in the field of a farmer and the prevailing price is UGX 900/= per kg.

One would expect a total Revenue after sale of everything as: 700 kg x UGX 900/= equals to UGX 630,000. But remember they expect to spend UGX 668,000 to earn the UGX 630,000

The family will thus end up with a loss of UGX 38,000 /=.

#### Topic 6: Analysis of farm business Risks

Farm business risks reduce the profitability of farming businesses. Business risks is the chance that harmful events would likely occur in the business, if it occurs it would result in losses. Farmers as entrepreneurs must be able to anticipate, estimate damage and develop counter measure to minimize losses.

**Objectives:** By the end of this topic participants will be able:

- i. Anticipate certain agricultural risks they may face
- ii. Estimate the amount of losses they could cause to the farming business
- iii. Take rational farm risks management decisions

#### Duration: 60 minutes

Materials: Flip chart, markers, note books and pens, manila cards

#### Method/Steps:

Break up the group into sub groups, discuss the following questions and present:

- Why are the common agricultural risks experienced over the past three years? (10 min)
- What kind of losses did these risks caused to the barley or sorghum (10 min)
- How do farmers respond to such risks? (10 min)

#### Wrap up the topic

Risks associated with farming businesses and their farm level management (group discussion)

Risk Type	Possible Causes	Possible Effects	Mitigation/Management Strategies
Production/ Output	<ul> <li>Climate- droughts /floods.</li> <li>Input shortages/inaccessible.</li> <li>High input costs.</li> <li>Poor quality inputs.</li> <li>Poor management skills.</li> <li>Poor timing of operations.</li> <li>Pests and diseases.</li> <li>Ill health and labour shortages.</li> </ul>	<ul> <li>Destruction of crops or livestock.</li> <li>Stunted growth.</li> <li>Poor yields and low profits.</li> <li>Poor-quality products.</li> <li>High field and post-harvest losses.</li> </ul>	<ul> <li>Learn improved production practices.</li> <li>Plan production as a family.</li> <li>Adopt appropriate tech business.</li> <li>Diversification (crops, livestock).</li> <li>Adopting appropriate tech.</li> <li>Proper timing of production.</li> <li>Informed on disaster warnings.</li> <li>Group saving &amp; credit to acquire funds and inputs.</li> <li>Engaging in contract farming.</li> </ul>
Market/ Income	<ul> <li>No market for products/low prices.</li> <li>Poor marketing strategies.</li> <li>Availability of substitute products.</li> <li>Buyers have other suppliers.</li> <li>Lack of storage facilities.</li> <li>Poor infrastructure and logistics.</li> <li>High marketing costs.</li> <li>Poor quality products.</li> <li>Perishability of products.</li> </ul>	<ul> <li>Destruction of harvested products (especially perishables).</li> <li>Low profits or losses.</li> <li>Desperate sales at low prices.</li> <li>Lack of funds for future farming activities.</li> <li>Inadequate income for family livelihood.</li> </ul>	<ul> <li>Starting the marketing process early, before harvesting.</li> <li>Planning marketing as a family.</li> <li>Collaboration with other farmers in marketing.</li> <li>Value addition where possible.</li> <li>Bulk selling of produce.</li> <li>Contract farming/committed buyers before production.</li> <li>Training in marketing skills.</li> <li>Proper timing of marketing of products.</li> </ul>
Income Distribution	<ul> <li>Poor finance management skills.</li> <li>Skewed control of income.</li> <li>Failure to involve family in finance planning and distribution.</li> <li>Failure to repay debts/loans.</li> <li>Failure to finance activities.</li> <li>Failure to honour household responsibilities.</li> </ul>	<ul> <li>Omission of some commitments (for example, loan repayments).</li> <li>Loss of property resulting from defaults on loan repayments.</li> <li>Lack of funds for next farming activities.</li> <li>No change in quality of life.</li> <li>Conflict &amp; family disunity.</li> </ul>	<ul> <li>Planning for raising finances and expenditure as a family and valuing contributions of spouse and children.</li> <li>Financial management training or advice.</li> <li>Commitment to repayment of debts.</li> <li>Commitment to reinvesting in the farming business.</li> </ul>

## Example of Gross Margin/Risk Analysis

Crop	Expected Yield of barley	700 kg
Barley	Selling Price per Kg	UGX 1,000
	Expected Revenue	700kg x UGX1, 000 = UGX700, 000
	Total Production Cost [ETC]	UGX637, 000
	Revenue – ETC	UGX 63,000
	If a harmful event occurred affecting	10% Yield drop = 700kg – (10%x700kg) = 630 kg
	the following as:	10% Price drop = 1,000 – (10%x 1,000) = UGX900
		10% rise in Production cost = UGX637, 000 + (10% of 637,000) = UGX
		573,300
	Profit (Gross margin) Barley	= UGX 63,000
Crop	Expected Yield of Sorghum	= 700 kg
Sorghum	Selling Price per Kg	= UGX 900
	Expected Revenue	700kg x UGX900 = UGX630, 000
	Total Production Cost [ETC]	= UGX668, 000
	Revenue – ETC	UGX 38,000 (Loss)
	Profit (Gross Margin)	UGX 38, 000 (Loss)
	If a harmful event occurred as	10% Yield drop = 700kg – (10%x700kg) = 630 kg
	IOHOWS:	10% Price drop = 900–(10%x 900) = UGX810
		10% rise in Production cost
		UGX668, 000 + (10% of 668,000) = UGX 734,800

# Unit 10: Introduction to the concept of Gender

## Session 10: Understanding the basic concepts of gender

The purpose of this session is to create awareness about gender issues/concerns in agriculture, why are these issues what does it imply in terms of people's livelihoods. We may be aware that gender issues were once not issues, but as societies evolved culture change and new institutions are built up so gender evolved.

Objectives: By the end of the session facilitator will be able to instil the concepts that raises gender concerns in participants to

- i. Understand the concerns of gender created by the basic gender concepts
- ii. Understand why these concerns are being raised
- iii. Discuss how gender issues can affect their activities in the field school and future activities

Activities: Short discussion by the facilitator, brainstorming, focused discussion groups of separate males and females, plenary discussions

Materials required: Flip chart/manila paper and marking pens, masking tape, Posters/Pictures on the different roles

#### Duration: 20 minutes

#### Methods/Steps:

- 1. Brainstorm with the participants about what their experience with understanding of gender is like and note the key issues being discussed on flip charts
- 2. Discuss with the participants conceptions and misconceptions of gender and link this to the key issues why understanding gender is important

#### **Key Trainers notes**

In most rural community gender is a sensitive subject and distaste male participants, hence the approach the facilitator choose should be culturally sensitive.

Gender concerns emerged as a result of misconceived inequality which vary from society to society and must be addressed to minimize the harmful impact on our society in terms of agriculture, food and income security and overall wellbeing of the society.

Gender equality is not directly correlated to economic development. Gender inequalities also exist in industrialised countries with high GNP per capita. Gender equality is not a so called "women's issue". Women's empowerment is necessary but not sufficient in the process towards the ultimate goal of gender equality, which has yet to be achieved in any country in the world.

The key concepts in gender/gender issues

- **Patriarchy** is the manifestation and institutionalization of male dominance against women and children in families and the extension of this dominance against women in society. Patriarchal sites where men have the power include all relevant institutions of society (legal, economic, religious, family, culture, etc.). Patriarchy institutionalizes male privileges in these same major institutions and is based on the control of women's productive and reproductive abilities.
- **Sexism** is the ideology of male supremacy. It allows men to believe that they are needed for the existence of women, to protect women and to give them identity. Cultural sexism leads to exclusionary practices (that keep women from participating in development), i.e. giving preference to boys for education.
- The PUBLIC is an exclusionary space where men control and distribute the material and social resources (wealth, power, status, commodities) and women are excluded. One method of excluding women from the Public is to make it into a dangerous place where they may face physical or verbal violence, legal exclusion, economic marginalization and humiliation. An example is harassment of women in public places such as public transport terminuses or football stadiums.
- The **Private** is also an exclusionary space where men are considered as the head of the family, due to the privatization of women's bodies, with all decision-making powers conferred upon him and thus the state does not interfere. An example is marital rape which is not acknowledged or legislated against in most countries.
- Development is the material and social redistribution of resources and power.
- A Stereotype is a widely held but oversimplified belief, image or idea about a person, race, group, sex or thing. For example, a widely held stereotype is related to the idea of "good" and "bad" women or girls, where a "good woman" may be seen as a married woman while a single mother or divorced woman is considered as a "bad woman". Backlash from society against gender equality often comes in the form of accusations that gender activists "are just bitter divorced women", for example.
- Gender is the social construction of men's and women's roles in a given culture or location. Gender roles are

distinguished from sex roles, which are biologically determined.

- Gender Equality is where all human beings, both men and women, are free to develop their personal abilities and make choices without the limitations set by stereotypes, rigid gender roles, or prejudices. Gender equality means that the different behaviours, aspirations and needs of women and men are considered, valued and favoured equally. It does not mean that women and men have to become the same, but that their rights, responsibilities and opportunities will not depend on whether they are born male or female.
- Gender Equity refers to fairness of treatment for women and men, according to their respective needs. This may include equal treatment or treatment that is different but considered equivalent in terms of rights, benefits, obligations and opportunities. In the development context, a gender equity goal often requires built-in measures to compensate for the historical and social disadvantages of women. Hence, both gender equity and equality must be pursued in a complementary manner where gender equality is the ultimate goal. In other words, in order to achieve gender equality, it is often necessary to pursue gender equity measures.
- Gender Mainstreaming is a strategy for making the concerns and experiences of women as well as of men an integral part of the design, implementation, monitoring and evaluation of policies and programmes in all political, economic and societal spheres so that women and men benefit equally. The ultimate goal of mainstreaming is to achieve gender equality.
- Affirmative Action refers to policies that take into account race, ethnicity, or gender to promote equal opportunity and to redress historical disadvantages resulting from discrimination.

Discuss the real gender issues in your community?

## **Topic 1: What Gender means**

Objectives: By the end of this session, the facilitator would have clarified

- i. Gender and sex
- ii. Gender roles

#### Activities:

- Brainstorm with the participants the understanding of gender. Capture all the responses on flip chart
- Highlight key words in the definitions generated from the participants
- Since gender is a new development paradigm, the facilitator should draw up a working definition appropriate for the forum

#### Some definitions of Gender

- Gender refers to the social differences between women and men, i.e. the different responsibilities of women and men in a given culture or location. These roles of women and men are learned and they are dynamic.
- Gender concerns the socially constructed roles and the resulting relationships between women and men, girls and boys in terms of rights, obligations and opportunities in a specified setting.
- Gender refers to the socially determined ideas and practices of what it is to be female or male; the widely shared expectations and norms within a society about appropriate male and female behavior, characteristics, and roles.
- Expound on the following: socially constructed; Roles, Relationships, Learned, Dynamic

#### Differentiate between Gender and Sex

Sex refers to the biological characteristics that categorize someone as either female or male; whereas gender refers to the socially determined ideas and practices of what it is to be female or male. Men and women play different roles that are shaped by biological, ideological, historical, religious, economic and social cultural determinants.

Sex	Biological	Born with	Cannot be changed
Gender	Socially constructed	Not born with	Can be changed

Brainstorm on cases where roles prescribed for males and females conflict by comparing their culture and other cultures (e.g. Itesots & Sabiny; Urban & Rural inhabitants; Blacks & Whites/Asians etc.) in the following areas (use posters/photos to generate discussions):

- 1. Who is involved in childcare (babysitting, guidance, counselling & discipline etc.?)
- 2. Who provides water & food (fetching, cooking, serving etc.?)
- 3. Housekeeping (cleaning, laundry etc.)
- 4. Ploughing, planting, weeding, harvesting
- 5. Weddings/funerals ceremonies

#### **Exercise: Group Work**

- Together with the participants, list on-farm activities (irrespective of who does what) done by household members.
- Form two sex-based groups of 'male' and 'female'. Ask each group to list the tasks they typically carry out. The
  facilitator to go round and guide trainees to ensure that the lists capture reproductive, productive and community
  roles.
- Plenary presentations and any observations and comments from the participants on the results of group work.

#### Some of the expected observations:

- 1. More roles/activities for females especially reproductive roles
- 2. Overload for women

#### **Exercise: Plenary**

Facilitator defines the following phrases and then guides the participants to group the list of activities into the three categories:

- 1. Productive roles
- 2. Reproductive roles
- 3. Community roles

**Reproductive Work/Role:** This includes the biological function of child bearing and child rearing and also social reproduction and maintenance of the workforce, e.g. by cooking and housekeeping [Moser, 1999]. Though this work requires skills and takes the time of those who perform these tasks such work has not been disregarded by extension service providers.

Productive Work/Role: This involves the production of goods and services for payment [Moser, 1999]

**Community Work/Role**: The community role of women is usually an extension of their reproductive role and includes such tasks as the maintenance of collective resources such as roads [Moser, 1999]

#### Session 11: Introduction to Gender Analysis Framework

Gender analysis framework is an analytical planning tool to help facilitators understand the communities that they are working with and identify, with those communities, the support they can provide. The tools focus mainly on the analysis of difference and, in particular, gender differences.

## Topic 1: Gender Analysis

It is a careful stepwise processes of examination in the differences in the asset bases, livelihood strategies and vulnerabilities between women and men, as well as the reasons for and implications of these differences.

Objectives: By the end of this topic, facilitator would have introduced participants to

- i. The process of analysing gender
- ii. Key tools of analysing gender

Materials: Flip charts, markers, masking tapes

#### Methods/Steps

- 1. Brainstorm with the groups if they are aware of gender concerns in the community and how they got to know it exists.
- 2. Through small group separated on gender basis, asks the them to draw gender daily calendar
- 3. In a plenary session let them present and discuss their findings

#### **Gender Analysis Tools**

Gender Analysis tools help us to gather and examine information on gender differences and social relations in order to identify, understand and redress gender issues and concerns. These tools include:

- 1. Gender Daily Calendar or activity profile
- 2. Access and Control Profile
- 3. Benefits Analysis Chart
- 4. Gender Needs Assessment Matrix

#### **Exercise: Group Work**

Separate gender-based groups to draw up *gender daily calendar* for both men and women during selected season (e.g. production of sorghum or barley).

- Plenary presentations; allow for any observations
- Some of the expected observations:–
- Women work longer hours
- Women have more duties/roles to perform
- Virtually no rest for women
- 3-tier roles ranging from domestic, to productive and community roles
- Division of labour has disadvantaged women (in favour of men)

**Definition of Gender Division of Labour:** This is the socially determined ideas and practices which define what roles and activities are deemed appropriate for women and men.

#### **Definition of Gender Relations**

- Hierarchical relations of power between women and men that tend to disadvantage women. These are revealed in practices, ideas and representations (labour division, roles, resource allocation, abilities ascribed, attitudes, desires, personality traits, behaviour patterns, etc. They result into social classes, value placed on the sexes, tribalism (racism) etc.
- · Participants to brainstorm on the phrases below in relation to the meaning of the definition above
  - Access to productive resources by men and women e.g. land, credit facilities
  - Self confidence in participation
  - Decision-making at household level

#### **Gender Needs**

- Definition of practical Gender Needs (PGN)
- Definition of strategic Gender Needs (SGN)
- How PGN link up with roles of the gender groups

#### **Practical Gender Needs**

These are the needs women identify in their socially accepted roles in society. They are a response to immediate perceived necessity and are practical in nature such as basic living commodities such as shelter, employment and food, water etc.

#### **Strategic Gender Needs**

The needs women identify because of their disadvantaged position to men in their society. They relate to division of labour, power and control and may include such issues as legal rights, equal wages etc.

#### **Topic 2: Gender and agriculture**

A person who operates a farm or cultivates land to produce farm products can be men and women of all ages. Women actually play the main role in agriculture although they are often not visible and overlooked. If women had equal access to agricultural resources and services, food security would be greatly improved and societies would grow richer, and not only in economic terms.

Objectives: By the end of this topic, facilitator would have guided participants to

- i. Illustrate that gender issues and concerns are linked to agriculture productivity and development
- ii. Raise consciousness about gender disparities and the need for attitudinal and behavioural change

#### Duration: 30 minutes

Materials: Flip chart/manila paper and marking pens, Masking tape, photo gallery,

#### Methods/Steps:

- 1. Divide participants in small groups and give each group markers and flip chart paper.
- 2. Ask the small groups to review and discuss activity profile matrices. Have each small group post their matrix on the wall when completed. Take a 'gallery walk' to observe responses from the other small groups.
- 3. In a plenary, review the highlights of the matrices with the whole group by asking the following question:
  - a. What observations can you make about the connections
    - among gender;
    - productivity;
    - agricultural services from the information.

#### Facilitator Guide and Reference Notes to the Facilitator

#### Case study (Source: Adapted FAO at Work 2010-2011)

#### Apolot works in sorghum production.

Women like Apolot have a crucial role to play in sorghum production such as tending the sorghum garden, weeding, harvesting, drying, threshing, winnowing, sorting, etc. They do around 70% of the work in sorghum farming on an unpaid family labour basis. On top of this productive role, they often have to grow food crops on a piece of land and have to tend the household chores. They are sometimes not able to support their husbands, because of lack of time or exhaustion.

When women's work is not visible, nor valued, when women are not informed nor involved in decision-making on production, post-harvest handling or marketing, they feel de-motivated. Yet Apolot's contribution is crucial to ensure enhanced productivity and quality.

Men often perform tasks that require physical strength like preparing land and planting or technical know-how like spraying for pest and disease control. Women are responsible for household chores, on top of the work in the sorghum. They also take care of their vegetable gardens or grow food crops for household consumption and food security. As this example clearly shows; disregarding women's stake in sorghum farming reduces the benefits families gain from sorghum production and directly affects the entire coffee value chain.

Agriculture is under-performing because of women's unequal access to land, fertilizer, technology, extension and credit. At the same time agriculture also faces formidable challenges; from increased food demand to climate change impacts. Closing these gender gaps, therefore, would be good for both women and for agriculture.

Roughly half the world's smallholder farmers are women. A large body of evidence shows when women control income from their farming this income is spent on family welfare, especially child nutrition. Overwhelming empirical evidence points to the importance of women as agricultural producers. In some developing countries, 79 % of women report agriculture as their primary economic activity.

Women's contribution has a positive impact on national level agricultural productivity. According to FAO estimates, if women had access to the same productive resources as men, they could increase yields on their farms by 20-30%. This could in turn reduce the number of hungry people in the world by 12-17 %. For food production that includes food processing and preparation, women provide 60-80% of the total labour used in bringing food to the table in developing countries.

Gender relations influence control over the assets and resources that are needed to derive benefits from development interventions, such as improved technologies, institutions, and policies. In agriculture, gender norms govern how the labour of males, females, and children is used as well as what responsibilities and rights they have with respect to different crops, animals, and natural resources.

Many obstacles to achieving gender equality in the control of productive resources originate in gender norms that define women as being less capable, less knowledgeable, and less suited to certain activities than men. Such norms strongly influence household decisions about resource use. Even when women are offered access to new opportunities, local gender norms positioning men as the most knowledgeable members of the household can tend to exclude women from participating in training and seed markets outside the village.

# Farmer Field School Post Implementation Follow up

#### Implementation follow up

In this module, the FFS facilitators will be taken introduced to follow up activities which may emerge at the exit of implementation period. The following units are discussed under this module:

- Unit 11: Introduction to Farmer Field School Network
- Unit 12: Marketing in Farmer Field school
- Unit 13: Governance in Farmer Field School

# **Unit 11: Climate Resilient Farmer Field School Network Formation**

Experience has shown that after FFS implementation most farmer field school tend to continue with their meeting to address emerging issues beyond the farmer field school implemented activities. As such a concept of loose association of FFS into networks similar to cooperatives has emerged to address marketing challenges in FFS.

## Session 12: Understanding a Farmer Field School Network

Objectives: By the end of this session, participants will be able to:

- i. Describe an FFS Network
- ii. Explain how the networks operate and the benefits accruing from them
- iii. Discuss the role of the networks in group marketing

## Duration: 3 hours

Methods/Steps: Brainstorming, guided self-discovery, discussions and presentations in plenary

Materials: Flip Chart Paper, Marker Pens, Masking Tape, Role Play Script, Notebooks and Pens

#### Activities:

- 1. Introduce the session and learning objectives
- 2. In a brainstorming session, participants describe an FFS network and its importance, noting in particular the role that network can play in group marketing
- 3. Using contributions from participants, the facilitator makes a brief presentation on the networks, the advantages of networks in identifying/solving common group marketing problems, running group enterprises such as bulk purchases of inputs, sourcing technical advice, collection and analysing of market information and collective marketing.
- 4. Divide participants in groups to discuss the following questions:
- 5. Why would they wish to network themselves?
- 6. How the networks should be managed?
- 7. What structures should be in place to allow smooth running of networks?
- 8. What services should networks offer and how should they be funded?
- 9. Invite groups to make presentations to the plenary for discussions and the facilitator guides clarifications of any unclear issues
- 10. Wrap up by emphasizing the importance of networks and encourage participants to form networks for ease of marketing

## Topic 1. What a Farmer Field School Network is

FFS Network is an informal federation of a number of FFS groups with a common interest. This is because as groups grow, they sometimes face problems and challenges that they cannot solve on their own. By forming networks, FFS groups can better share information, improve access to resources, participate in community projects and represent their interests to local leadership through advocacy and lobbying.

Some of the services that networks can offer to its member groups include:

- Bulk purchases of inputs thus improving access and lowering costs
- Identifying markets and collecting marketing information is easier since the association can delegate this function to a small group of knowledgeable individuals.

- Collective marketing of products through bulking helps affiliated groups attain economies-of-scale.
- By selling in larger quantities member groups can reduce transaction costs, gain bargaining power and thus command better prices for their products.
- By networking, groups can gain better access to technical and advisory services that would not be easily achieved by individual groups. Government and NGO extension agents are usually more interested in working with networks because they can reach more people than working with smaller groups.
- Networking with others in order to share information and experiences. Through this mechanism it becomes easier to solve problems. Likewise it is easier for the association to explore opportunities that exist in the market for existing or new products.
- Assisting groups with financing. This can be done by establishing a savings fund at the networks level from which individual groups can borrow or through jointly applying for/guaranteeing loans for individual members/groups from banks.
- Representing groups to government and other service organizations. Being larger and more organized networks easily access services from both government and NGOs. They can lobby and advocate to government for favourable policies. Government agencies and NGOs also find it easy to channel their services to communities through networks.

#### Key success factors in establishing Networks

- The groups forming the FFS Network must have been in existence and successfully running their activities for at least 1-2 years. By then, the potential benefits that the groups might obtain from establishing an FFS networks might be more clearly seen and might begin to outweigh the costs of running the Network.
- Groups must be within easy reach of each other in order to enhance communication and decision-making.
- The number of groups involved should be small (3-10) for easy management. As more groups get involved management becomes difficult and area of coverage increases making communication difficult
- The groups involved should be engaged in similar activities or enterprises. When groups are involved in differing enterprises, they will not easily have common problems hence making it difficult for the association to handle a multitude of problems.

## Steps to be followed in initiating and forming an FFS networks

- Groups need to clearly understand the advantages and benefits of forming networks. Since it involves bringing together different groups, mutual trust and confidence building measures have to be put in place right from the beginning. Some of the steps recommended include the following:
- Facilitators should help groups that have got interested in forming networks to make contact with each other.
- Hold a meeting to informally discuss activities and common problems being experienced by the groups.
- The groups should identify activities that can be jointly carried and problems to be solved.
- Next elect 2-3 representatives per group, who should be willing, interested and be trusted by others
- Arrange a second meeting in which, representatives talk over the identified problems in detail
- The representatives should then set a limited number of realistic objectives for the networks
- The representatives also draft the constitution for approval by all members. The constitution should spell out
  objectives/purpose, membership, meetings, roles and responsibilities, handling disputes, sources of financing and
  records to be maintained.
- Management bodies should be put in place. This will include: the general assembly, the executive committee and the management committee.
- Once management bodies are in place, the networks should endeavour to be registered at sub county level
- Once the management bodies are in place, then the network should start by tackling simple problems first and only taking on bigger tasks when the association is fully functional.
- In the first year, the networks for farmer groups could for example start by linking the groups to the farmer fora and the various service providers in their area, identifying common enterprises, generating funds for the association and bulk purchases of inputs. Later on the network can undertake activities like market research, collecting market information, carry out collective marketing and also undertake community level activities such as spring protection, school construction and road maintenance.

#### Linkages between networks and other organizations

Although networks are intended primarily to address the problems of individual groups, they are also better placed to deal with other organizations such as Farmer Fora, Uganda National Farmers Federation (UNFFE) and other apex organizations e.g. Uganda Cooperative Alliance. FFS networks being representatives of a number of individual groups are therefore better placed to link up with other organizations to form a common voice in the following areas:

- Selection, prioritization and identification of key constraints for enterprises.
- Participation in technology development and demonstrations.
- Demanding for and assessing the quality of services provided by service providers.
- Lobbying government on policy issues such as credit, support to collective marketing and access to export markets

## Topic 2. Leadership in Networks

Leadership is guiding and directing others to strive willingly and enthusiastically towards achievement of set goals. A functional and sustainable group requires effective leaders to guide and direct other group members towards attaining the group goal as well as to articulate the group needs and aspirations. The group leadership must comprise of democratically elected members.

#### Types/styles of leadership

Participatory leadership		Dictatorial leadership		
•	<i>Encourages teammates.</i> "Achieve the objective and you will be rewarded in some manner"	•	Threatens teammates. "Either achieve the objectives or you will be fired, disciplined"	
•	Says and thinks "We". We (the group are going to achieve the objective".	•	Says and thinks "I" "I am going to achieve the objectives"	
•	Gives others credit for success. "You people deserve credit	•	able to solve the problem"	
	for our achievement. Your effort made it possible".	•	Blames teammates for failures. "You people are responsible for the	
•	Accepts responsibility for failures. "I am fully responsible. Had I managed this activity properly, the results would have been positive"		would have succeeded"	
	been positive	•	Makes work drudgery, "I know this job is boring, but you're paid to do	
•	<i>Makes work a game.</i> "Let's enjoy this job. It can be fun if we		it, so do it"	
		•	Knows all the answers. "My way is best. After all, I'm in charge so I	
•	Depends on demonstrated ability. "I have achieved similar		know how to do it"	
	goals before and with your help we'll achieve this one"			

#### Qualities of a good leader

Listens, takes interest in the people she/he leads, active, energetic, brave, decisiveness, knowledgeable, transparent, competent, confident, loyal, and enthusiastic and awakens enthusiasm, has sense of duty, impartial, participates, encourages team spirit and demonstrates intelligence. They have integrity, stamina, act fairly, no favouritism, uses commands sparingly, demonstrate communication skills (listens and gives feedback), mediates interpersonal conflicts, requests but not demands, accepts and encourages constructive criticism, shows faith in those they lead, selflessness, warm, keeps group secrets, among others.

#### Leadership skills

For effective leadership, the following skills must be applied: Ability to communicate orally, Listening to all members, Reflecting, Giving feedback, Keeping members' morale high by creating a sense of belonging, Mediation of interpersonal conflicts, Awakening enthusiasm (make members eager to listen and work), Inspiring others, Creating healthy/positive competition amongst people you are leading, treating all members according to their levels/status, interviewing and Probing.

## Topic 3. FFS Network Leadership Structure

An effective leadership structure is neither too small nor too big. The FFS Network structure will be drawn from the FFSs in the respective areas and will be composed of a core Executive, comprising the Chairperson, Treasurer and Secretary. There will be three working committees including: The Finance and Planning Committee, the Loans Committee and the Market Information Service Committee. The roles and responsibilities of the various committees are spelt out in Section 2 of this document.



#### Figure 4: FFS Group Composition

At the FFS group level, the structure will be composed of the Executive; comprising of the Chairperson, Treasurer, Secretary, and the Representative to the FFS Network. Various sub committees may be established depending on the needs of the respective FFS groups.

#### Key Trainers notes:

- 1. The size of the FFS Network will be determined by the number of the FFSs which have subscribed with it. FFSs which have not subscribed with the Sub-county Network will not be represented.
- 2. Each FFS will only send one representative to the FFS Network. All capable members of the FFS are eligible, thus should not be limited to the executives
- 3. In the event that a member of the core executive of the FFS is nominated to the FFS Network, he/she forfeits the position and the respective FFS fills the vacant executive position
- 4. The executive and membership to the committees will be on an annual basis but renewable for three terms upon satisfactory performance
- 5. The Finance and Planning Committee will be composed of 5 members including the Treasurer
- 6. The **Loans Committee** will be composed of 5 members (the Facilitator in charge of the respective area and 4 members of the Network excluding the Core executive)
- 7. The Market Information Service Committee will be composed of 3 members
- 8. Members on the MIS committee may also belong to either of the other committees **BUT** a member of the Finance and Planning Committee can not belong to the Loans Committee or vice versa
- 9. Each committee must have a chairperson and secretary. The Committee secretaries should submit summary reports to the Network secretary on all resolutions made

#### **Roles and Responsibility**

Every leadership post has specific duties which complement those of other posts. Thus, for effective leadership and to avoid conflicts within the executive of the FFS and FFS Network, there is need for collective responsibility, sharing of information among the Executive, Committees and the FFS.

#### (a) Chairperson

- Ensure participation of all members in the decision making process
- Coordinate and supervise activities of the executive, committees and the rest of the members ensuring that they carry out the group activities
- Chair and conduct meetings
- Oversee the development and implementation of the FFS/FFS Network workplans
- Resolve conflicts and maintain harmony among group members
- Represent group at meetings with other organizations
- Solicits for financial and material resources
- Ensure that all reports and records are made and updated on time by the responsible executive and committee

#### (b) Secretary

- Records and keeps minutes and all other records in an orderly manner
- Prepares for submission the regular reports
- Write and distribute communications
- Send invitations
- Organize the venue for the meeting
- Read aloud minutes of previous meeting

#### (c) Treasurer

- Keeps financial records (e.g. expenditures, receipts, sales, funds received)
- Handles financial matters

(d) Finance and Planning Committee

- Safeguards and manage use of group funds
- Identifies sources of funds and material resources
- Makes regular financial reports
- Together with the rest of the group, carries out enterprise selection and prioritises the activities to be undertaken
- Prepares detailed work plans and budget
- Reviews and monitors on a regular basis implementation of the work plan
- Identifies and analyses viable and potential business ventures which can be proposed to the rest of the group for endorsement
- Puts in place strategies for raising funds and savings for capitalizing the FFS business
- · Works closely with the MIS to ensure that the best markets are obtains
- Prepares follow-up activities for the long term sustainability of the FFS/FFS Network

## (e) Loans Committee

- Sensitize all groups intending to access the educational revolving loan
- Issue guidelines and application forms for the educational revolving fund
- Receive and vet all applications for the educational revolving fund in conformity with the savings and credit policy and the guidelines for the educational revolving fund
- Submit approved groups for the educational revolving fund with recommendations to the executive for subsequent disbursement
- Keep records of all eligible applicant groups and accompanying recommendations
- Together with the FFS Network Core Executive, put in place and update regularly a transparent records system reflecting the financial position of the FFS Network at any given time
- Ensure that the beneficiary groups put in place the recommended records system
- Ensure that the beneficiary groups are using the loan for the intended purpose
- Together with the respective representatives of the beneficiary groups on the network, carry spearhead the recovery process. This is a collective responsibility of the network to ensure that all the loans are recovered on time for subsequent disbursements

#### (f) Market Information Service Committee

- Ensure that every FFS in the respective area has a MIS representative in place
- Collect on a regular basis, information on prices and, in some cases, quantities of widely traded agricultural products from the local markets, wholesale and retail markets, as appropriate, and dissemination of this information on a timely and regular basis through various means to farmers, traders, government officials, policymakers and others, including consumers.
- Participate in the ongoing market linkage discussions under the Linking Local Learners Initiative (LLL) and regularly share with and seek contributions from the respective FFSs on the outcomes of the discussions.
- Keep records of the changing market prices, demand and supply of the tradable produce in the respective Area
- Appraise the different available market outlets for the area and make recommendations to the Network and the affiliate FFSs

# Unit 12: Marketing in a Climate Resilient Farmer Field school

FFS primary objective is to empower farmers with production skills through a participatory problem solving approach. However, as the group solves the problem of production, they often discover marketing as the long lasting solution to production than the technical production techniques. Subsequently, market focus has been introduced in FFS as part of the empowerment models.

## Session 13: Understanding what marketing is

Objectives: By the end of this session participants would be introduced to the

- i. Principles of marketing definition, marketing mix (5P's), marketing channel and marketing information
- ii. Marketing problems as relates to malt barley/sorghum smallholder farmers.
- iii. Marketing strategies (intervention)

#### Duration: 2 hours

Materials: Brain Storming, Class Discussion, Group Discussion and Dialogue, Flip Charts and Marker Pens

#### Methods/Steps:

- Exhaustively discuss with participants their understanding of **Marketing**, asking individuals to write their answers on the flipchart.
- Note that farmers' perception of marketing is often limited to Selling.
- Summarize the different responses to give the most comprehensive and true definition of Marketing.

#### Topic 1. What is marketing?

- "Marketing is the process by which companies create customer interest in products or services. It generates the strategy that underlies sales techniques, business communication, and business development. It is an integrated process through which companies build strong customer relationships and create value for their customers and for themselves." — *Wikipedia*
- 2. "Marketing is the activity, set of institutions, and processes for creating, communicating, delivering, and exchanging offerings that have value for customers, clients, partners, and society at large." American Marketing Association
- 4. "Marketing is not only much broader than selling; it is not a specialized activity at all. It encompasses the entire business. It is the whole business seen from the point of view of the final result, that is, from the customer's point of view. Concern and responsibility for marketing must therefore permeate all areas of the enterprise." Peter Drucker
- 5. "Marketing is the social process by which individuals and groups obtain what they need and want through creating and exchanging products and value with others." *Philip Kotler*
- 6. "Marketing is the process whereby society, to supply its consumption needs, evolves distributive systems composed of participants, who, interacting under constraints technical (economic) and ethical (social) create the transactions or flows which resolve market separations and result in exchange and consumption." *Bartles*
- 7. "Marketing is any contact that your business has with anyone who isn't a part of your business. Marketing is also the truth made fascinating. Marketing is the art of getting people to change their minds. Marketing is an opportunity for you to earn profits with your business, a chance to cooperate with other businesses in your community or your industry and a process of building lasting relationships." *Jay Conrad Levinson*
- 8. "Marketing is getting someone who has a need to know, like and trust you." *Jon Jantsch (of Duct Tape Marketing fame)*
- 9. Marketing is "The management process responsible for identifying, anticipating and satisfying customer requirements profitably." The Chartered Institute of Marketing
- 10. "Marketing is the process of anticipating, managing, and satisfying the demand for products, services, and ideas." Wharton School, University of Pennsylvania.

In FFS Marketing, we understand marketing as all the undertakings farmers perform to satisfy the demands of agriculture products or services at a profit. This understanding is cantered on the fact that true marketing is related to commercialized agriculture. It emphasizes the fact that farming is a business and should be taken consciously.

## **Objectives of FFS Marketing**

- To ensure the customer demands for products is met appropriately
- To ensure that customers are satisfied with the products they demanded
- To ensure that the FFS control reasonable market share
- To ensure that the profit goals of the farmer (supplier) are met appropriately
- To ensure that business continuity is created
- To ensure there is minimum losses
- To ensure that relationships are established
# **Topic 2. Principles of Marketing**

Marketing is a business function that seeks to identify and satisfy the needs of target customers at a profit. Marketing is premised on principles commonly referred to as the marketing mix. Marketing principles form the core of marketing strategies, activities, and decisions in a business.

#### The marketing mix (4P's):

#### a) Product

In the case of the barley/sorghum FFS, the product that will sell will mainly be the grains/seed. A product is evaluated by the degree to which it satisfies a need and provides value for a specific group of consumers. The product should satisfy a perceived need and offer the features and accessories that a consumer group demands, within the terms that a group demands.

When creating FFS product, consideration should be put on customer wants. The common saying in marketing is "don't sell what you have but sell what the market wants".

#### **Product strategy:**

FFS should know the following

- 1. Who is our customer?
- 2. What form of products does the customer wants?
- 3. How much do customers want?
- 4. What delivery method do they want it?
- 5. What packages do they want?
- 6. Are we capable of meeting the customers demand satisfactorily?
- 7. What can we do to ensure the continuity of this business?

#### b) Price

The price principle refers to how much consumers pay for the product, and it is evaluated in terms of how the price maximises profit for the FFS. As prices drop, demand tends to rise but profit per unit decreases.

#### **Pricing strategies**

FFS should decide how they will determine satisfactory price for their products. Some of the common pricing models;

- 1. Cost-plus pricing (A fixed percentage is added to your cost of production) and
- 2. Value based pricing (The price is set according to the customer's perceived value of the product, this model is mostly used with the more unique items)

Effective pricing maximises total profit for the company by balancing profit per unit with demand.

#### c) Place

The place principle considers the distribution channels i.e. where you will sell your product and how it goes to the market. Consumers can't purchase products that wouldn't reach them, so distribution channels are an essential part of the structure of production, warehouses, shipping and sale points that make the retail product available. Distribution channels are evaluated on ease of use and reliability, an important factor in making a product desirable and accessible.

#### Place/distribution strategy

FFS should decide on how the product leaves their hands and reaches their customers. The following distribution channel should be carefully thought of:

- 1. Aggregator channel
- 2. Middlemen/brokers
- 3. Bulk and deliver
- 4. Bulk, store and sell
- 5. Create a seasonal product market place

The choice of channel of distribution is determined by the transaction costs and risks involve which in return affects the profitability of the products

#### d) Promotion

The promotion principle is about communicating with consumers. It involves spreading the word out to potential customers. Advertising is the most well-known form of promotion. It essentially makes use of the media.

# **Promotional strategy**

FFS should decide on the following

- 1. Who do we promote our products to?
- 2. What media is appropriate for them?
- 3. Is the cost manageable to our FFS?

By combining the above four principles we form the "marketing mix" strategy. You must understand these fundamentals to formulate an effective marketing strategy.

# Marketing strategy

A marketing strategy is the logic by which the business unit happens to achieve its marketing objectives. Designing a market strategy involves a few steps.

# a) Market segmentation

This is the first step of planning a marketing strategy. The FFS needs to divide potentials customers into groups based on a characteristic that tells us the kind of product the customer is interested in.

The major ways to segment are geographic, based on location; demographic, based on family niche. Basically market segmentation allows us to determine niches in a market.

# b) Target Marketing

This occurs when the FFS examines the results from market segmentation and studies the various market segments to determine the segments to which the product will be most useful to.

Consideration to study the market segment:

- When examining a segment FFS need to consider how fast it is growing, this can be done by looking at sales and growth rates.
- There are other factors that FFS may need to consider include the number of competitors in a segment which will greatly affect the profit margin that the FFS can hope to make.
- FFS need to consider your company's resources. FFS may find that some segments will take too much time or money to pursue, which will cut into their profit as well.
- c) Product positioning

This is the manner in which the consumer sees FFS product in respect to other similar products available in the market. FFS need to examine FFS product and its competitors in the market and determine how it is different or better than the others. These differences could be better quality, lower price or a product that is more accessible to the consumer.

Out of the differences determined pick those that would appeal most to the targeted market segment and promote them. The product positioning FFS end up with should tell consumers why FFS product is the one that they should spend their money on.

# Session 14: Marketing problems of small scale farmers

Objectives: By the end of this session, participants will be able to

- i. Examine the weaknesses of the farmers' current marketing activities.
- ii. Understand the potential costs and profits in marketing.
- iii. Suggest possible means to overcome the current weaknesses in smallholder farmers' marketing.
- iv. Draw a possible way forward.

**Materials:** Flip charts and Marker Pens, Manila cards of four different colours, Simulated meeting, Brainstorming, Class Discussion, Participatory Illustration

# Duration: 3 Hours

Smallholders face some constraints in seeking to take advantage of both domestic and export market opportunities:

(a) Constraints that inhibit production and consistency of supply:

Small farmers are often unable to produce sufficient quantities to fully meet market demand, leading to lost income and to a loss of competitiveness. Production problems include:

- Lack of suitable inputs resources,
- Urban drift of labour from agriculture sector,
- Low foreign investment in production and less competition with imported cheaper convenience products.

Inconsistency in supply has shifted, supermarkets and resorts demand toward imported products.

(b) Constraints that increase market costs:

- Poor economic geography (remote location from markets, small land and population mass, large internal distance between islands),
- inadequate supporting policies,
- weak institutional support,
- unreliable infrastructures and services:

This raises processing and marketing costs, leads to deterioration in the quality of goods and provides market opportunities for imported products in the domestic markets.

# (c) Constraints that reduce market access:

Meeting international sanitary and phytosanitary (SPS) legislation and private quality certification standards which are required by modern retailing system, can be a major challenge for smallholders.

Smallholders (those who have capacity to export) must be able to export products that meet the minimum standards required by importing countries/enterprises and should be price competitive in niche export markets. Without the assistance of privatepublic sector and donor agencies, it is somehow difficult for stallholders to access niche export markets.

# (d) Constraints that break market relationship and linkages:

Though both sides have an interest in doing business together, smallholders and large companies in many cases find it difficult to enter in a productive business relationship. Often, the two sides lack the mutual trust and access to one another required for successful cooperation. Structural challenges including a lack of information, a lack of skills and knowledge, insecurity, resource scarcities, and gaps in infrastructure stand in the way. Trust and access are basic requirements for success in any business relationship

#### Limited access to capital and input resources:

Lack of access to credit has reduced the competiveness of smallholders relative to imported products in domestic markets, and in export markets. Although there are some development/commercial banks and micro-finance schemes providing loans to smallholders, their limited knowledge of the sector, remoteness from rural areas, high collateral requirements and resulting high interest rates given their risk perception of the industry, have made it challenging for small-scale farmers.

Smallholders need capital and financial resources to buy inputs, and invest in equipment, storage facilities, and animal stock and necessary services for intensification of crop production.

Limited access to financial resources with short terms makes it hard for smallholder to make investments that don't pay off immediately [for example investment in machinery or long-term cash crops (such as trees)].

As the agriculture sector is often perceived as high risk by many financial institutions, smallholder access to loans, is often limited. Financial constraints are more pervasive in agricultural production, which forms the basis for agribusinesses and agroindustries.

Lack of land tenure security and formal property titles make it more difficult for smallholders to use their land as collateral when attempting to access loan capital.

#### **Diversification:**

Small farmers have the potential to raise their incomes by switching from low quality bulk produces to high-value agricultural produces, but they face a number of constraints.

Since high-value agricultural commodities are perishable, there is significant volatility in their prices, and thus significant market risk. In addition, small farmers have low volumes of marketable surplus and their farms are mostly located in remote areas with poorly developed infrastructure and transportation, leading them to face high transaction costs and risks in production and marketing of such commodities.

For niche export markets smallholder need quality certifications (such as organic and GAP-Good Agricultural Practices) which are costly and difficult to implement, particularly for small farmers.

# Marketing strategies that could address marketing problems

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**Contract Farming:** Contract Farming (CF) can address some constraints to small-scale productivity and can be institutional solution to the problems of market failure for credit and information. Imbalance power between farmers and companies, violation of the terms of the agreements, lack of contract enforcement and social differentiation can be still some challenges

**Formation of cooperatives or marketing groups:** Forming small-scale farmers' cooperatives, associations, groups and societies can reduce high transaction costs and market risks; increase returns, products quality; improve bargaining power and obtain needed services.

**Production for domestic and tourism markets:** It can produce quality and healthy food products for its domestic and tourism markets by investing in market-oriented farming system and agro-tourism sector development. Producing for domestic markets will decrease food dependency, poverty in rural communities and non-communicable disease caused by low quality imported food. Access to inputs and resources, inadequate infrastructures, intuitional policies and services are some challenges of smallholders' farms to compete with imported products in the domestic markets.

**High value produces for niche export markets:** Producing origin based, certified, and premium quality traditional products for niche export market can provide some opportunities to compete with low quality bulk products. But absence of large innovative processing sector, high requirements and cost of standards, lack of private sector investment are still challenges in this field.

**Develop value adding through improved food processing activities:** Looking to the rapid urbanization, diet diversification and retail transformation in the region, demand for processed food products has increased. FFS should develop value added food chains through improved food processing activities in order to (1) meet the food safety and quality standards required by modern retails outlets (2) reduce dependency on imported processed food (3) improve shelf life to overcome seasonality and (4) produce nutritious food for the domestic markets by facilitating access to cheaper processing technology through reducing import levies on processing machinery, equipment and packaging materials

# Unit 13: Governance and Management in a Climate Resilient Farmer Field School

# Session 15: Governance and management in Farmer Field School

Governance and management of Groups can be challenging and complex, this unit puts together some useful resources to help FFS leaders with a wide range of issues on governance and management.

Objectives: At the end of the session, participants will be introduced to:

- i. Understand the concept of governance in general and for smallholder farmers;
- ii. Understand the major principles of good governance and apply it to FFS
- iii. How to write the FFS governing documents?

#### Duration: 15 minutes

Materials: Flip charts, markers, masking tapes, pens and books

#### Methods/steps

In small groups discuss the following questions

- What do you understand by the word governance?
- What is the role of governance in the Microfinance Institution you represent?
- Who is charged with the role of governance in your institution?
- What are the challenges of balancing social and commercial objectives of MFIs?
- What principles of good governance are to be observed in MFIs?

#### Wrap up

Governance is the systems and processes concerned with ensuring the overall direction, effectiveness, supervision and accountability of an organisation.

Governance in reference to a not for profit community organization refers to the board and its collective legal responsibility as an incorporated association, community based organization or cooperative, according to the organisation's rules.

FFS governance encompasses a wide range of topics and issues. It comprises oversight and management of the FFS group so that it serves the interests of its members.

FFS governance provides a structure for setting objectives and goals, identifying strategies to achieve objectives, and developing and implementing a performance monitoring plan.

FFS governance also includes the rules and regulations by which an FFS operates.

For FFS governance to be most effective, these should be developed and agreed upon by the FFS membership. The rules and regulations must be comprehensive and cover all aspects of the FFS operations and functions.

Rules and regulations provide a structure through which the executive and management pursue members' interests and facilitate effective monitoring and utilization of available resources.

Objective: By the end of the of this session participants will be able to understand principles which guide good governance

#### Duration: 15 minutes

Materials: Flip charts, markers, masking tapes, cut pieces of manila cards, pens and books

#### Methods/steps

- 1. Cut in pieces the manila card and on each write one principle of good governance.
- 2. Ask the participants to discuss each principle one at a time

#### Wrap up the session

The United Nations regards good governance as having eight major principles:

- 1. Participation both men and women is a cornerstone of good governance.
- 2. Consensus-orientation mediation of the different interests to reach a broad consensus.
- 3. Accountability responsibility to those who are affected by the decision.
- 4. Transparency free information sharing and access.
- 5. Responsiveness service to all within a reasonable time frame
- 6. Equity and inclusiveness fair treatment and reception of all members
- 7. Effectiveness and efficiency input/output at best use to satisfy their goal.
- 8. Consistency with the rule of law well-defined rights and duties, impartial enforcement.

#### Good governance

Good governance assures that corruption is minimized, the views of minorities and marginalized groups are taken into account and that the voices of the most vulnerable in society are heard in decision making. It is also responsive to the present and future needs of society.

Objective: By the end of the of this topic participants will be able to understand components of group constitution

#### Duration: 45 minutes

Materials: Flip charts, markers, masking tapes, template of constitution, pens and books

Methods/steps: Ask the participants to read articles by articles and discuss each principle one at a time

#### Wrap up the session

A governing document outlines the purposes of an organisation and how it will be run. It may also be a trust deed, constitution, memorandum and articles of association, or another formal, legal document.

A governing document is important as an instruction manual for the trustees and other members of the governing body. Depending on how it is written and on local legislation concerning 'not for profit' or nongovernmental organisations, it may also be a document which carries legally binding obligations.

It is best to develop a governing document when in the process of establishing an organisation, even if this is not required by law or for the purposes of registration. However, such a document can also be written later. Because the governing document outlines the **principles** by which the organisation is governed and managed, it is important that its provisions are discussed with **key stakeholders**. The following are the general recommended steps in developing a governing document:

- 1. Identify the main headings to include in the document.
- 2. Use these headings for an outline of the document, and consider which stakeholders to consult about different provisions.
- 3. Arrange the consultations with the various stakeholders. Make sure that someone is nominated to take notes of key points raised. Highlight those aspects that may be included in the draft document.
- 4. If specific points are unclear or ambiguous, then a legal adviser may be able to provide specialist advice.
- 5. Once the document has been drafted, key stakeholders may be consulted again. Make sure that the draft document is circulated in advance with explanatory notes, and that someone is selected to present and explain its contents at the meeting.
- 6. After the workshop, incorporate any agreed modifications or additions and ask a legal adviser to take a final look at the document to make sure that it complies with any relevant local legislation.
- 7. Once the document has been finalised, it must be approved by the governing body. If the document is written before a governing body has been created, an important item on the agenda of the body's first meeting will be approval of the governing document.
- 8. Make sure that all trustees have a copy of the governing document and that they understand its contents. This is usually the task of the Chair.

# Checklist of standard provisions

- 1. Name of the organisation and power to amend the name.
- 2. Aims which clearly set out what the organisation was set up to do (including details of beneficiaries).
- 3. Powers clearly separated from the aims.
- 4. Provisions which describe how the trustee body is set up (including how trustees are appointed and the length of time they serve).
- 5. Provisions which deal with trustee meetings and proceedings at those meetings, including voting and a quorum.
- 6. Provisions for a membership (if appropriate), including how someone becomes a member, and voting rights.
- 7. Provisions for members' meetings and proceedings, if appropriate (e.g. annual general meetings, special general meetings).
- 8. Provisions for keeping the organisation's accounts and the control of its bank account.
- 9. Provisions those trustees should not have a personal interest.
- 10. A provision for amending the governing document.
- 11. A provision for dissolving the organisation.

**The importance of standard provisions:** A number of standard provisions should be included in a governing document as explained below:

**Provision 1.** It is important to consider the name of the organization carefully because it may not be easy to change it once it is incorporated into the governing document.

**Provision 2.** The aims set out what an organisation is set up to do. They should therefore be described clearly, using words with a commonly accepted meaning. An FFS may have more than one aim. It is important to remember that:

- The aims should reflect what the organisation intends to do; and
- The aims should be easy to understand.

Taking the goal of FFS used in Module 1, the FFS can derive their aim to reflect what FFS does but related to their specific need.

**Provision 3.** Powers are usually set out in a separate clause immediately following the aims. The trustees of most organisations will need some powers which they can use to help them carry out the aims. Consider carefully what powers the trustees might reasonably be expected to need and include them. This might avoid having to amend the document later.

#### Example: Powers of Trustees

The trustees have the following powers, which may be exercised only in promoting the aims: to provide advice, to cooperate with other bodies, to establish a membership structure, to raise funds, to make grants, to deposit or invest funds in any lawful manner, to insure the property of the organisation against risk and take out other insurance policies, to protect it to enter into contracts, to provide services to or on behalf of other bodies, to do anything else within the law that promotes, or helps to promote, the aims.

**Provision 4.** Trustees are the people responsible for the general management and administration of the FFS. The governing document should spell out clearly:

- How many trustees there will be
- How they will be appointed
- How long they will serve.

The governing document normally either appoints, or provides for the appointment of, the first trustees of the organisation. These individuals are thus named in the document as the 'first trustees'.

The FFS must make decision on the number of trustees, the length of office, eligibility and reappointment. Most organisations appoint at least three trustees, and most have between three and nine. Some FFS (network) have more than nine trustees, so that all the member organisations have the opportunity to appoint a representative. For the sake of continuity, it is a good idea for the governing document to state that individual trustees will hold office for different periods of time.

**Provision 5**. Meetings and administrative provisions. Unless the governing document outlines a basic administrative framework, the trustees will find it difficult to run the organisation efficiently. Consider the list of provisions below and add others as necessary:

#### **Provisions for Meetings and Administrative Procedures**

A. Meetings

- What is the minimum number of meetings that the trustees should have each year in addition to an annual general meeting (AGM)?
- How will meetings of the trustees be arranged?
- How will emergency or special meetings be called to discuss a particular issue?

#### B. The Chair

- How will the Chair be appointed?
- Will the Chair have the right to a second or casting vote when the numbers of trustees voting for and against a resolution are equal?

C. A quorum

• What number of trustees must be present if a meeting is to be valid (that is, what is the minimum number of trustees needed for a quorum)?

**Provision 6.** Membership. For membership organisations the governing document should set out who is eligible to be a member. For example, membership may be defined in terms of individuals or organisations only, or both individuals and organisations. Individuals in the case of FFS, FFS group in the case of network formation.

The following lists some key considerations for membership provisions.

- **Membership fees:** Is a subscription or membership fee payable? How often will fees become due (for example, annually or upon becoming a member, etc.)?
- Eligibility
  - How will individuals or organisations apply for membership?
  - What criteria will be used for accepting or rejecting applications?
- Voting rights: Will members have any voting rights on the governing body?
- Termination of membership: How may membership be terminated?

**Provision 7.** Members' meetings. If a governing document provides for a membership, it is also advisable to provide for general and special meetings of that membership in addition to the regular meetings of the trustees and the AGM. Some questions to consider are presented in the box below.

- 1. What type and period of notice will be given before the meeting?
- The notice will normally specify the time, place and general nature of the business of the meeting.
- How will minute taking and voting be organised?
  There may be a Secretary for the governing body or this task may be rotated between its members.

**Provision 8.** Financial accounts and bank accounts. The governing document should provide for one or more bank accounts to be set up, and make adequate provision for the control of these accounts, including authority for signing cheques. Make sure that the provisions contained in the governing document match those in the financial procedures policy document.

**Provision 9.** Personal interest. The governing document should include provisions for dealing with any conflict of interest that may arise. Trustees should not be able to use their position in the organisation to promote their own personal financial gain, or other personal and direct benefit.

For example, there should be a provision requiring trustees to declare their business interests and for these to be recorded.

**Provision 10.** Amendments. The governing document should set out a procedure by which it may be amended. There are likely to be occasions when this is required to meet changing organisational needs and imperatives.

**Provision 11.** Power of dissolution. There may come a time when, for whatever reasons, an organisation cannot continue to operate. Therefore the governing document should specify:

 How the organisation may be dissolved what will happen to any remaining assets after all debts and liabilities have been settled.

# Session 16: FFS Structures and roles of leaders

Objectives: At the end of this session, participants will be able to:

- i. Understand the structure of FFS and their networks;
- ii. Appreciate the function of FFS;
- iii. Understand the critical role of governance in putting in place systems and structures for FFS;

# Topic 1. Important functions of organising a FFS

- 1. To define the role of the individual: An individual member of an FFS must know his role, position and relationship with other Members. FFS is an organization for learning and every member must understand his role in this learning process.
- 2. Determination of authority: The assignment of a certain role proposes the granting of certain authority so that performance can be possible. Organisation is necessary to define the authority i.e., the rights and powers of members in different positions which would help them to discharge their assigned roles.
- 3. Fixation of responsibility: Each individual is assigned a certain duty organisational structure defines what performance is expected of a member of the FFS. Absence or faulty determination of responsibility will lead to irresponsible functions, behaviour and attitudes.
- 4. Specialisation: Farmer Field School is based on the idea of specialization which means the performance of different parts of the learning is done by persons specifically suited for them. Organisation is basically required to promote specialization. Efficient and smooth functioning is possible when different elements of a job are performed by experienced members and their efforts are pooled to attain the desired and product.

- 5. Coordination: Since the pattern of managerial operations of FFS is to be based on mini groups, there arises the need of coordinating the activities of various mini groups or that of different FFS for the case of networks. They perform diverse, activities and these have to be woven into the main fabric.
- 6. Proper utilisation of human resources: The most important thing for FFS is to make the best possible use of its members. There must not be wastage or misapplication of labour. This is of great importance for economy as well as for the achievement of objectives.

It can be possible only by suitable organisation, which avoid all bottlenecks-chances of work being held up and allow smooth flow of performances.

7. Efficient functioning: Efficiency is to be the watchword of an FFS, all the factors mentioned above will have a great impact on the efficient functioning of the FFS, and organisation avoids all duplication in roles, overlapping and wastage. It promotes speedy, smooth and efficient functioning of the FFS.

# Topic 2. Leadership

There are different levels of leadership responsibility within FFS/Networks. Typically, the governing document will outline the responsibilities of the governing body as well as the rights and obligations of trustees and members.

Every organisation has a range of different leadership needs. The duties of leaders break down into four categories outlined below.

1. Planning

- · Policy development and oversight for the implementation of policies and procedures.
- Planning the organisation's future (long and short term).
- Deciding which services or programmes the organisation provides.
- Evaluating or scrutinising the organisation's programmes and operations on a regular basis.

#### 2. Administration

- Providing the governing body members with opportunities to grow as leaders.
- Selecting the Executive/chairperson and evaluating his or her performance.

#### 3. Finance

- Ensuring financial accountability.
- Overseeing, reviewing and approving the organisation's budget.
- Raising funds and ensuring that adequate funds are raised to support the organisation's work.
- Monitoring expenditure against budget.
- Safeguarding the assets of the organisation.

#### 4. Community relations

- Ensuring that programmes and services appropriately address community or client needs.
- Marketing the organisation's services and programmes.
- Continuing public relations, which includes an awareness that governing body members are agents or messengers of the organisation in the community.
- Representing the community and its interests.



Figure 5: Governing body structure

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# Annex AESA-Agrometa Data Collection Sheet For (Name the crop)

- 1. Crop under study: .....
- 2. Problem addressed: .....
- 3. Lowest administrative unit (e.g. Ward): .....
- 4. FFS Name: .....

# **General Information**

- 1. Time of observation: .....
- 2. Crop variety: .....
- 3. Fertilizer type: .....
- 4. Spacing: .....
- 5. Planting date: .....
- 6. Germination %: .....
- 7. Plant population: .....
- 8. Soil condition
  - a. Soil type: .....
  - b. Soil moisture: .....
- 9. Water situation in the field: .....
- 10. Plant condition (describe the condition of crop development parameters)
  - a. Plant age: .....
  - b. Plant health .....
  - c. Weeds .....
  - d. Natural enemies .....
  - e. Pests .....
  - f. Diseases .....
  - g. Unknown insects.....

11. Environmental conditions around the field .....

<sup>3</sup> AESA is done weekly

<sup>4</sup> AGROMETA period can be decided by the group, whether to make it weekly or dekadal (every 10 days)

# 1. Weather records for the AESA day: .....

- a. Amount of rain for the day (mm)
- b. Average temperature (°C): .....
- c. Wind direction: .....
- d. Wind speed: .....
- e. Pressure: .....
- f. Sun.....
- g. Clouds .....
- h. Etc. ....

2. Weather (rainfall, etc.) monitoring report for the week or dekad .....

- a. № of days rained in the week or dekad (#): .....
- b. Amount of rain for the week (mm) .....
- c. Average temperature (°C): .....
- d. Average wind direction: .....
- e. Average wind speed: .....
- f. Average Atmospheric pressure: .....
- g. Etc. ....

#### 3. Input costs:

- a. Seeds
- b. Fertilizer
- c. Pesticides
- d. Labour

# 4. Harvest:

- a. Yield (Kg/acre);
- b. Price of produce (Ksh /Kg)

- 1. Weather and Climate information for previous monitoring period leading to the AESA day:
  - a. Indigenous<sup>5</sup> | Traditional weather forecast data (from previous weather monitoring reports)

Indigenous weather indicators already seen so far: Behaviour signs (Folklore Analysis) Forecast: What observed indicators mean (= interpretation and implications) for weather in the season and/or in the following week

c. Scientific | Conventional weather forecast data (from previous weather monitoring reports)

Downscaled	sea	sonal	weat	her	forecast <sup>6</sup>	from	Mete	orology	Local (weekly or dekadal) weather monitoring records
Department	for	the	area	or	locality	(e.g.	from	Kenya	analysis and interpretation (AGROMETA) for the period
Agricultural Observatory Platform – KAOP)							preceding the AESA day		

- 3. Drawing: Diagram of the plant under study
- 4. Decisions
  - a. Decision framework (Consensus AGROMETA forecast): integrating indigenous and scientific weather and climate information

What aspects of weather information	What	aspe	ects	of	wea	ather	Recommendation or scenario plan f	or
do the two sources of data agree on?	informa	ation	don'	t	the	two	climate-resilient response: Action that need	ds
	sources of data agree on?						to be taken based on the interpretation of the	ne
							data available	

# c. Recommendations

OBSERVATIONS (AND RESULTS OF ANALYSIS) -		PT	D St	tatio	ns	RECOMMENDATIONS (OR DECISIONS
parameters			2	3	Total	MADE)
1.	Climate trends (past):					
2.	Climate forecast (future):					
3.	Soil moisture:					
4.	Weeds:					
5.	Insect pests:					
6.	Predators/natural enemies:					
7.	Deficiency (e.g. nutrients):					
8.	Plant health:					
9.	Diseases					

<sup>5</sup> Such indicators may include plants, animals, ecosystems, celestial features, position and motion of objects, changes in objects and materials, etc.

<sup>6</sup> Weather information farmers say they need: amount of rainfall, intensity, onset (start date), cessation (end date), distribution, etc.

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