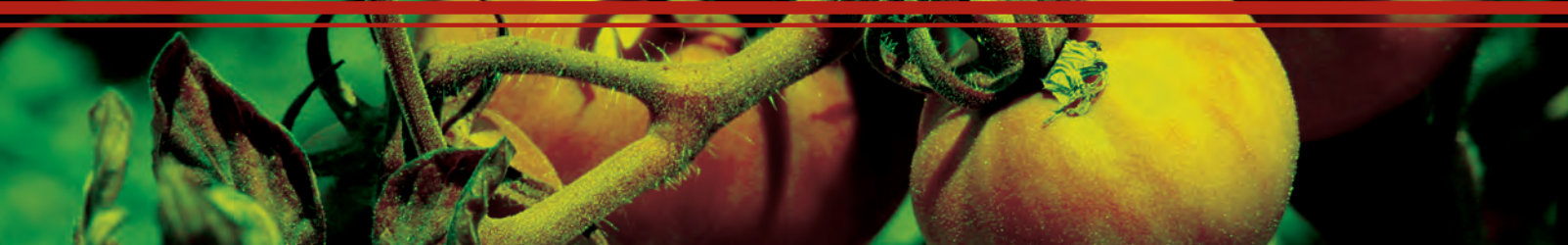


# Farmer Field School (FFS) Manual

Special Framework  
of Assistance (SFA)  
2006 | St. Lucia







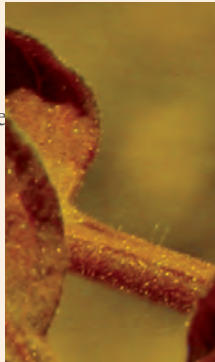
## Guidelines for the Implementation of a Farmer Field School (FFS)

This manual has been compiled for the Ministry of Agriculture, St. Lucia with assistance from the Food and Agriculture Organisation (FAO) with financing from the European Union's (EU's) Special Framework of Assistance (SFA 2006) programme.

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## Preamble

*The Farmer Field School (FFS)* approach has been practiced for many years in different parts of the world with considerable success. Its recent introduction to the agricultural sector in St. Lucia has been through the combined efforts of a number of players.

Thanks to the Ministry of Agriculture, Land, Forestry and Fisheries (MALFF), Food and Agricultural Organization of the United Nations (FAO) and the European Community (EC) for recognizing the importance of the FFS approach and for collaborating on this project.

This manual highlights the major activities in conducting Farmer Field Schools (FFS) for IPM in watermelons and can also be used as a guide for the conduct of FFS in other crops. It is hoped that the manual will be used and shared among the FFS Facilitators as a resource guide in planning and implementing FFS activities not only in St. Lucia but by FFS practitioners in other countries.

A manual such as this is never truly finished, it needs to be constantly updated as practitioners modify existing exercises and develop new ones. It will also be necessary to produce a detailed manual on the conduct of FFS in various crops. In such a detailed manual all the resource material for the pests, diseases, plant nutrition could be highlighted with the appropriate management options. Despite the wealth of information on FFS produced around the world, there is need for such a manual which will provide the necessary reference and serve as a guide for the countries who are now planning the introduction of the FFS approach.

It is sincerely hoped that persons using this manual will find it intellectually stimulating, informative and resourceful.

*FFS Facilitators - St. Lucia*

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# List of Abbreviations & Appendices

## ABBREVIATIONS

AESA	Agro Ecosystem Analysis
CARDI	Caribbean Agricultural Research and Development Institute
DAP	Days after planting
DAS	Days after Sowing
EC	European Community
ECM	Ecological Crop Management
FAO	Food and Agriculture Organization of the United Nations
FFS	Farmer Field School(s)
FP	Farmers Practice
FPA	Farmer Participatory Approach
IPM	Integrated Pest Management
Kg	kilogram
MALFF	Ministry of Agriculture, Land, Forestry and Fisheries
SFA	Special Framework for Assistance
TOT	Training of Trainers
US	United States

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# 1.0 Introduction



## 1.1 Background

*The FFS approach* was developed in the late 80's by FAO in South East Asia as a way for small-scale rice farmers to investigate and learn for themselves the skills required for and the benefits to be obtained from adopting Integrated Pest Management (IPM) practices in their fields. Since then, the approach has been extended to several countries in Asia, Africa, Latin American and the Caribbean. At the same time, there has been a shift from IPM for rice-based systems towards other annual crops and vegetables and integrated soil fertility management.

In St. Lucia, the Ministry of Agriculture, Land, Forestry and Fisheries (MALFF) partnered with the Food and Agriculture Organization of the United Nations (FAO) and the European Community (EC) to enhance agricultural production by way of introduction of the Farmer Field School (FFS) Approach through the EU/SFA 2006 projects:

- ❖ **Strengthening of Plant Health Services**
- ❖ **Assistance to Improve Agricultural Production and Productivity by Promoting Technology Adaptation**

A Training of Trainers (TOT)/ Farmer Field School (FFS) programme in Integrated Pest Management (IPM) in watermelons was conducted during the period June – November 2009. Eighteen (18) Extension Officers, MALFF attended the intensive classroom and field training which also from the Ministry of Agriculture incorporated a pilot FFS in which thirteen (13) farmers participated.



With the conduct and completion of TOT/FFS, the eighteen (18) newly trained persons will now function as FFS Facilitators. It is expected that the FFS Facilitators will chart the way forward to the Phase 2 of the programme where they will conduct FFS in the various regions in St. Lucia.

A workshop entitled *The Way Forward* was held (September 2009) to plan for the implementation of Phase 2 which was completed in August 2010. This manual will serve as a guide for the FFS Facilitators in the planning and implementation of the FFS activities for Phase 2 and beyond.

## **1.2 Farmer Field School Concept**

The Farmer Field School (FFS) approach evolved from the concept that optimal learning is derived from experience and in the case of farmers, from observations in the field. The FFS integrates the domains of ecology and non-formal education to give farmers the opportunity to learn about their crop, to share experiences and to learn from each other.

Farmer Field School (FFS) is based upon “learning by doing” to empower the communities to build their capacity for informed decision-making. It provides a platform to the farming communities where they can share their experiences and knowledge to improve their existing practices through experiential learning processes leading towards sustainable agriculture production. Farmers are given an opportunity to make a choice in the methods of production through discovery based approach

It is a “*school without walls*” and 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. FFS aims to increase the capacity of groups of farmers to test new technologies in their own fields, assess results and their relevance to their particular circumstances. They interact on a more demand driven basis with the researchers and extension workers and seek assistance in most cases when they are unable to solve a specific problem amongst themselves.

In general, the FFS aims to empower farmers with the knowledge and skills to make them experts in their own fields; to sharpen the farmers’ ability to make critical and informed decisions that render their farming profitable and sustainable; to sensitise farmers in new ways of thinking and problem solving and to help farmers learn how to organize themselves and their communities. A field school therefore is a process and not a goal.

## **1.3 Farmer Field School Principles and Methods**

The training methodology of the FFS 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:

- ❖ **Grow a healthy crop**
- ❖ **Observe fields regularly**
- ❖ **Conserve natural enemies**
- ❖ **Understand the ecology and become experts in the field.**

The Farmer Field School (FFS) is a group-based learning process and during the FFS, farmers participate in experiential learning activities. These activities involve simple experiments, regular field observations and group analysis. The knowledge gained from these activities enables participants to make their own locally-specific decisions about crop management practices. This approach represents a radical departure from earlier agricultural programmes, in which farmers were expected to adopt generalized recommendations that had been formulated by specialists from outside the community.



The basic features of a typical IPM Farmer Field School include:

- ❖ **The IPM Field School is field based and lasts for a full cropping season.**
- ❖ **FFS educational methods are experiential, participatory, and learner centered.**
- ❖ **Each FFS meeting includes at least three activities: the agroecosystem analysis, a “special topic”, and a group dynamics activity.**
- ❖ **In every FFS, participants conduct a study comparing IPM with non-IPM treated plots. It often includes several additional field studies depending on local field problems.**

The key non-formal education (NFE) approaches used in the Farmer Field School learning include: sharing, case studies, role play (dramatized sessions), problem solving exercises, panel discussions, group dynamics, small group and large group discussion, brainstorming and simulation game.









## 2.0 Implementation of Farmer's Field Schools (FFS)

*The Farmer Field School (FFS)* is farmer education based, which last for the entire cropping season. It consists of 10-30 farmers who participate in activities which are “very hands-on” and conducted to improve farmer’s decision making capacity. FFS will have a better impact when it is well planned and specially designed to address the issue of the crop.

The FFS should meet the following objectives:

1. Introduce good agricultural (farming) practices of the selected crop
2. Improve knowledge of crop cultivation based on IPM and other concepts.
3. Empowering farmers to be decision makers



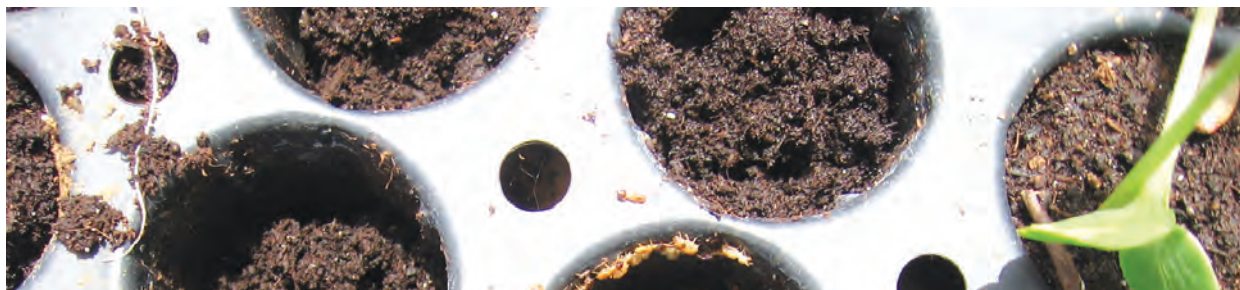
### 2.1 Prior to the start of the FFS

#### 2.1.1 Financial Arrangements:

- ❖ Prepare a budget and get commitment for financing prior to the start of the activities.
- ❖ Prepare an implementation schedule and a budget as a guide for the FFS activities.

#### 2.1.2 Selection of farmers and venue for the FFS

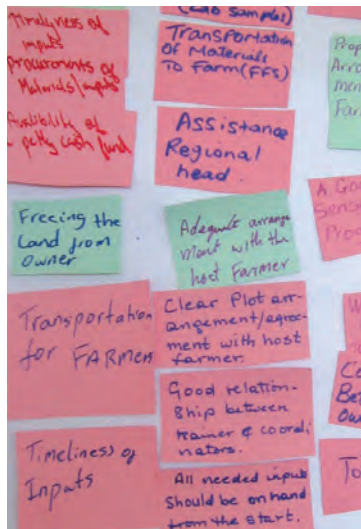
- ❖ Select if possible farmers in areas with high levels of pests and diseases and corresponding high pesticide usage or any other identified need.



- ❖ Select areas where there are active farmer groups or where there is good interaction among the farmers. Community leaders should be used to encourage farmer participation.

#### 2.1.3 Criteria for volunteer farmer selection (to host the FFS inclusive of venue)

- ❖ Selection of a volunteer farmer (host farmer) who is willing to allow the use of his land for the season-long conduct of the FFS.
- ❖ The arrangements between the host farmer and should be discussed, agreed upon and finalized. The expectations of both parties should be clear, well defined documented and



understood.

- ❖ The size of the entire plot should be based on the average farm size and should be sufficiently large to allow for two main observation plots (FP & IPM) and one or two experimentation plots.
- ❖ The plot selected for the FFS should be accessible to the target farmer group.
- ❖ A venue appropriate for meetings near to the field should be available or be temporarily erected.
- ❖ Site Selection is important to the FFS because of the various factors that have to be considered. Inappropriate site selection would hamper the farmer willingness to participate
- ❖ Crop growing area, there should be a large concentration of farmers
- ❖ Host farmer should be cooperative, influential, have good leadership quality and must be willing to work with other farmers
- ❖ The venue should accommodate the participants and facilitators with facilities to sit (benches/chairs), draw/write (tables) and display posters (available walls).

#### 2.1.4 Expectations of Volunteer/Host Farmer

- ❖ MALFF staff and FFS Facilitators meet with the volunteer farmer to select the site and discuss what is expected of the farmer in relation to land use, land preparation, inputs, maintenance and compensation if any. Clarify issues such as the sale of the crop and compensation for crop losses if this occurs.
- ❖ Volunteer Farmer must commit/agree to allow the decision of the FFS group of farmers to be the sole decision makers of the FFS and other study plots.

#### 2.1.5 Expectations of FFS Facilitators

- ❖ FFS Facilitators, volunteer/host farmer and other participating farmers meet to discuss what is expected in relation to land use, land preparation, inputs, maintenance, participation and compensation if any. Clarify issues such as the sale of the crop and compensation for crop losses if this occurs.
- ❖ FFS Facilitators and farmers must commit/agree to allow the decision of the FFS group of farmers to be the sole decision makers of the FFS and other study plots.

#### 2.1.6 Identify potential participants and obtain their commitment to attend the sessions regularly:

- ❖ FFS is normally conducted with 25 farmers, but the numbers can range from 10 to 30.



- ❖ Participants should be representative of those within the area and include youths, women or smaller farmers as well as leaders.
- ❖ They should be willing to share the information gained with other farmers and should be actively involved in farming.

### 2.1.7 Select the time of the year that is just before or with the start of the crop to start the FFS.

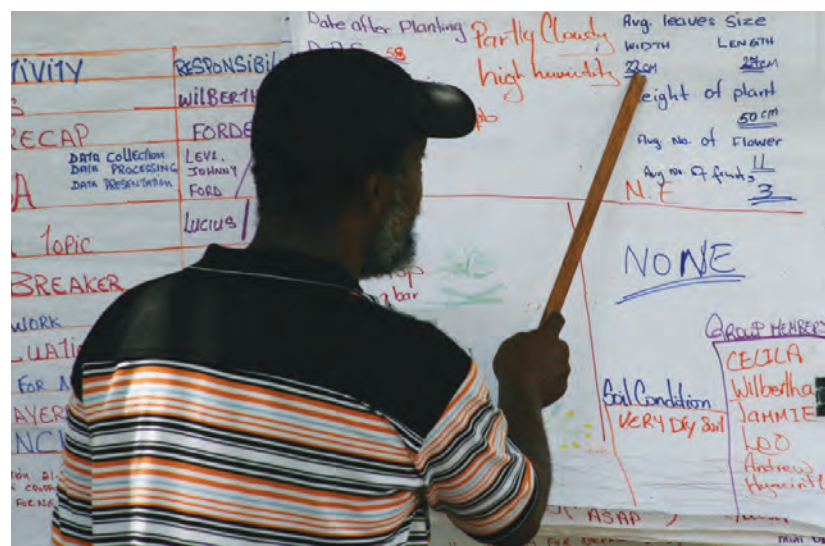
- ❖ This will enable participating FFS farmers to implement IPM and other practices in their own cultivation and in parallel to the FFS, or conduct their own experimentation.

### 2.1.8 Obtain consensus from the potential participants on an appropriate day of the week and time for meeting

- ❖ FFS is best conducted in the early morning when the insects can be easily observed. In the event that farmers cannot come at that time, late afternoons is also suitable.
- ❖ Agree on the frequency of the meetings. It is usual for farmers to meet one day per week for approximately 4 hours for the conduct of the FFS. However, farmers and facilitators will also be required to visit the field outside of the FFS session to observe or to assist with the implementation of recommendations.

### 2.1.9 Selection of other staff to work along with the FFS facilitators:

- ❖ Staff should be committed and motivated and be determined to have a successful FFS. This is necessary to motivate farmers to be involved since extreme work is required prior to, during and after the actual FFS.
- ❖ Staff should interact well with farmers in the community, possessing good social and interpersonal skills.



#### **2.1.10 Conduct semi-structured interviews, either with individual farmers or with the group**

- ❖ Volunteers from the farmers group supply information on the crop (farmer's practices) – The guide questions is appended, Annex 1.
- ❖ Validate the farmer practice by meeting with the farmers and having them agree that what is given is the norm in the area particularly relating to pest control practices, fertilizer application and general crop management practices.
- ❖ Use this information to prepare a farmer-cropping calendar
- ❖ This cropping calendar represents a typical sequence of events which farmers implement on their plot.
- ❖ It includes the cultural methods used e.g. land preparation, preparation and sowing of seeds, water management, the time of application of specific inputs – agrochemicals, fertilizers etc.

#### **2.1.11 Prepare an FFS curriculum or schedule of activities which outlines the calendar of activities for each of the 14 to 16 planned sessions.**

The cropping calendar developed for the water melon crop is attached in Annex 2.

#### **2.1.12 List a basket of management options from all sources based on the priority problems, as identified in the needs assessment.**

Attached is the list of the priority problems identified, Annex 3.

### **2.2 Materials required for the FFS**

Adequate and timely supply of materials assists in ensuring the FFS objectives are met.

#### **2.2.1 Land Preparation, crop establishment and crop management**

- ❖ Equipment for clearing of land, land preparation
- ❖ Seeds – determine varieties and sowing density.
- ❖ Tools for maintenance of plots
- ❖ Fertilizers
- ❖ Pesticides for FP (according to cropping calendar) and IPM (based on AESA recommendations).
- ❖ Equipment for application of pesticides.
- ❖ Safety equipment for use during pesticide application
- ❖ Irrigation may be required depending on the time of the year/location.



### 2.2.2 Conduct of AESA

- ❖ Notebooks and pens/pencils for each person.
- ❖ Ruler or measuring tape-one per group.
- ❖ Magnifying lens – one or two per group.
- ❖ Collection materials
- ❖ Artist brush for small or delicate fauna.
- ❖ Aspirator made from tubing and collection vials
- ❖ Sweep nets
- ❖ Containers for storing samples of fauna found in plots
- ❖ Vials or jars and plastic bags

### 2.2.3 Presentation of AESA

- ❖ Plain sheets 100cm \_ 50cm e.g. newsprint or flip chart paper
- ❖ Drawing material
- ❖ Markers of varying colours (one set per group)
- ❖ Colored pencils or crayons
- ❖ Eraser and ruler
- ❖ Board for displaying drawings or flip chart board.





AGENDA TOT	
ACTIVITIES	RESP
PRAYER	Gollion
Group: Final COST REPORT	Memuel/Hyacinth
DBL	Deanne
Dry-Run of Pres. and Speech	Groups
Ice Breaker	©
Planning For Workshop	Groups
Planning For Graduation	Team
Tidy-up Classroom	Team
Tidy-up Lab	Team
Stock Taking	Team
Action Planning Phase II	Deanne
Planning for Next Day	Team
Closing Prayer	Levi/Cletus

#### 2.2.4 Refreshments of participants

### 2.3 Preparation for the FFS

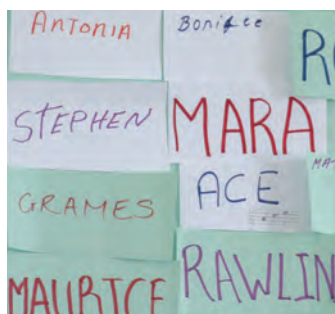
- ❖ Obtain relevant materials as outlined above. A check list is appended, Annex 4
- ❖ Clearly outline what is to be achieved during the session and specify the person who will be responsible.
- ❖ Ensure that everyone understands his/her role.
- ❖ Prepare the session chart or schedule of activities at least two days before the FFS day. This allows for effective use of time and creates a sense of purpose and achievement among its participants.
- ❖ Prepare for delivery of topic and obtain or develop ideas needed for the activity. Conduct a 'dry run' of the session to review presentations and allow someone to identify problems such as lack of smooth flow or poor communication.
- ❖ Plan the FFS to commence at or just prior to, planting-sowing of seeds.

### 2.4 Conducting the FFS

#### 2.4.1 Introduction

- ❖ Follow the customs/traditions of the area/location and invite a participant to lead the group in prayer.





- ❖ Use the language that is usually spoken among the participants, rather than the official language.
- ❖ For the first session, coordinate an introduction session “getting to know each other”
- ❖ Explain the objectives of the FFS and the commitment required by the participants. Emphasize the benefits of participating.
- ❖ At the beginning of the first session, ask the group to suggest “participatory norms” for the conduct expected of all (facilitators and participants during the session e.g. no killing of ideas, be punctual).
- ❖ Display these prominently on the chart in the meeting area to serve as a reinforcement of agreed behavior.
- ❖ Review the previous FFS, the main ideas shared (what went well, what needs improvement) and recommendations.
- ❖ Outline the objectives of the current session and the activities to be conducted using the prepared chart
- ❖ It is important that participants understand what is expected to be achieved since their level of involvement in the exercise will reflect this.
- ❖ Refer to the schedule for this purpose at the beginning of each activity.

#### 2.4.2 Conduct and icebreaker or team building exercise to motivate and stimulate the participants

A list of ice breakers and energizers is incorporated in Section 5.0

#### 2.4.3 Administer a pre-evaluation exercise (ballot box):

- ❖ The ballot box is a non-threatening means of conducting pre-evaluation. Guide questions are appended, Annex 5.
- ❖ Select aspects based on the objectives of the FFS that should be emphasized or for which prior needs assessment did not provide sufficient information.
- ❖ The format is that of a multiple-choice question with three choices for each question. About 15-25 questions are asked, depending on the number of participants.
- ❖ The options are visualized, using live or preserved samples for the options. Much thought is needed to choose options that reveal conflicts in the participants mind.
- ❖ The questions are written in large letters on heavy paper, for example Bristol board, which has pockets or boxes below each option to contain the participant’s votes.
- ❖ Place on sticks or poles so that they are at eye level.
- ❖ To remove bias sufficient space is needed between the boxes so that participants do not see the other persons vote.
- ❖ The participants are then given chits according to the number of questions. Each set of chits is numbered to identify the

participant so that the individual's knowledge can be assessed.

The number can be omitted if it is thought that this would cause problems with the group.

- ❖ The participants then rotate around the field allowing sufficient time to respond to each question. When they do not know the answer, encourage them to make an educated guess.
- ❖ Facilitators should be nearby each ballot to provide explanations about the questions and assist those who cannot read. They should also control the flow so that only one person is at the pole at the time.
- ❖ Use responses to assess participants' knowledge about the topics and to direct emphasis in future FFS sessions and special topics.
- ❖ Share general comments on responses with participants at the subsequent FFS.

#### **2.4.4 Conduct Agro Ecosystem Analysis (AESA)**

Agro-ecosystem analysis (AESA) is a tool to guide farmers to learn how to develop skills and knowledge about ecosystems and to make better decisions. Working in groups farmers observe field situations and make notes about the ecosystem e.g., crop, insects, diseases, weed, water, weather etc. These observations are then placed on a sheet of paper to be examined before making crop management decisions.

The Agro-Ecological System Analysis (AESA) may include the following information: Location, Date, Crop age (DAS), Variety, Beneficial insects, Harmful insects, Diseases, Weeds, Plant height, Weather and soil conditions, colour of leaves, flower and fruit initiation.

There are three main components of the AESA: Observation, Analysis and Decision-making (discussions and consensus among farmers).

##### **2.4.4.1 Observation**

- ❖ Commence one week after planting or germination of seeds.
- ❖ Form participants into groups each reflecting a cross-section of those present.
- ❖ Assign each group to specific study areas in the FFS. For example, two assigned to do AESA in the FP plot, two to the IPM plot and one to the special study plot. These team members can be rotated on a weekly basis.
- ❖ Plants are randomly selected and marked by each group (sample plants). They are used as observation plants for each AESA unless they are damaged, in which case the nearest plant is substituted.





- ❖ Record observations on prepared sheets or in notebooks. For example,
- ❖ Growth - number of leaves, length of leaves, and length of root
- ❖ Biotic Life - count of types of insects, other arthropods and other living organisms on or around plant.
- ❖ - Note the size, colour, markings and life cycle stage. Note the location e.g. upper or undersurface of leaf, in soil, or mainly in upper or lower part of plant.
- ❖ Observe for disease symptoms – note the shape, colour, colour, markings, extent of symptoms and location of the plant on which found
- ❖ Collect samples for display to other participants or for further investigations
- ❖ General Observation on plot
- ❖ Assess reasons for the damage e.g. insect type, mechanical disease, vigor and health of plants, soil conditions, type and amount of weeds, weather conditions and drainage. Sweeps (6-7 per plot) using insect nets should be done to collect other organisms.
- ❖ Make general observational comparisons between IPM and FP plots.

#### 2.4.4.2 Analysis

The groups return to the meeting place and prepare presentations based on observations and discussions among members. Observations are depicted in drawing as seen by participants. The aim is for accuracy of representation and not artistic skills. This is used as a means of recording the crop at that stage and communicating to the group.

- ❖ Use newsprint or other plain sheets 100cm \_ 50cm.
- ❖ Write the heading using marker, including the plot type, age of the crop, date and any other agreed parameters.
- ❖ Draw the crop in the central area of the paper using coloured pencils to visualize.
- ❖ Draw arthropods other living organisms and diseases on the area of the plant observed.
- ❖ Pay attention to important details of the organisms collected (size, colour, marking, shape) that will assist in conveying what was observed to the participants and facilitate identification if the sample was not collected.
- ❖ Draw pests on the left side and natural enemies on the right side of the paper. Include the total number observed and the part of the plant on which found.
- ❖ Show the interaction between pests and natural enemies if known.
- ❖ Use any pictures that may be available or tap into the resources

- of others present to assist in identification.
- ❖ Involve all members of the group in this process, rotating assignments weekly.
  - ❖ Include drawings and statements about the environmental conditions e.g. weather
  - ❖ Discuss what was observed and what recommendations are to be made for management of the crop during the week. This includes issues such as fertilizer required, cultural or chemical pest management, irrigation and weeding.
  - ❖ Write recommendations for each problem observed on another page.
  - ❖ The facilitator assists the group in this process especially during the initial periods to ensure that they understand what is required and help to clarify issues.
  - ❖ Select one person from each group to present the findings and recommendations to the entire group.
  - ❖ All members contribute by including omitted items and responding to questions.
  - ❖ The facilitator asks questions based on presentations to start discussions among the participants. This encourages expression and sharing the experiences and ideas. It also reinforces the understanding of relationships among organisms in the field. Issues to be discussed include whether a stated natural enemy is really effective, which pest it controls and what numbers are needed for effective control.

#### **2.4.4.3 Decision – Making**

- ❖ Discuss proposed actions (or inaction) to be taken on the plots based on the group presentations.
- ❖ Encourage the sharing of opinions, giving reasons for these and guide the group in arriving at consensus about specific actions for each plot. It is important to allow all the participants to exchange and share ideas. Do not allow a few persons to dominate the exercise. This is the most critical aspect of the process of decision-making and the pros and cons about recommended actions should be aired and discussed thoroughly. Formulate a common conclusion.
- ❖ When there are disagreements on specific actions to be taken, allow persons to present their views thoroughly and the reasons for them. Ask questions to clarify views. Facilitate the group exchange of opinions to arrive at a consensus after listening to all considerations.
- ❖ Repeat the final agreed actions clearly, so that all present know the decisions.
- ❖ Write the decisions including the names and application rate of inputs to be used. This will ensure that those implementing will remember what to do.



- ❖ Obtain volunteer to return to the plot at the agreed day and time to implement the group decisions. The facilitator must manage this process so that all participants share in this responsibility rather than overburdening a few persons.
- ❖ Provide the materials to implement these.

## **Agro Ecological System Analysis (AESAs)**

### **2.4.5 Conduct a team building exercise and/ or group learning activity.**

Group dynamics is part of FFS activities that help strengthen group cohesion and enhance cooperation. A list of team building exercises is incorporated in Section 4.0.

- ❖ This serves to gather the group together, provide a change in atmosphere as well as to strengthen cohesiveness among all present.
- ❖ All activities present a learning opportunity. Encourage participants to say what was learnt and how the experience could improve some aspect of their lives.
- ❖ Some group dynamics improve the capacity to learn and take decisions.

### **2.4.6 Present a special topic that was identified previously.**

- ❖ FFS is carried out and lasts for the entire cropping season and follows the crop stages.
- ❖ Use material that facilitates interaction and visualization.
- ❖ Encourage the sharing of experiences relevant to the topic.
- ❖ Each special topic for the crop should be done at the relevant stage of the crop. Each subject should be linked and inter-related to the real field situation. To ensure farmers gain

#### **Week Subject Area**

- 1 Land preparation, Weed Control, Introduction of Crop
- 2 Nursery Production
- 3 AESA, Seedling Anatomy, Crop Morphology
- 4 AESA, Fertilizer application
- 5 AESA, Pests and Diseases
- 6 AESA, Natural Enemies
- 7 AESA, Life cycle and food web
- 8 AESA, Understanding Pesticides
- 9 AESA, Insecticide effect on insects, insect damage, prevention
- 10 AESA, Weather effect on crop, disease and insect development, Post harvest technology
- 11 Harvesting, Marketing, Economic analysis of crop



adequate knowledge during the FFS sessions it is suggested that the schedule of special topics be guided by the farmers and may include the following:

A special topic supports the AESA with very simple demonstrations which are carried out either in the field or at the meeting place. The topic could be selected from the list above, but innovative and creative facilitators could develop more topics relevant to the farmer needs. The special topics in general cover the issue of: crop physiology, insects (harmful and beneficial), spiders, pesticides, diseases and plant nutrition.

#### **2.4.7 Closing the session**

- ❖ Review the main issues covered by the FFS including the main recommendations.
- ❖ Select a special topic for the following session if not selected during the FFS.
- ❖ Confirm the date and time of the subsequent meeting

#### **2.4.8 Evaluation with facilitators**

- ❖ Facilitators review each session, discussing what went well and where there can be improvements or adjustments to address deficiencies.
- ❖ Incorporate these in the planning for the subsequent FFS.



## 2.5 Post evaluation of the FFS

Use the ballot box or similar assessment method to ask question similar to those asked in the pre-evaluation, that is covering the same technical areas and of the same level of difficulty. This allows for assessment of the changes in knowledge and attitudes of participants. Further assess to those individuals who participated in the pre-FFS detailed semi-structured interview to note changes in practices and the impact of participating in the FFS.

## 2.6 Stakeholders Workshop/Field Day

A field day is an occasion organized by FFS farmers and FFS Facilitators with the purpose to showcase all activities and achievements to other farmers in the community who did not participate in the FFS.

Field days could also be the opportunity for interactions and sharing experiences plus encouraging other persons to participate in the scaling up operations in the future.

Considerations when planning a field day: Conduct a field day preferable when the crop has reached the maturity stage. Invite stakeholders, members of the farming community, policy makers, researchers and community leaders to view the plots and share in the experiences and observations of the FFS participants.

### **Objectives:**

- ❖ Observe and compare the Farmer Practice (FP), IPM plots or other trails
- ❖ Encourage other farmers to participate in future FFS
- ❖ Present results to financers of the FFS
- ❖ Provide a forum for participants to show the skills developed and experiences learned.

*The following should be prepared for viewing by those attending:*

- ❖ Display of key AESA that represent changes in the crop during its growth
- ❖ Display of results of special experimentation
- ❖ Insect and/ or disease zoos used to facilitate learning about natural enemies, life cycles, damages etc.
- ❖ Presentation of some of the team building and learning exercises.







## 3.0 Special Topics: Discovery Learning Sessions

### 3.1 Insect collection and identification

*Insects* belong to the arthropods, which vary in size from tiny thrips that can hardly be seen with the naked eye, to quite large, such as the preying mantid. Studying their movements, feeding habits and reproduction patterns gives us information regarding the biology and ecology. An advantage of working with arthropods is that they usually can be studied using a hand lens only, unlike pathogens.

Using arthropods, the concept of biological control can easily be demonstrated in a so-called insect zoo. The beneficial arthropods are the so-called predators (insects or spiders that feed on other insects, particularly pests) or the so-called parasitoids (insects that lay eggs in or on its host so that the host provides food for the young stages of the parasitoid).

Predators are usually easier to study, because they are usually larger than parasitoids. Another concept that can be studied using arthropods is the effect of pesticides (biological as well as chemical) on pests and beneficials.

#### 3.1.1 To identify beneficial insects that helps protect the crop

##### Materials:

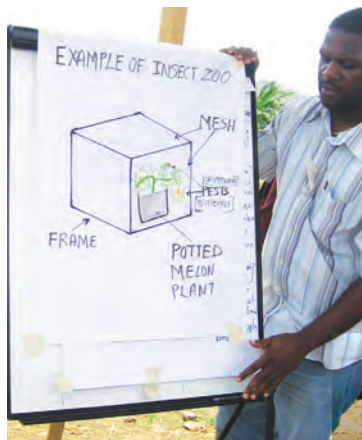
Transparent plastic bag	Sweep net
Discarded plastic bottle	Alcohol
Cotton	

##### Procedures:

- i. Each group enters the field and examines the bottom to catch ground insects and spiders. Collect and place into a plastic bag.
- ii. Return to classroom and put onto a large paper.
- iii. Separate and group the collected specimens based on their similarity of physical characteristics.
- iv. Identify the specimens based on their local name and their function in the field (ask entomologist for unknown insect to have them correctly named and their functions).
- v. Preserve in the vial and attach label to each.

##### Guide Questions:

- a) How many of them are categorized as plant feeder insects?
- b) How many of them are categorized as beneficial insects?
- c) How many spiders did you catch?
- d) What will happen if there are no beneficial insects and spiders in the field?
- e) Why it is important to conserve natural enemies?
- f) What will happen to them if pesticides are being used excessively?
- g) What lesson is learnt from this exercise?



### 3.1.2 Insect Zoo

Some arthropods are pests, feeding on plant parts; others feed on insect prey, others live inside other arthropods and again others come from weeds or neighboring crops, and are simply resting in the crop.

To learn about the biology of arthropods, the insect zoo and variations on the insect zoo can be conducted. This exercise can be used for most pests, and especially for caterpillars.

**Objective:** To study arthropods, their feeding and life cycles

#### Materials:

Small plastic vials or bags      Tissue paper  
Camel or fine hair brush      Hand lens

#### Procedure:

*To find out whether an arthropod is a pest*

- i. Collect in a vial, and supply food (leaves, stems and/or fruits of the studied crop).
- ii. Close the tube and place a piece of tissue paper between the tube and the lid to avoid condensation inside the tube. Keep the tubes out of direct sunlight.
- iii. Observe whether the insect feeds and on what it feeds; check again after some time.



*To find out whether an arthropod is a predator*

- a) Collect it in a vial, give it some prey (aphids, eggs or small larvae).
- b) Close the tube and place a piece of tissue paper between the tube and the lid to avoid condensation inside the tube. Keep the tubes out of direct sunlight.
- c) Observe whether the insect feeds and on what it feeds; check again after some time.

*To find out about the developmental stages of arthropods*

- i. Collect eggs, larvae/nymphs or pupae encountered in the field

and rear them in vials through the next stages until the adult stage.

- ii. Feed the larval stage on appropriate food (leaves, fruits, insect prey in case of predators) every day, and observe the arthropods during development.

**Discussion:**

- a) Did you learn more about the arthropod you studied in the insect zoo?
- b) Was the studied arthropod a '*friend of the farmer*' or an 'enemy of the farmer'?
- c) How could the information about duration of development stages help you in the management of arthropod pests?



### 3.1.3 Collecting Insects

**Sweep nets:** These are useful for sturdy predators, e.g. bugs and beetles active on foliage, but not so good for delicate flying insects because it is difficult not to damage them. Walk through the vegetation swinging the net from side to side with a regular motion. Use a small tube or jar to capture the insects once they are inside the net.



**Beating trays:** These are useful for collecting many plant-dwelling species hiding amongst leaves etc. It is often easier to work in pairs with a beating tray, especially when collecting fast-moving species. Hold the tray under the plants or tree to be sampled, or simply spread an old white sheet on the ground underneath. Shake the plant or use a stick to beat the vegetation vigorously so that the insects fall onto the white sheet where you can spot them easily. Make sure your first attack is strong because some insects will cling tightly to foliage once they are slightly disturbed! Collect the insects with your aspirator and take care with aspirators not to inhale dust and do not use them with insects that secrete unpleasant chemicals.

**Pitfall traps:** These are good for collecting predators that spend a lot of time on the ground, e.g. beetles and spiders. You will need to inspect your traps every day if you want to collect live specimens. Dig a hole and sink a smooth-sided plastic cup into the ground. Make sure that the rim of the cup is smoothly flush, or level, with the soil surface. Leave overnight. Inspect the next day and remove all captive insects. If you do not need live specimens you can put some preservative (e.g. dilute formalin or ethylene glycol) into the water to prevent captured predators from eating each other.

**Hand collecting:** You can collect many predators active on plants by carefully examining plants. It may be easier to remove and bag





samples of foliage to examine later back at base.



Preserving insects and other arthropods: You can preserve any arthropod in 80% alcohol for identification, but some groups are better preserved dry. The best way to kill arthropods for preservation is to drop them into alcohol (you can pull them out, once dead, if you want them to dry out). When collecting any specimens, make sure they have been fully labelled with date and location of collection, name of collector, crop or plant where collected and any associated hosts or prey; for example, “feeding on Spodoptera larva”. Include all these details when sending specimens for identification.

### 3.1.4 Sampling for arthropods with light trap

As much information as possible on the abundance of pests and their natural enemies in the field is considered desirable for making a well-informed and good decision in pest management. Different trapping methods have different specific advantages, but each gives



only a partial picture. For example, light trap will generally catch only flying adults (night-active moths, aphids, whiteflies). Together with other methods, the catches can provide a fuller picture of the agro-ecosystem.

**Objective:** To learn how to use a light trap and discover which arthropods are trapped using a light trap

#### Materials:

- |               |                   |
|---------------|-------------------|
| Light trap    | Plastic bags      |
| Plastic trays | Fine hair brushes |
| Forceps       | Vials             |
| Detergent     | Pencils           |
| Paper         |                   |

**Procedure:**

The light trap can be cheaply constructed using locally available materials.

- i. Use a simple kerosene lamp above a water basin supported by a tripod made with bamboo sticks or branches collected in the field.
- ii. Prepare and set up the light trap during the day in the selected site
- iii. The lamp should be at a height above the crop level. Ensure that some detergent is added to the water in the basin.
- iv. Light the kerosene lamp only in the evening (at dusk) when the sun sets. On the next morning, pour the catches from the basin into plastic bag(s) together with some water. All excess water should be discarded.
- v. Back in the classroom, pour the catches into the trays.
- vi. Separate and sort the catches into the various arthropod/insect groups (e.g., wasps, moths, leafhoppers, flies, etc.).
- vii. Count the numbers caught for each group and tabulates the results for discussion.

**Discussion:**

- a) What does the catch consist of mostly (larva/nymph or adult)?
- b) Which are the main groups of insects/arthropod caught?
- c) Which group is most and which is least prevalent? And what is the ranking (in abundance) of the others?
- d) Since all these are caught using the light trap, what can you conclude?
- e) Can you relate any of these with the crops in the area where the trap is set up?
- f) What particular groups (stage and types) are not caught? And what can you conclude from this?
- g) In what way is the light trap useful and what are its limitations?
- h) If other traps are also set up (or other assessment methods done), how do the catches of the light trap compare with them? What can you conclude?

**3.1.5 Sampling for arthropods with sticky board**

Different trapping methods have different specific advantages, but each gives only a partial picture. For example, yellow sticky board will generally catch only flying adults (wasps, flies, night-active moths, aphids, whiteflies, flea beetles, etc.). Together with other methods, the catches can provide a fuller picture of the agro-ecosystem.

**Objective:** To learn how to use sticky boards and discover which





arthropods are trapped using sticky boards

**Materials needed:**

Yellow/blue sticky boards	Plastic bags
Fine hair brushes	Forceps
Vials	Labels
Wooden sticks	

**Procedure:**

- i. The sticky board can be hung from or tied onto a wooden stick(s) or bamboo which is firmly stuck into the ground where the trap is being set up.
- ii. Keep the board in the vertical position and a little above the crop. It is best to set up the sticky trap in the morning and to collect it later in the day before dark.
- iii. During collection, each board can be slipped into a clear plastic bag and labeled before taking it to the lab/ classroom for checking/counting of the catch.
- iv. To facilitate counting, grid lines may be drawn with marker pen over the plastic bag (without removing the



- v. sticky board).
- v. Counts from each square are taken and subsequently pooled together for each group of arthropod (leafhoppers, flies, wasps, etc.) caught.
- vi. They are then tabulated and the results analyzed and discussed.

**Discussion:**

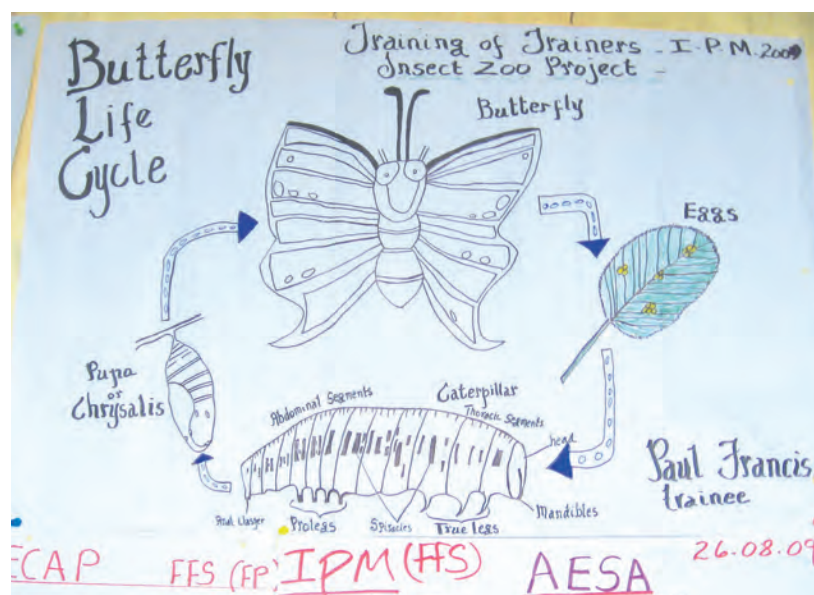
- a) What does the catch consist of mostly (larva/nymph or adult)?
- b) What are the main groups of insects/arthropod caught?
- c) Which group is most and which is least prevalent? And what is the ranking (in abundance) of the others?
- d) Since all these are caught using the sticky board, what can you conclude?
- e) Can you relate any of these with the crops in the area where the trap is set up?
- f) What particular groups (stage and types) are not caught? And what can you conclude from this?
- g) In what way is the sticky board useful and what are its limitations?



- h) Why should we regularly inspect the traps?
- i) If other traps are also set up (or other assessment methods done), how do the catches of the sticky board compare with them? What can you conclude?
- j) Can you design other sticky traps based on what you have learnt?

### 3.1.6 Life cycle of caterpillar pests

**Objective:** To understand the life cycle and development stages of an insect with complete metamorphosis.



#### Materials:

Clear plastic bottles	Vials	Bags
Cages covered with screen	Potted plants	Sweep nets
Magnifying glass	Fine hair brush	Tissue paper

#### Procedure:

##### To study egg laying

- i. Collect moths from the field using the sweep net and place them inside a potted, screen-caged plant.
- ii. Leave the moths inside the cage for 24 hours. After 24 hours, remove the moths and observe for eggs laid on the plant.
- iii. Observe the eggs and make drawings.
- iv. Don't touch the eggs! Continue to monitor.
- v. Also take a few leaves or leaf parts with eggs from the potted plant and place them into clear plastic bottles that are lined with slightly moist tissue paper.
- vi. Label the bottles (name, date and crop).
- vii. Keep them in the classroom or in the shade.

- viii. Monitor the eggs and observe time of hatching.
- ix. After hatching observe the larvae in the bottles as well as on the caged plants. In the bottles, regularly provide new leaves for food.
- x. Regularly make drawings. Note dates of pupation.

### **Discussion**

#### ***Egg stage:***

- a) Where are the eggs laid - on the plant or on the soil?
- b) If on the plant - which part of the plant? If on the leaf - which part of the leaf? If on the stem, which part of the stem?
- c) How many eggs were laid?
- d) What is the shape and colour of the eggs? Are there differences in colour?
- e) How many days does it take for the eggs to hatch?

#### ***Larval stage:***

- a) What is the size of the caterpillar at hatching?
- b) Where do the larvae feed? Which part of the plant?
- c) Do the larvae change skin? Why?
- d) What are the sizes of the larval stages?
- e) What happens when the caterpillar is fully grown?
- f) How many days does the larval stage last?

#### ***Pupal stage:***

- a) Where does the caterpillar pupate?
- b) Does it make a cocoon? What are the colour, shape and size of pupa and cocoon? What is the function of the cocoon?
- c) How many days does the pupal stage last?

### **3.1.7 Insecticides effect on insects**

Many insecticides are poisonous and are used to control harmful insects. In reality, insecticides also kill beneficial insects and other organisms like fishes, frogs and birds. Insecticides may be divided into two major groups:

- broad spectrum insecticides which kill all of insects and
- narrow spectrum insecticide which targets a specific organism

#### **Objective**

To demonstrate on insects and on other non-target organisms the effects of broad and narrow spectrum insecticides

#### **Materials:**

Insecticides (broad spectrum and narrow spectrum)  
Mosquito plastic sprayer      Plastic cup or discarded water bottle  
Mesh net                              Rubber band              Insects and fish



### Procedures:

- i. Collect insects (harmful and beneficial insects), spiders, caterpillars
- ii. Put insects into two different plastic cups (harmful and beneficial), put also spider, caterpillar into other cup cover with mesh and tie with rubber band.
- iii. Dilute insecticide into water similar to recommended rate, put into two different sprayers.
- iv. Spray a cup with broad spectrum and other with narrow spectrum Examine the result after one hour
- v. In large sheet of paper construct two tables and list how many of them died and how many remained alive.
- vi. Present your result to other group.



### Questions

- a) Which insecticide killed both target and non-target organism?
- b) Why do we have to encourage farmers to use only narrow spectrum insecticide?
- c) What will happen to beneficial insects and non-target organism if broad spectrum insecticides are used excessively?
- d) What will happen to the environment if too much insecticide is used?

### 3.1.8 Pesticides and direct exposure

Applying pesticide requires a specific skill to minimize the exposure of the chemical to the user. The best way to escape exposure is to avoid direct contact as much as possible. Pesticide killing ability is determined by LD<sub>50</sub> (lethal Dosage). LD<sub>50</sub> is measured in mg active ingredient per kg body weight (mg/kg)

Proper handling of pesticides is important beginning from: transporting from shop to storage area and field, adding to the sprayer, measuring from container before mixing, mixing with water, spraying and washing sprayer after the use.

This session, is to demonstrate the LD 50 of common pesticide used and assess the ways how to avoid from direct exposure during spraying.

### Objective

To know the LD 50 of pesticides commonly uses by farmer, and assess the way how to avoid direct exposure.

### Materials:

Sprayer	Spoon	Bucket
Glove	Plastic bag	Food dyeing
Weigh scale		

### Procedures:

- i. Look into pesticide list and find the pesticides commonly recommended or those available in the market. A substitute (spray dye) is used in this exercise (as shown in the photo).
- ii. Determine the LD 50, compute how much active ingredient (kg your body weight), compute for oral and dermal LD 50.
- iii. Weight any objects around of you at different size (find





- iv. Which active ingredients are the most hazardous? Do you find pesticide which have similar active ingredient but higher LD 50?
- v. If you recommend farmers apply pesticide, while they have no adequate protective gear, who is responsible?

#### **Avoiding direct exposure**

- i. Select three persons from the group and assigned them as “safety instructor” with the a badge “healthy inspector and safety”
- ii. Select two other persons as “spray man”.
- iii. Spray Man prepare knapsack sprayer use 2 ml/liter and 500 liter/ha for plot of 400 m<sup>2</sup>. Compute pesticide required, add to the water, and place into the knapsack sprayer.
- iv. The duty of inspectors are to assess and monitor steps being taken by spray man and make notes regarding exposures to the body during preparations and operations. Based on the notes, analyze and make suggestions for each step in order to avoid direct exposure.
- v. Inspectors present their finding and advise how to spray properly.
- vi. Use red colour food dye for pesticide substitute.

#### **3.1.9 Disease Zoo**

There may be difficulty in determining whether the damage



observed is due to fungus, virus or bacteria. Disease zoos are used to grow-out the disease on the plant part and observe what occurs.

- i. Enclose the plant part in a plastic bag or a transparent container with small holes to allow air circulation.
- ii. Insert absorbent paper to prevent moisture accumulation.
- iii. *Observe daily:*
  - If a fungus causes the diseases, there would be an increase in the affected area.
  - Use a marker to identify leaf spots to be monitored.
  - Measure the diameter at fixed periods to find out whether there is any increase over time.
- iv. Look for the presence of mature fruiting bodies or spots.
- v. Record changes such as extent of damage and colour of the affected area overtime.

### 3.1.10 Weed seed bank

Weed seeds are present at different layers in the soil. Some weed seeds have a very long dormancy period and can remain in the soil for over 20 years. Weeds can compete with plant for sunlight nutrients and space. In a highly weed populated plot, the yield can be significantly reduced, and in other cases the weeds serve as an alternative host for diseases or insect pests. For effective weed control, farmers should know about weed types and the management options to minimize population.



#### Objectives:

1. To determine the type of weed seed present in the soil and at what depth.
2. To determine the dormancy of weed seeds.

#### Materials:

Soil	Fork
Spade	Shovel
Cutlass	Ruler
Plastic bag	Soil

#### Procedures:

- i. Dig first layer of soil to two inches depth.
- ii. Dig second layer of soil to six inches depth.
- iii. Dig third layer of soil to nine inches depth.
- iv. Place each layer of soil into separate plastic bags.
- v. Place in seed box and wet and observe for seedling emergence.
- vi. Record the type weed seedlings as they emerge.

#### Discussion:

- a) What cultural practices can minimize weed population?



# HOUSE RULES

BE ON TIME

ALWAYS WEAR NAME TAGS PARTICIPANTS

REPLACE TOOLS AFTER USE TOOLBOX

WORK AS A TEAM TEAM WORK

SHARE KNOWLEDGE EXPERIENCED FARMER

INPUTS, TOOLS SHOULD BE AVAILABLE FOR DAYS  
WORK 9:30 AM - 12:30

MAKE EFFECTIVE USE OF TIME

RESPECT OTHERS OPINIONS

CELL PHONES SHOULD BE ON VIBRATE/OFF

NO LITTERING

LISTEN WHEN ONE IS SPEAKING

WHEN YOU WANT TO SPEAK ID BY SHOW  
OF HANDS

NO OBSCENE LANGUAGE

DO NOT TAKE THINGS WITHOUT KNOWLEDGE  
OF GROUP MEMBERS

FARM PLAN (F





## 4.0 Group Dynamic Activities

*Group dynamics* is part of the FFS activities that help strengthen group cohesion and enhance cooperation. A number of activities could be formulated that helps the group members to become enthusiastic and to be motivated. Activities may include role playing, story and short drama. The group dynamics comprise of communication, leadership mobilization, problem solving and planning. Below are examples of group dynamics that can be used for FFS:



- 1.0 Actions (Seeing, Listening, Doing)
- 2.0 Act or Draw
- 3.0 Agricultural Taboo
- 4.0 Agricultural Bingo
- 5.0 The Longest Line
- 6.0 No Lifting of Pen
- 7.0 Bucket of Water
- 8.0 Building Towers
- 9.0 Powers of Observation
- 10.0 Is it a Pest, a Disease or Natural Enemy?
- 11.0 Recall the Crops
- 12.0 Pesticide Resistance - Role Play

### **1.0 Actions (Seeing, Listening, Doing)**

#### **Objectives:**

1. To encourage teamwork
2. To show the importance of observations
3. To show how much we learn when we do things ourselves
4. To compare the observations made when we see, listen and do things

#### **Materials:**

- ❖ Approximately 20 items (for example, paper clip, eraser, key,



pen, pencil, marker, diskette, staple machine, bottle etc) in one location.

- ❖ Locate items in the classroom or surroundings. Improvise!
- ❖ A written list with the items
- ❖ Clock

**Procedure:**

1. Divide the participants into six (6) groups. A minimum of 2 persons in each group.
2. The groups should be assembled where they cannot easily see the items
3. The named groups should be invited to participate as follows:



- |         |  |
|---------|--|
| Group 1 | See the items. ( <i>Seeing Only</i> )  |
| Group 2 | Listen to the list of items being read to them. ( <i>Listening Only</i> )  |
| Group 3 | Move the items from one location to another (for example, pick up the items from the table where they are laid out and place into an adjacent basket). ( <i>Doing Only</i> )               |
| Group 4 | See and Listen to the items being called. ( <i>Seeing and Listening</i> )  |
| Group 5 | See and move the items from one location to another (for example, pick up the items from the table where they are laid out and place into an adjacent basket). ( <i>Seeing and Doing</i> ) |
| Group 6 | See, Listen, and move the items. ( <i>Seeing , Listening and Doing</i> )   |

4. Each group should be timed for the activity (for example, 2 minutes/group)
5. Ask each group to list the items as they remember them
6. Process the information collected

GROUPS	ACTIVITY	# OF ITEMS
1	Seeing only	
2	Listening only	
3	Doing only	
4	Seeing and Listening	
5	Seeing and Doing	
6	Seeing, Listening and Doing	

**Guide Questions for Analysis:**

- Did you enjoy this game?
- Which group had the highest score?
- Why do you think this group scored the highest?
- What were the limitations to this game?
- Which activity or combination of activities allows you to remember most of the items?
- What did this activity teach us?



**2.0 Act or Draw**

**Objectives:**

- To encourage team work
- To encourage participants to be innovative and use their imagination.
- To create a sense of comfort with peers in the group.

**Materials:**

❖ Box 1: with approximately 12 Bristol board cards (Activity Cards) with some agricultural related activity or equipment written on each card. For example, cow, hoe, diseased plant, mist blower, spraying, insect pest, moulding, weeding, staking, wet soil, harvesting, weighing, conducting AESA, presenting AESA,





clue-giver pulls a card from the box and sits with Group B.

Team B controls the buzzer.

The Clue-givers teammates are not allowed to see the cards and just sit waiting to shout out their answers.

When the Clue-giver draws the card the word at the top of the card is the guess word that the Clue-giver has to get his/her teammates to say in one (1) minute.

The five words below the Guess word are the TABOO words, which cannot be mentioned when giving clues.

- ❖ No gestures or sound effects are allowed.
- ❖ After Team A's Clue-giver has completed a turn, a member of Team B is chosen to be the next clue-giver for their team.
- ❖ Seats are exchanged so that the new Clue-giver's teammates cannot see the cards. The buzzer is passed to Team A.
- ❖ Teams take turns appointing Clue-givers and guessing words until all players have had one turn as the Clue-giver.

For example, How do you get your team to say the guess word CATERPILLAR?



#### GUESS WORDS

#### TABOO WORDS

Minutes	sixty, seconds, hours, time, meeting
Caterpillar	bug, insect, worm, larva, butterfly
Tool	instrument, hammer, screwdriver, saw, carpenter
Monitor	screen, baby, watch, observe, A.E.S.A.)
Birthday	happy, presents, cake, candles, anniversary
Ladybug	insect, lucky, orange, spots, black
Curriculum	school, course, subject, study, learn
Private	public, property, army, detective, eye
Bird	wings, landfill, eat, plants, fly, sky
Footprint	step, impression, track, sand, mark
Toad	frog, amphibian, pond, jump
Seed	plant, garden, sow, sunflower, poppy
Fence	picket, chain, sword, barbed, barricade
Chart	map, eye, graph, bar, pie
Coconut	fruit, palm tree, milk, shell, ice-cream
Fire	flame, burn, cracker, hydrant, smoke
Organic	natural, gardening, earth, chemistry, plant
Fly	insect, airplane, wings, bird, white
Dirt	earth, soil, dig, land, mud
Grasshopper	locust, cricket, insect, jump, plants

\_\_\_\_\_ | *You can't say BUG, INSECT, WORM, LARVA or BUTTERFLY.*

They are TABOO – utterly unmentionable words!  
Think fast, talk fast, and don't say a TABOO word or you'll get buzzed and lose a point.

Be creative and come up with new words!

**Guide Questions for Analysis:**

- a) Did you enjoy this game?
- b) Why did the winning team win?
- c) What did this game teach us?
- d) Does this game teach us about being creative and innovative?

**4.0 Agricultural Bingo**

**Objective:**

- 1. To determine the level of knowledge of the participants
- 2. To determine how well they understand a subject matter
- 3. To create excitement within the group

**Materials:**

❖ Bingo Cards each with 12 questions. Two questions should be designed to identify card holder(s). For example, my name is \_\_\_\_\_; I belong to group \_\_\_\_\_.

*Be creative! Design your bingo cards with questions relevant to your crop situation.*

❖ Name tags (Answers to questions)

<b>I am biological</b> -----	<b>I am systemic</b> -----	<b>I am translaminar</b> -----
<b>I have eight modes of action</b> -----	<b>My name is</b> -----	<b>I work on larvae</b> -----
<b>I contain copper</b> -----	<b>I belong to group</b> -----	<b>I should not be mixed with N.P.K.</b> -----
<b>I repel insects</b> -----	<b>I work on insects</b> -----	<b>I work on fungus and bacteria</b> -----

Two questions can have the same answer. Note: 12 questions (5 nametags)

❖ Pens/pencils

New BT

CYPRO

NEEM-X

PHYTON

KOCIDE

**Procedure:** (12 -question card bingo)

1. Assign five individuals a nametag and a pen each.
2. Distribute Bingo cards to all other participants
3. Participants with cards fill in the two I. D. questions (*i.e. My name is \_\_\_\_\_; I belong to group \_\_\_\_\_.*)
4. Explain the rules of the game. No prompting of answers.
5. Participants with bingo cards must ask the person whose nametag they believe is the right answer to a question on the bingo card to sign in that slot.
6. An individual assigned a nametag can only sign twice on one card.
7. When all the slots are filled (signed) the participant(s) shouts BINGO and his card is taken.
8. Cards are numbered in the order they are taken up.
9. The first correctly filled card wins.

### Correctly Labeled Bingo Card

I am biological

New BT

I am systemic

Phyton 27

I am translaminar

Cypro

I have eight modes of action

Neem-X

My name is

Deanne

I work on larvae

New BT

I contain copper

Kocide

I planted

Tomato

I should not be mixed with N.P.K.

Kocide

I repel insects

Neem-X

I work on insects

Cypro

I work on fungus and bacteria

Phyton 27

### Guide Questions For Assessing Agricultural Bingo

- a) What would have helped you to finish faster?
- b) Would it have been easier to work individually or with someone else?
- c) If you worked in pairs or in groups and had different opinions how did you choose which opinion to use?
- d) What skills did you need to win?
- e) How could the activity be improved on?



## 5.0 The Longest Line

### Objective:

To develop an understanding of group cohesion, co-operation, unity, resource seeking and sharing among members.

### Materials:

❖ Wide space (*clear and clean space, wide clear session room*)

### Procedure:

Divide the group equally, each group not lesser than five. Line each group accordingly from same starting line. Each group starts forming their lines using whatever materials they have in them. They are not allowed to get any materials/things from outside. The group with the longest line will be the winner. However, the facilitator or everybody should check if all the materials are properly connected to each other. Introduce the term longest line when the groups are already in line.

### Guide Questions for Processing:

- How did you feel?
- Did you enjoy the game?
- Why did this group won, why not this group or this group or this group?
- When activity is most appropriate?



## 6.0 No Lifting of Pen

### Objective:

To show how planning and discussions among team members can improve the output of activities

### Materials

Paper

Pens

Markers

### Procedure

1. Divide the group into teams
2. Instruct each team to form a line in front of the flipchart board with paper
3. Each team must draw a farmer
4. Each team member is allowed 1 min to participate in the drawing and then another member takes the marker and continues the drawing without lifting the marker from the paper.
5. No talking is allowed during the activity
6. Discuss the outcome of the drawing at the end
7. Allow member to discuss how they can improve on their drawing.
8. Repeat the activity

### Guide Questions for Processing

- a) Was the drawings improved after discussions?
- b) Why was it different?
- c) What contributed to these improvements?
- d) How can this be used during the FFS activities?



## 7.0 Bucket of Water

### Objective:

To demonstrate the effect of planning activities and team work

### Materials

- ❖ Buckets      Clear glass      Water

### Procedure

1. Divide the group into two teams
2. Arrange the teams into two lines facing each other
3. Place one bucket of water at one end of each line and an empty glass or other clear/transparent container at the other end.
4. Ask the team to fill the glass or container with water from the bucket using their hands.
5. Both teams must start together
6. End the game when the first container is filled.

### Guide Questions for Processing

- Ask the winning team what was done to fill the glass so quickly?
- What could be done differently the next time?
- Repeat the exercise and compare the time taken to fill the glass
- How can team work be increased?

## 8.0 Building Towers

### Objective:

To demonstrate team work

### Materials

Straws

Masking tape

Scissors



### Procedure

- Divide the group into two teams
- Distribute to each group an equal number of drinking straws.
- Ask each group to build a tower of straws that is tall and can stand on its own (stable)
- Allow 15 minutes to complete
- Invite the group with the team members to compare the structure and stability of the towers.

### Guide Questions for Processing

- How the team did chose what shape to construct?
- Did leaders emerge from the activity and what was their role?
- Which attitudes contribute towards better team work and which attitudes hinder team work.
- How did you manage to address the stability ad height of the towers?







## 9.0 Powers of Observation

### Objective:

To show that team work results in greater achievement

### Materials

Bracelet	Pen	Watch
Ring	Lipstick	Key chain
Diskette	Cd disc	Rubber bands
Masking tape	Red marker	any other items available

### Methodology

1. Place items on table
2. Observe for 1 minute
3. List the items individually as observed in the 1 minute
4. Indicate the number of items observed
5. Divide into 2 teams
6. List the Total number of items observed per team

### Results

Compare the Total of the items observed as individuals and as a team

### Guide Questions for Analysis:

- a) Did you enjoy this activity?
- b) What did you learn from this activity?
- c) Does this activity teach us something about working as individuals and working as a team?

## 10.0 Is it A Pest, A Disease or Natural Enemy

### Objective

1. To stimulate thinking among the participants
2. To test / assess participants' knowledge

### Procedure

Announce the guidelines for the participants. The names of diseases, insect pests and natural enemies will be called. They must act out what it is based on what is called.

Diseases	look scared
Insect Pests	change position (change seats)
Natural enemies	Smile and look happy

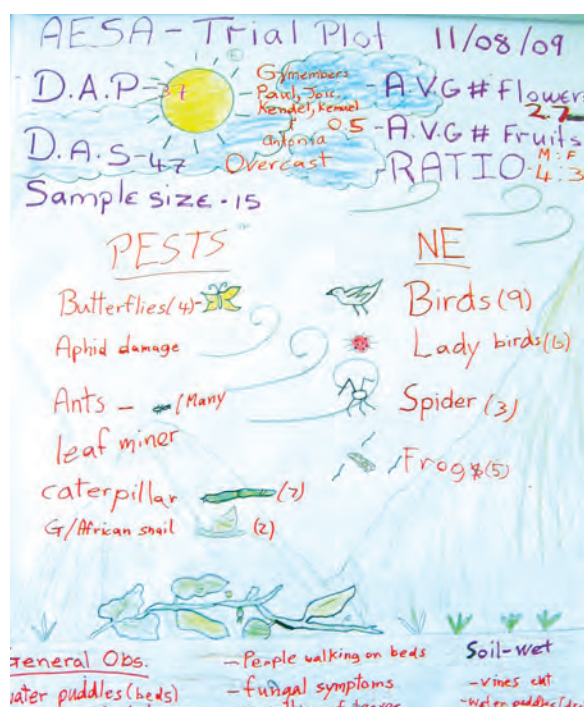
For example,

Brown Spot	look scared
Blast	look scared
Ladybird Beetle	smile and look happy
Bibitfly	change seats
Stem Borer	change seats

You can call a combination of diseases, insect pests and natural enemies.

### Guide Questions for Analysis:

- a) Did you enjoy this activity?
- b) What did you learn from this activity?
- c) Does this activity teach us something about pest diseases and natural enemies in the crops?







## 11.0 Recall the Crops

### Objectives:

1. To encourage participants to listen, focus and remember.
2. To encourage participants to think
3. To create a refresher exercise

### Procedure:

1. Allow the participants to sit in some order; a circle or a line.
2. The first person calls the name of a crop.
3. The second person calls the name of the first crop and also calls the name of another crop.
4. The third person calls the name of the first, the second and also calls the name of another crop.
5. The game continues until everyone has taken a turn in recalling the crops that went before him/her.

For example,

First Person	Cabbage
Second Person	Cabbage, Tomato
Third Person	Cabbage, Tomato, Cucumber
Fourth Person	Cabbage, Tomato, Cucumber, Pumpkin
Fifth Person	Cabbage, Tomato, Cucumber, Pumpkin, Carrots etc.

### *Guide Questions for Analysis:*

- a) Did you enjoy this game?
- b) Did it help you to focus better?
- c) What did this activity teach us?



## 12.0 Pesticide Resistance Role Play\*

*(Adapted from EU- Cariforum Master Trainers Documentation)*

When pesticides are used on a frequent basis, there is a risk of build-up of pest resistance against pesticides. This result in a number of outbreaks of pests, for example, brown plant hopper on , have been documented in several SE Asian countries after intensive use of chemicals resulted in:

- *the reduction of natural enemies and*
- *the build up of pest resistance to pesticides.*

Farmers tend to increase frequency and dosage of pesticide and applications when crop health problems persist. As farmers get caught in the 'pesticide treadmill', costs of production escalate or gets higher. In this role play, experiences are shared about the reduction of the effectiveness of insecticides due to the build-up of pest resistance.

### Objective

To understand how insect populations become resistant to insecticides

### Materials

- ❖ Tissues to cover noses of 'Super Insects' (be innovative)
- ❖ 1 'Poison-sprayer' (hand sprayer filled with water)
- ❖ 6 Chairs as plants (you can decorate them with leaves and paddy)

### Procedure

Organize the group for the role play. You will need the following volunteers:

- ❖ 1 Participant acting as the Story Teller
- ❖ 1 Participant acting as the Farmer (he will keep the 'Poison-sprayer' with him)
- ❖ Participants, to be 'Ordinary insects'
- ❖ Participants, to be 'Super insects', which cover there noses with tissue or create their own method for depicting themselves.
- ❖ A group of 'observers' (all remaining participants), who will take notes of what happens

Ask the 'Ordinary insects' to stay at one side of the room and the 'Super insects' on the opposite side. The middle of the room is the field (you could draw a boundary on the floor, using chalk, being the edge of the field, and put 6 chairs or stools as trees in the field).

The Story Teller starts reading the script whilst the acting participants mime the role play (instruction in italic);

*"In the first week of the season, a farmer went to his farm and he found 5 insects. He complained bitterly about the presence of these insects because he regularly sprayed the farm. He did not know it, but 1 of these, a Super insect, was resistant to the pesticide that he usually used. All the others were Ordinary insects."*

*(1 Super insect and 4 Ordinary Insects go into the farm and settle feeding on*

*the plants. After that, the Farmer comes in and acts as if he is observing his crop and complaining about the insect population).*

“The Farmer became very worried that his plants would be eaten by the insects, and he decided to spray poison immediately. He went home and brought his Poison-sprayer and sprayed the farm. The ‘Ordinary insect’ managed to escape the poison by hiding behind a leaf.”

*(The Farmer brings the Poison-sprayer into the farm and sprays all except on Ordinary insect)*

“All but one of the Ordinary worms’ died of poisoning and the ‘super





worm' happily survived because of the resistance he/she has against the poison."

*(All Ordinary insects, except one, die, while the Super insect shows his nose cover to the public as his protection and smiles)*

"Now the Farmer was happy, so he went away for a week. In that week, the surviving insects gave birth to babies. Each adult insect could make 3 babies, so in the next generation, there were 3 Ordinary insects and 3 Super insects. After the mating and making babies, the adult insects died."

*(Surviving insects get babies by inviting 3 more Ordinary insects and 3 more Super insects into the field, then fly away and die)*

"The next week the Farmer came to the field and found 6 insects. Of course he did not know that among the 6, there were 3 Super insects that were resistant against poison. Again he was worried and he decided to spray. This time he mixed the poison a bit stronger and took care to cover all areas of plants where the insects could be hiding."

*(Farmer looks around carefully and sprays all the insects, not excluding anyone)*

"All Ordinary insects died of the poison spray, but the Super insects survived."

*(Ordinary insects die, while the Super insects again show their nose covers to the public and smile)*

Again the remaining insects (3 Super insects) made babies. As before, each adult made 3 babies, flew away and died. Because all the parents



were Super insects, the 9 new babies were all Super Insects."

*(Surviving Super insects get babies by inviting 9 more Super insects into the field, then fly away and die)*

"The next week, the farmer visited the field again. Now he found 9 insects. He sprayed again with an even stronger poison, but now, none of the worms died!"

*(Farmer takes his poison sprayer, looks around carefully and sprays all the*



*insects, not excluding anyone. The 'super worms' again show their caps to the public and smile. Farmer looks puzzled)*



“What should the farmer do now?”

Encourage discussions on the activity and the number of pesticide application?

*Participants can be encouraged to be creative and innovative in depicting the role play and can also modify the actions.*





**IPDM**

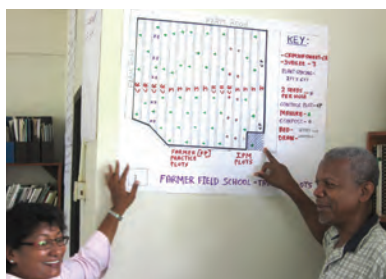
**TOMATO**

**HEATMASTER**

## 5.0 Ice Breakers & Energisers

**Icebreakers** are discussion questions or activities used to help participants relax and ease into a group meeting or learning situation. Participants can be encouraged to be innovative and come up with their own unique ice breakers.

- 1.0 **Develop A Catch Cry**
- 2.0 **And the Answer Is.... Make a Guess!**
- 3.0 **Spell the Crop ( ) Using Body Parts**
- 4.0 **The Gift**
- 5.0 **The Money Game**
- 6.0 **If You Are Happy and You Know It**
- 7.0 **The Time to Be Happy Is Now**
- 8.0 **Fruit Salad**



### 1.0 **Develop A Catch Cry**

#### **Objectives:**

- ❖ To encourage team work within the groups
- ❖ To encourage participants to be innovative and use their imagination.
- ❖ To motivate and develop a sense of pride among the group members.

#### **Materials:**

Paper                      Pens/pencils

#### **Procedure:**

- ❖ Divide the participants into 2 groups of equal sizes.
- ❖ Each group will be allowed to discuss among themselves for 30 minutes a group name and a catch cry/ slogan and then present it to the entire group.
- ❖ Groups can use this slogan/ catch cry to start off activities in the field after their prayer, at low moments at high moments or at any appropriate time etc.

#### **For Example,**

##### **Group 1: "WATERMELON"**

Catch Cry: the group would shout after the count of 4.

W-A-T-E-R-M-E-L-O-N

These could be letters representing the first names of the persons in the group/team.

##### **Group 2: "CABBAGE"**

Catch Cry: the group would shout after the count of 4.

C-A-B-B-A-G-E



## 2.0 And the Answer Is... Make A Guess!

### Objectives

- ❖ To encourage team work
- ❖ To encourage participants to think

### Materials:

Flip chart board            Paper  
Markers                    Clock (timer)

### Procedure

Divide the participants into two groups of equal sizes and allocate names for example, Group A and Group B. The facilitator then explains the rules of the activity.

- ❖ The facilitator writes a question on the flip chart paper and the group A will be asked to give an answer in 1 minute.
- ❖ If the group A guesses correctly they get 10 points and another question is placed on the chart for Group B.
- ❖ If group A answers incorrectly the Q is moved to the group B who can earn 5 points if they answer correctly.
- ❖ The questions are asked from group to group and the group with the highest points at the end is the winner.

You may choose to give the answer for the first question so that the group will understand fully.



### Examples

Can you make a guess of what this represents?

1. Man

-----

Board

*Answer:* Man Overboard

2. Stand

-----

I

*Answer:* I understand

3. R/e/a/d/i/n/g/

*Answer:* reading between the lines

4. R

ROAD

A

D

*Answer:* Cross roads

5. Cycle

Cycle

Cycle

*Answer:* Tricycle

6.

-----

town

*Answer:* down town

7. Le/

/vel

/

*Answer:* split level

8.

0

-----

M.D.

Ph.D.

*Answer:* 2 degrees below zero

9. iiii

-----

u

*Answer:* eyes on you

**Guide Questions or Analysis:**

- ❖ Did you enjoy this activity?
- ❖ Was it fun filled?
- ❖ What did you learn from this activity?
- ❖ Why did the winning team win?

**3.0 Spell the Crop ( ) Using Body Parts****Objective:**

- ❖ To stretch arms and legs
- ❖ To stimulate some movement
- ❖ To have fun
- ❖ To break the monotony
- ❖ To evoke fun and laughter

**Procedure:**

- ❖ Invite the participants to stand at arms length from each other
- ❖ With the use of the hands and the feet and other body parts invite them to spell their crop, namely,
- ❖ Be creative and innovative.

**For example,**

- R - Left arm curved over the head and right hand outstretched to the side of the body
- I - arms raised above head
- C -
- E -

Participants then clap themselves on a job well done.

**Guide Questions for Analysis**

- ❖ Did you enjoy this activity?
- ❖ Was it fun filled?
- ❖ What did you learn from this activity?

**4.0 The Gift****Objective:**

- ❖ To incorporate a fun filled activity into the programme
- ❖ To create excitement among the farmers

**Materials:**

- ❖ Gift wrapped in many sheets of paper (~10 sheets)
- ❖ Music

**Procedure:**

- ❖ Select a small gift item and wrap in many sheets of paper
- ❖ Invite all the participants to form a circle
- ❖ Start the game by playing music and then allowing the gift to



be passed quickly from person to person

- ❖ When the music stops the person who has the gift opens one layer of the wrapper.
- ❖ The music starts again and the process is repeated.
- ❖ The person who removes the last layer of paper gets the gift.

*Note: If this activity is being done in the field where there is no musical playing equipment then a song can be sung.*

#### **Guide Questions:**

- ❖ Did you enjoy this activity? Was it fun filled?
- ❖ What did you learn from this activity?
- ❖ Why did the winning team win?

## **5.0 The Money Game**

### **Objective:**

- ❖ To wake up participants or change the pace of a session.
- ❖ To allow participants to stretch their legs and arms etc.
- ❖ To encourage team work which is fun filled.

### **Procedure:**

- ❖ Divide the participants in two groups of equal sizes and describe the symbols for the value of money to the groups.

### **For example,**

- \* Standing with both hands above the head = \$2.00
- \* Standing with both hands to your side = \$1.00
- \* Touching your toes = \$0.50
- \* Stooping down = \$0.25



- The facilitator calls values of money and groups will use symbols to show the value called.
- You can choose any value or any combination of values, which can be demonstrated in a realistic way.

**For example,**

- \* Show \$2.00
- \* Show \$2.25 (stooping down with both hands above head)
- \* Show half of \$2.00
- You can call a predetermined amount of values. The persons in the group who do not show/demonstrate the correct value has to come out of the group.
- The group that has the most members in the end is the winner.

**Guide Questions for Analysis:**

- ❖ Did you enjoy this activity?
- ❖ Was it fun filled?
- ❖ What did you learn from this activity?
- ❖ Why did the winning team win?

**6.0 If You Are Happy and You Know It**

- ❖ Sing the song and do the actions. Repeat four times and replace “clap your hands” with the following each time:
- ❖ “Stamp your feet
- ❖ “Nod your head”
- ❖ “Whistle”

*If you are happy and you know it “clap your hands”  
 If you are happy and you know it clap your hands,  
 If you are happy and know then your life will surely show it  
 If you are happy and you know it clap your hands*

**Cumulative actions:**

Stamp your feet	Do whistle
Nod you head	Do them all

**7.0 The Time to Be Happy Is Now**

*The time to be happy is now  
 And the place to be happy is here  
 And the way to be happy  
 Is to make others happy  
 And to have a little heaven down here*

For the first round of singing, could be sung by everybody, in the next round, do not pronounce H and this applies to all the letters starting with letter H.

**Guide questions for processing:**

- ❖ How did you feel singing the song with some of the letters being omitted?
- ❖ Just like in groups, how do feel with some of the members are not there?

## 8.0 Fruit Salad

**Objective:**

- ❖ To serve as an energizer, establish group cohesion and to restructure sitting arrangement of participants in the session area.

**Procedure:**

- ❖ Select three or four popular fruits most liked by the participants. For example, avocado, mango and apple. Ask each participant to select one favorite fruit. And assign movements for each group of fruits.
- ❖ The leader mentions one kind of fruit and the persons in this group will do the movements. This goes on and on until the sitting arrangements has probably been jumbled.

**Movements:**

- \* Avocado - all in the avocado fruit will change seats
  - \* Mango - all in the mango fruit will also change seats
  - \* Apple - all in the apple fruit will change seats
  - \* Fruit salad - everybody will move to find a seat
- Those found not moving will be eliminated from the group.





# Appendices

## Appendix 1

### BASELINE INFORMATION FROM FARMERS

Name of farmer:

Address:

Acreage:

Variety:

Land preparation:

Seed Rate:

Variety:

### Fertilizer Application

Age of Crop	Type	Rate

### Crop Protection

Insect	Type	Method of Control	Chemical Used
Diseases			
Weeds			
Other			
Harvest Date:			

## Appendix 2

Cropping Calendar FFS St. Lucia (Farmers Practice)							
WEEKS	DAYS						
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
1	Previous Land Preparation - Plant seedlings - Slug Bait Miracle - Grow Stimu Plus - Irrigate	Supply Plants	Irrigate	Irrigate Supply Plants	Irrigate Supply Plants	Irrigate Supply Plants	Irrigate Supply Plants
2	New Fol K New Mectin Miracle Grow PH Plus Calmax	Irrigate	Irrigate	Irrigate	Irrigate	Irrigate	Irrigate
3	New Fol K New Mectin Miracle Grow PH Plus 16:12:24 Calmax Molding	Circle Weeding Molding		Circle Weeding Weedicide (Basta)	Irrigate		
4	New Mectin PH Plus NPK Stimu Plus Calmax			16:8:24			
5	New Mectin 12:12:24 Stimu Plus	Irrigate		Irrigate		Irrigate	
6	New Mectin PH Plus NPK Stimu Plus Phyton 27		Irrigate	16:8:24	Irrigate		
7	New Mectin 12:12:24 Stimu Plus New Fol K		Irrigate		Irrigate		
8	New Mectin				Irrigate		
9	12:12:24						
10	Harvest						
11	Harvest						
12	Harvest						

NOTE:

1. Irrigate as necessary
2. Rates of chemicals are based on the recommendations
3. Manual weed control as necessary

**FFS Cropping Calendar  
(Farmers Practice)**

WEEKS	DAYS						
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							



## Appendix 3

### The priority problems identified included:

- ❖ Understanding Pesticides
- ❖ Insect Pest Life cycles
- ❖ Natural Enemies
- ❖ Natural Pesticides
- ❖ Weeds
- ❖ Diseases
- ❖ Plant Nutrients
- ❖ Record keeping
- ❖ Nursery Production
- ❖ Good Agricultural Practices.

## Appendix 4

### General List of Materials for the Conduct of Farmer Field Schools CHECK LIST

*(Items may vary depending on the nature and location of the FFS Activities.)*

ITEM	REMARKS/ CHECK
<b>Sensitization Session</b>	
Attendance Register	
FFS Flyers (Information sheets)	
Invitations	
Letter Size Paper	
Meeting Venue, Chairs, Tables, Shed etc	
Refreshments	
Stakeholder List	
<b>Farmer Field School Sessions and Special Topics</b>	
3 Flip Chart Boards (minimum 2)	
Beakers	
Blank CD's	
Blank DVD's	
Bristol Board (green, blue, pink, white, yellow)s	
Bull dog Clips	
Calculator	
Camera	
Clear Plastic Bags – varying sizes	

**General List of Materials for the Conduct of Farmer Field Schools  
CHECK LIST**

*(Items may vary depending on the nature and location of the FFS Activities.)*

<b>ITEM</b>	<b>REMARKS/ CHECK</b>
Clip Boards	
Colored pencils	
Crayons	
Crayons, Pencils, Pens	
Disease Samples	
File folders (Ballot boxes)	
Flip Chart Paper	
Fluorescent Bristol Board (green, pink, blue, yellow)	
Garbage Bags	
Glass Jars/ Cups	
Glue and Glue Sticks	
Heavy Duty Pushpins/ Thumb Tacks	
Insect Collection Containers / Jars	
Insect Nets	
Insect Samples	
Insect Zoos –Netting, PVC, Elbows & Tees	
Letter and Legal Size Paper	
Magnifying Glasses	
Markers (blue, black, red, green)	
Measuring Glasses/cylinders	
Meter Rulers (folding/ expandable)	
Mixers / Stirrers	
Mounting , Masking & Scotch tape	
Newsprint sheets	
Note Pads	
Paper Clips	
Petri Dishes	
Pickets	
Refreshments	
Resource Books	
Resource Personnel	
Retractable Measuring Tapes	
Rubber Bands	
Rulers (clear plastic)	

**General List of Materials for the Conduct of Farmer Field Schools  
CHECK LIST**

*(Items may vary depending on the nature and location of the FFS Activities.)*

<b>ITEM</b>	<b>REMARKS/ CHECK</b>
Shed (Meeting Place), Chairs, Benches	
Small Buckets	
Small Measuring Scales	
Stapling Machine and Staples	
String /Twine	
Stroke Cups	
Tables	
Toilet Paper	
Utility Knives	
<b>Field Sessions</b>	
Coolers (Collection of Insects)	
Dissection Kits (probes, vials, labels, scalpels etc.)	
Fertilizers	
Fungicides	
Garden Tools – Fork, Hoe, Shovel, Rake, Cutlass etc.	
Hammer	
Hand Tools	
Heavy Duty Scale	
Ice Pack	
Insecticides	
Market to Dispose of Produce	
Measuring Cups & Spoons	
Mist Blower	
Nails	
Plant Knives / Secateurs	
Plant Tags	
Protective Gear – Coverall, Respirator, Boots etc.	
Refreshments	
Seedlings /Seeds, Seedling Trays	
Signs for Field & Field Day	
Spray Cans	
Stakes & String	
Stimulants	
Tarpaulin	



**General List of Materials for the Conduct of Farmer Field Schools  
CHECK LIST**

*(Items may vary depending on the nature and location of the FFS Activities.)*

<b>ITEM</b>	<b>REMARKS/ CHECK</b>
Trials (Specific Materials)	
Watering Cans, Drums, Water Tank	
<b>Graduation</b>	
Certificate Paper	
Gifts /Tokens	
Invitations	
Refreshments	
Venue	

## Appendix 5

### PRE- EVALUATION (BALLOT BOX QUESTIONS)

These are sample questions which could be repeated using different samples or specimens.

- ❖ Which of the following is NOT a farmer's friend?
- ❖ Which among these is a pest?
- ❖ Which among these is a natural enemy?
- ❖ Which among these is a farmer's friend?
- ❖ Which among these is a farmer's enemy?
- ❖ Which of these caused this damage?
- ❖ Which of these is a spider?
- ❖ Which of these is the paddy bug?
- ❖ Which of these is urea?

*Be innovative! Be creative! Use samples and specimens available and develop the questions.*

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