REPORT OF THE

TRAINING OF TRAINERS COURSE ON
FARMER FIELD SCHOOL METHODOLOGY

FOR

KARI'S SOIL MANAGEMENT AND LEGUME RESEARCH NETWORK PROJECT

HELD AT EGERTON UNIVERSITY, MARCH 12-17, 2001

COMPILED BY

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The course facilitators from FAO-Kenya and Coast Development Authority, Mombasa wish to mention the persons who made the training a success; the Coordinator, SMP and LRNP, Dr. Joseph G. Mureithi for organizing and inviting the two facilitators to conduct the course; the FAO Representative Mr. Daniel Gustafson and Prof. J.A. Lugogo - Managing Director, Coast Development Authority for granting permission for their staff to conduct the course as facilitators; the Centre Directors, KARI - Embu, Kakamega, Mtwapa, Kisii, Kitale, and District Agriculture and Livestock Extension Officers (DALEOs) from those regions, for allowing the researchers and extensionists to participate. The farmers who have been working with the researchers in developing technologies and their participation in the TOT, deserve special mention. The conducive environment provided by the staff and management of CMRT added to the success of the course, as participants were adequately catered for, hence were relaxed in mind to absorb an intensive weeks' training by facilitators of the FFS Methodology. Special thanks goes to the CMRT Director's, Secretary, Ms. Bridget for her devotion in ensuring this report in your hands is ready for readership.

Last but not least, to all who contributed directly or indirectly to the success of the TOT, we thank you.

B.A.M. Mweri
Facilitator (CDA)

G.S. Khisa
Facilitator (FAO)

PREAMBLE

The Soil Management Project (SMP) and the Legume Research Network Project (LRNP) of the Kenya Agricultural Research Institute (KARI) were initiated in 1995 with financial and technical support from the Rockefeller Foundation. The two projects adopted the farmer participatory approach for developing and testing soil and crop management practices. Individual farmers, informal farmers' groups and NGOs participated in the projects' activities. Promising technologies were developed and they are ready for wider dissemination. The successes the FFS approach has had in Asia in training farmers on IPM technology has made the two projects consider introducing FFS as a scaling up and a farmer training approach. The FFS is a participatory approach that uses non-formal adult education methods based on experimental learning techniques and participatory training methods. FFS emphasize learning by doing. The learning process takes place in the field and is normally designed to last for a full growing/cropping cycle. This enables farmers to participate fully in implementation of all components of the technology from planting to harvesting. The learning process accords farmers opportunity to observe and reflect the merits and demerits of the technologies and thereby make informed decisions of whether to adopt them or not.

A FFS pilot project was launched in January 2001 and it will cover five KARI-Centers implementing the projects. These are Regional Research Centers at Kisii, Kakamega, Embu and Mtwapa, and the National Agricultural Research Center at Kitale. The pilot project has two phases; the first phase will be training of project staff on the FFS methodology, which will take one year and the second phase will be for the project staff to run FFS based on the technologies that will be scaled up. The pilot project will be implemented in collaboration with FAO- Kenya which has had wide experience in running FFS in western and coastal Kenya.

The first activity to herald the introduction of the FFS approach was a three days workshop to sensitize various stakeholders (senior KARI and Ministry of Agriculture officials project staff and members of farmer research committees) about the approach and objectives of the proposed project. The workshop was held from 6th to 8th March 2001 in Kakamega and over 90 participants attended. The second activity is a FFS training of trainers (ToT) course that is to be offered to the project staff. The ToT course will be in two parts; the first part will cover the theory of FFS which will take one week and the second part will be the season long field training based on the technologies to be scaled up. FAO, Kenya has provided two facilitators for this training and they are Mr. B.A.M Mweri and Mr. Godrick Khisa. About 60 participants will undergo this training.

The first part of the ToT was held from 11 to 17th March 2001 at the CMRT training facilities at Egerton University and it covered the following topics, introduction of farmer field schools methodology, steps in conducting FFs, organizations and management of FFS and non-formal education methods. The TOT involved field exercises, small group discussions and plenary sessions. This is the report of the TOT compiled by the trainers.

Dr. Joseph G. Mureithi
Coordinator, SMP and LRNP

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LIST OF ACRONYMS

DCO	- District Crops Officer
RO	- Research Officer
R	- Researcher
Lab Tech	- Laboratory Technician
M.O.A.	- Ministry of Agriculture
D.M.&E.O.	- District Monitoring and Evaluation Officer
A.O. I	- Agricultural Officer 1
DEC	- District Extension Coordinator
Div.	- Division
Agric. Econ	- Agricultural Economist
MOARD	- Ministry of Agriculture and Rural Development
S.R.O.	- Senior Research Officer
T.O.	- Technical Officer
R.S.	- Research Scientist
DAR&T	- District Adaptive Research & Training
CO/E	- Crops Officer/Extension
DRELO	- District Research Extension Liaison Officer
DTARP	- District Training and Adaptive Research Officer
E.O.	- Extension Officer
RELO/M&EO	- Research Extension Liaison Officer/ Monitoring & Evaluation Officer
TOL	- Technical Officer Livestock Section

1. GROUPING AND LEVELING OF EXPECTATIONS

a) Grouping

Participants were grouped into five groups randomly. Each group chose a name as follows;

- Group 1- Simba
- Group 2- Njokerio
- Group 3- Masaa
- Group 4- Millennium
- Group 5- Jembe

The five teams went into tackling all tasks assigned by the facilitators in there respective groups. Each developed a slogan and when presenting their output to the plenary they called out the slogan and the rest of the group responded

b). Expectations

- What are the expectations of the Participants (PARs) from the course?
- What are the expectations of the PARs from the Facilitators (FACs)?
- What are the expectations of the FACs from the PARs?

<u>Expectations from the course</u>

- Fully understand the concept of the FFS and skills to run them.
- How to identify, form group and run FFS.
- Learn how to develop curriculum and networking of participants
- Learn how to incorporate FFS approach in scaling SMP and LRNP technologies
- Group dynamics
- Learn techniques of sustaining the farmer led FFS
- Acquire skills in training other trainers

- Colourful graduation
- Certificate of participation to be given

Expectation of the group from trainers
- Effective communication and well co-ordinated course
- Know their subject matter well and give hand outs
- Participatory approach
- Interact with participants
- Give good background on successes, failures and how to improve the FFS basing their past experience in Kenyan context
- Cost effectiveness and sustainability of F.F.S.

Expectation of facilitators
1. Commitment
2. Cooperation
3. Respect opinions
4. Exchange of experience
5. Discovery based learning

2. SETTING OF LEARNING NORMS AND FUNCTIONS OF HOST TEAM

Laying down RULES and REGULATIONS during the entire training period.
The participants set the following norms:

Norms
- All sessions must start with a prayer and a motto for the group
- Punctuality should be observed
- Participation through discussion and presentation without intimidation
- Absenteeism without permission not allowed
- Members should be alert and respect each other's opinion
- No drinking nor smoking
- No wrong answer
- Use understandable language with one speaker at a time
- Collective responsibility with democratically elected leaders
- Minimal movement during session
- Group assignment taken seriously
- Penalties: 4 times absent - no certificate and 2 times - fine
- Close with a prayer

Functions of host team

The host team should: -
- Facilitate the whole week/day(s) activities
- Prepare the opening program and schedule of activities
- Arrange the training venue
- Keep the training hall and premises clean
- Provide the energizer/ice-breakers
- Introduce the resource person/guest speaker
- Check the weekly attendance of the FFS PAR
- Serve as the time keeper
- Distribute the reading materials and others

- Assist the FAX or reporter in the reporting and discussion
- Do other functions assigned by FAX

3. INTRODUCTION OF FFS METHODOLOGY (BACKGROUND)

Background

The FFS approach was developed by an FAO project in South East Asia as a way for small-scale rice farmers to investigate, and learn, for themselves the skills required for, and benefits to be obtained from, adopting on practices in their paddy fields.

The term “Farmers’ Field School” comes from the Indonesian Sekolah Lampangan meaning simply “field school”. The first Field Schools were established in 1989 in Central Java during the pilot phase of the FAO-assisted National IPM Programme. This Programme was prompted by the devastating insecticide-induced outbreaks of brown plant hoppers (Nilaparvata lugens) that are estimated to have in 1986 destroyed 20,000 hectares of rice in Java alone. The Government of Indonesia’s response was to launch an emergency training project aimed at providing 120,000 farmers with field training in IPM, focused mainly on recording on reducing the application of the pesticides that were destroying the natural insect predators of the brown plant hopper.

The technicalities of rice IPM were refined in 1986 and 1987 and a core curriculum for, training farmers was developed in 1988 when the National IPM Programme was launched. It was based not on instructing farmers what to do but on empowering them through education to handle there own on-farm decisions, using experiential learning techniques developed for non-formal adult education purposes.

Since then, the approach has been replicated in a variety of settings beyond IPM. The FARM Programme (FAO/UNDP), for example, has sought to adapt the FFS approach to tackle problems related to integrated Soil Fertility Management in the Philippines, Vietnam and China. The themes studied by farmers’ groups include soil mapping of village lands, physical and chemical analysis soils, fertilizer application and the influence of cropping practices on fertility. With the knowledge thus gained, farmers can more easily recognize differences in soils and take better informed decisions on the use of organic and inorganic fertilizers, alternative tillage systems and cropping practices so as to improve the conservation and management of soil productivity.

Subsequently the FFS approach has been extended to several countries in Africa and Latin American. At the same time there has been a shift from IPM for rice based systems towards other annual crops, vegetables etc and the curriculum has been enriched with other crop management aspects.

In Kenya the approach was introduced in 1996 under the special Programme for food security on maize based farming systems with only 4 FFS schools in Kakamega District, Western Province. The number has since risen to over 300 FFS spread over in Western, Coast, and Central province.

From the initial Maize based IPPM FFS the Programme has diversified to other crops and also include Livestock Production

The Programme has mainly been operational in Western Province (Kakamega, Busia and Bungoma), Coast Province (Kilifi and Kwale) and Central Province (Kiambu).

Plans are also underway to move into Rift Valley (Nakuru, Narok) and Eastern Province (Kitui and Mwingi) and also Central Province (Muranga, Kiambu, Maragua and Nyeri)

4. APPROACH AND CONCEPT

What Is A Farmer Field School**?**

Farmer field schools (FFS) is a participatory approach to extension, whereby farmers are given opportunity to make a choice in the methods of production through discovery based approach.

A Field School is a Group Extension Method based on adult education methods. It is a "school without walls" that teaches basic agro-ecology and management skills that make farmers experts in their own farms.

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 extensionists.

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, and interact on a more demand driven basis with the researchers and extensionists looking to these for help where they are unable to solve a specific problem amongst themselves.

In summary therefore a Farmer Field School (FFS) is a forum where farmers and trainers debate observations, 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.

Objectives of Field Schools

Broad Objectives

To bring farmers together to carry out collective and collaborative inquiry with the purpose of initiating community action in solving community problems

Specific Objectives

- To empower farmers with knowledge and skills to Make them experts in there own fields.
- To sharpen the farmers ability to make critical and informed decisions that render their farming profitable and sustainable.
- To sensitize farmers in new ways of thinking and problem solving
- Help farmers learn how to organize themselves and their communities.

FFS also contribute to the following objective

- Shorten the time it takes to get research results from the stations to adoption in farmers' field by involving farmers experimentation early in the technology development process.

- Enhance the capacity of extension staff, working in collaboration with researchers, to serve as facilitators of farmers' experiential learning. Rather than prescribing blanket recommendation that cover a wide geographic area but may not be relevant to all farms within it, the methods train extensionists and researchers to work with farmers in testing, assessing and adapting a variety of options within their specific local conditions.

- Increase the expertise of farmers to make informed decisions on what works best for them, based on their own observations of experimental plots in their Field schools and to explain their reasoning. No matter how good the researchers and extensions, recommendations must be tailored and adapted to local conditions, for which local expertise and involvement is required that only farmers themselves can supply.

- Establish coherent farmer groups that facilitate the work of research and extension workers, providing the demand of a demand driven system.

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:

- Grow a healthy crop
- Observe fields regularly
- Conserve natural enemies of crop pests
- Farmers understand ecology and become experts in their own field

<u>Characteristics of the Farmer Field School Approach</u>

Farmers as Experts. Farmers 'learn-by-doing' i.e. they carry out for themselves the various activities related to the particular farming/forestry practice they want to study and learn about. This could be related to annual crops, or livestock/fodder production. They 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 maize field, banana plantation, or grazing area is where farmers learn. Working in small subgroups they collect data in the field, analyze the data, make action decisions based on they analyses of the data, and present their decisions to the other farmers in the field school for discussion, questioning and refinement.

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 it is they have to do, and what it is that they can observe in he field, the extension worker takes a back seat role, only offering help and guidance when asked to do so.
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 leaders, 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 colleagues and advisers 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 are considered together with ecology, economics, sociology and education to form a holistic approach. Problems confronted in the field are the integrating principle.

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 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.

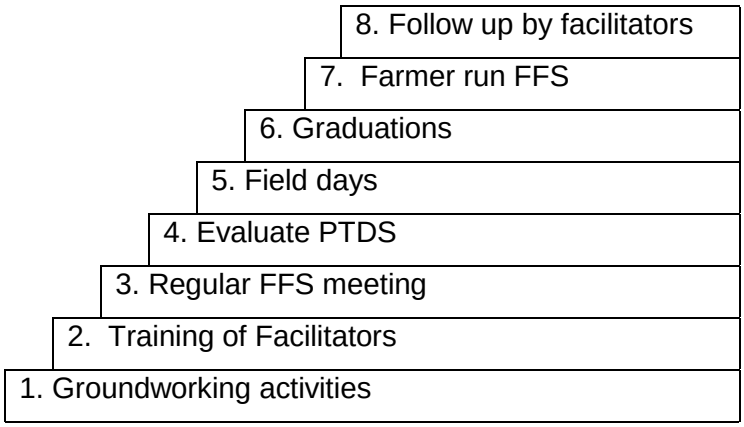
Regular Group Meetings. Farmers meet at agreed regular intervals. For annual crops such meetings may be every 1 or 2 weeks during the cropping season. For other farm/forestry management practices the time between each meeting would depend on what specific activities need to be done, or be related to critical periods of the year when there are key issues to observe and discuss in the field.

Learning Materials are Learner Generated. Farmers generate their own learning materials, from drawings of what they observe, to 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 fuse 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.

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

5. STEPS IN CONDUCTING FFS (CLASSICAL APPROACH)



a) Conduct Groundworking activities

- Identify focus enterprises
- Identify priority problems
- Identify solutions to identified problems
- Establish farmers' practices
- Identify field school participants
- Identify field school sites
-

b) Training of Facilitators on

- Crop/livestock production and protection technologies
- Field guides on how to effectively deliver crop/livestock production and protection topics using non-formal education methods (NFE)
-Participatory technology development (PTO) with emphasis on the approaches and developing guidelines on conducting PTD
- Non-formal education methods with emphasis on what, when and how to use NFE in FFS
- Group dynamics
- Special topics to be addressed at every stage of training.
- Regular FFS meetings
- Implement PTDs (Test and Validate)
- Conduct AESA and Morphology and collect data
- Process and present the data
- Group dynamics
- Special topics

c) Evaluate PTDs

- Analyze collected data
- Interpret
- Economic analysis
- Presentation

d) Field days

6. CONCEPT OF ECO-SYSTEM WHAT IS THIS? WHAT IS THAT?

Ecosystem
Definition: -
Q. What is an ecosystem?

Entails both living and non-living things found in an area and the environment they are in.
Learning objectives:

- Facilitate learning by discovery in the FFS
- To guide farmers to critically analyze and make better decisions on their field problems

Components of an ecosystem

Both: -
- Living
- Non-living and the
- Physical environment

What is this? What is that?

(Learning to answer questions with questions)

Definition: It is a discovery-based learning in which questions are used to answer questions. It leads the learner to the answer by asking questions.
- It promotes learning by discovery and leads learners towards their own analysis
- It guides farmers to critically analyze and make better decisions on their own fields.

The goal of discovery-based learning is to provide a more enlightened educational opportunity for participants. The methodology of learning is very important or achieving the goal of education. One important method is to ask questions that allow the participants to develop their own analysis and understanding. You are stealing an opportunity for education if you reply directly with an answer. Ask questions. Lead the participant to the answer by asking questions.
In the maize field, a common question is: What is this?
There are many ways to answer the question: What is this? For most of us, the natural response is to give the name of the object, often in a foreign language. The question is often answered by saying: Oh that is ….. or "This is …….? The result of this answer is that an education process has been stopped.
A better way to answer the question is to ask a question: Where did you find it? What was it doing? Were there many of them? Have you seen this before? The idea is promote learning by discovery and to lead the person toward his or her own analysis.

Learning Objectives:
- To facilitate learning by discovery among farmers in the FFS.
- To guide farmers to critically analyze and make better decisions on their field problems

Materials:
- Maize field,Plastic bags,notebook and pen

Steps:
- Go into a corn field in groups of two or three persons per group
- In this group, take turns in the following roles:
  - The 'farmer' should take anything in the rice ecosystem (pests, natural enemies, weeds, others) and ask, "What is this?" The other member will act as a "recorder" and must write

down questions and responses. The "technician" should respond with one of the following type of responses: 'That is a good questions'. "Where did you find it?" 'What was it doing' 'Did you ever see it before'? 'What do you think it is'? (Keep asking questions). Use this especially when you know what the specimen is. Try not to give the answer!

- If the question is to be answered, the "technician" should avoid the answers, which give more emphasis to identification. Rather, the function of the organism should be emphasized. 'This is an insect that feeds on the plant'. 'It is not actually a problem insect until there are very many'. 'There are many organisms which eat this insect, including spiders and parasites' OR, 'This is a spider that eats insects and is a friend'. 'It happens to be called a hunter because it moves around the field searching for insects' OR, some other responses that only give biology/ecological information.

- NEVER GIVE THE ANSWER WITH A NAME. THAT ONLY KILLS THE QUESTION. THE QUESTION IS A CHANCE TO LEARN.

- After the members had taken their turns, return to session hall/shade and process experiences.

Exercise:
What is that? What is this?
(Answering questions with questions)
- Walk through the field as a group
- In the group take turns in the following:-
- One member picks/takes points at anything in the maize ecosystem
- One member will ask questions

The remaining member should record both Q and A.

Group exercises on the concept of what is this

Group 1: Simba farmer field school

F What is this?
T Looks like an insect that flies
F Is it a beneficial insect
T Yes but are harmful if many
T Where id you find it
F Pastures
T What was it doing?
F They were many and some were eating grass
T Do they eat grass?
F Yes
F Can they be eaten by animals or human beings
T In some communities
F Can they be used for medicine for animals or human beings
T Perhaps
F It has man colours, Why?
T Colours are like clothing's for protection purposes
F How can I prevent them from eating grass
T Chicken or other birds can eat them
F Will I bring birds here?
T If you have chicken that is okay
T Other insects are beneficial

F This is a plant from my shamba
Tech: You got it from your shamba?
F Yes
Tec: Are they many in the farm?
F No just in patches
Tec Why are you worried?
F The patches maize is performing poorly
Tec How does it appear? The maize crop
F Leaves yellow, slow growth, small cobs
Tec Have you seen the weed elsewhere
F Yes in other farms
Tec What do other farmers say about it?
F They are also worried because after weeding this plant does not dry up
T Has anybody done anything about it before
F No, just weeding
Tec: Do animals fee on it?
F Yes, one farmer has tried to feed her animals on it and claims it increases milk
T How does this plant grow? Does it climb on the maize crop?
F No it grows on the ground
T Have you tried to slash it?
F Yes but if regrows very fast by developing roots
T It is a vegetative plant
F What do you mean by that?
T It is plant that grows from cuttings have you seen any other crop that grows vegetatively?
F Yes, couch grass
T How do you control it?
F By preparing the shambas early
T The plant is called a wandering Jew and its succulent in nature
F What do you mean by that?
T It has water in it, therefore does not dry up easily
F: How do I control it?
T Weed your shamba when it is dry
F I will try to do that and I will be in touch with you
T I will visit you to see the intensity of the infestation

Group 2: Njokerio farmer field school

Farmer : Here is soil sample from my farm. There is an animal inside destroying my crops.
T What is the animal?
Technician: What crops have you planted?
F Maize, kale, sweet potatoes
T When did the problem start?
F Two days ago
T Have you experienced the problem before?
F No
T What damage did you observe on crops?
F The animal was cutting the crops
T Have you thought of any control method?
F None; that's why I have come to you
T Do your neighbors have similar problem?
F Yes, my immediate neighbor has
T Lets go to the field and find out more

Group 3: Masaa farmer field school

F What is this?
T What about it?
F I found it in my maize plantation
T Why did you decide to bring it to me?
F I wanted to find out what it is
T Which effects did you say it has on maize?
F It made the maize to perform poorly
T How do you manage your maize field?
F Usually weed and put fertilizer as required
T Do you have a name for it in your area?
F Yes, it is called Anyach
T What does that mean?
F It does not have a meaning
T How have you been controlling it before?
F By using it as cattle feed and for spraying vegetables
T Then why don't you continue doing that, it is called Mexican Marigold

Group 4: Millennium farmer field school

Exercise 1:

F: I have this problem
T: What is the problem?
F I have problem with flowers?
T What is the problem with flowers?
F There's brown dust, insects and eventually the plant dies
T What do you think? Is it the dust or the insects that causes the death of the plant?
F I don't know
T Do you have flowers that have insects and dust and yet they do not die?
F No! All affected plants dies
T What comes first the dust or the insect?
F The dust comes first
T Do you think the insect followed the dust or produced it?
F Insects come and cause the flowers to die. The insects comes and enters the flower and when they leave the flowers die and the whole plant dries.
T What do you therefore think?
F The insects produced the dust
T Did you break the stem and check whether the damage was on the stem?
F The damage is on the outside
T We have first to agree whether the problem is the dust or the insect
T Is this the first season you have observed this problem?
F This is the eleventh year of growing flowers and this the 1st year this incidence have occurred.
T Do your insects come from other plants?
F I only grow flowers, I don't grow other plants
T We will have to investigate whether the insect is killing the plant directly or produces dust that kills the plant. I'll take these samples and go and investigate and I'll bring you the results.

Exercise 2:

F Here is soil sample from my farm. There is an animal inside destroying my crops
T What is the animal?
What crops have you planted?
F Maize, kale's sweet potatoes
T When did the problem start?
F Two days ago
T Have you experienced the problem before?
F No
T What did you find in the soil?
F I dug and found a hole and a long tunnel
T What damage did you observe on crop?
F The animal was cutting the crops
T Have you thought of any control method?
F None; that's why I have come to you
T Do your neighbors have similar problem?
F Yes, my immediate neighbour has
T Lets go to the field and find out more

Group 5: Jembe farmer field school

F Excuse me officer. What is this?
T Where did you find it?
F In my farm. It affects most of my crops maize, beans, bananas
T How much of it is in your farm?
F Nearly half of my farm
T When did you notice it for the first time?
F Last year, it has really caused my yields to go down
T Have you tried to control it?
F I have tried ploughing early, and weeding it but is still persistent
T This is a perennial and persistent weed. Continue early weeding, heap and burn.Herbicides like round up can also control it but it is rather expensive although effective. We will set up participatory onfarm weed control trial in your farm in future to determine the cost effectiveness of the various methods
F Thank you.

7. FEEDBACK FROM FIELDWORK/APPRECIATING TYPES OF ECOSYSTEM

Group 1 Simba farmer field school

Viewing Ecosystem

Things observed

Blue hills and clouds,trees (Acacia), live and dead shrubs (Erwinia), lions ear, grasses (staff, couch, Rhodes), Birds, butterflies, sparrow, Plastic bags and tins, grasshoppers, insects (ants),Sodom apple and datura,dead mat of grass,rats and mole mounds

How they affect each other

- Lion ear provides nectar for sunbirds, which also feed on butterflies, grasshoppers and other insects
- Erwinia provides food to some unidentified birds which, in turn, disperse the Erwinia seeds
- Grass roots provide food for moles which burrow in the soil and improve soil aeration for better plant growth
-The entire plant community provides home for living organisms (rats, birds, butterflies)

- Clouds bring rain to enable the plants and other living organisms to get water
- Dead mat of grass provides mulch and thus conserving moisture in the soil which is in turn, used by plants.

GROUP 3: Masaa FFS
What we saw;
Blue sky, clouds, hills/buildings, tall trees, kite, shrubs/flowers/nests,birds,butter flies, grasshoppers, beetles, grass, Spider, Caterpillar, Ants, Soil

Group 4: Millennium FFS

Ecosystem Food Web
Blue sky/clouds, range of hills (mountains), trees/buildings, cows grazing on pastures, telephone lines, vehicles, cyclists, open field (pastures trees (cypress), birds flying (Hawk), acacia/ shrubs, Grass (stargrass/rhodes) polythene paper, grasshoppers, lady bird, beetles, ants, Spiders, flies, Soil, goal posts
(drawing)

Notes: Moles - Eat plants
Help in decomposition

GROUP 5: Jembe

Observations

Horizon Blue sky, clouds, bills, birds, houses
- Cyprus, Acacia, various shrubs, dry thickets, (grass dry)
- Grasses, butterflies, grasshoppers, herbs, mole hills, soil, ants Clouds - provide rain
(drawing)

Notes:
Houses - shelter
Trees timber, firewood, birds housing, micro-climate
Birds - Eat insects; help pollination
Insects - eat grass; help in pollination and decomposition
Grass - Feed on soil nutrients
(drawing)

8. AGROECOSYSTEM ANALYSIS (AESA) – MAKING A GROUP MANAGEMENT DECISION

Establishment by observation of the interaction between a crop/livestock and other biotic and abiotic factors co-existing in the field. This involves regular observations of the crop/livestock. It is a way of assembling what we are studying and placing into a process useful for decision making based on many factors.

Why AESA?
To improve decision-making skills, through a field situation analysis by observing, drawing and discussing. To improve decision-making skills by presenting small group decisions for critique in the large group

9. FEEDBACK FROM FIELD WORK- ON AESA

a) Millennium FFS – Group 4

General Information

Variety:	Improved moneymaker
Spacing:	40 x 40cm
Date of planting:	8-2-01 *(plant drawing)*
Age if crop:	1 month (33 days)
Fertilizer rate:	NPK - 1 kg/14m^2
Weather:	Sunny/cloud
Time of Observation:	11.00 a.m.

Agronomic Data

Plant	1	2	3	4	Av
Plant Height (cm)	59	57	56	58	57.5
No. of trusses/plant	5	5	3	4	4
No. of fruits/truss	15	5	5	6	8

Pests
1. White fly
2. Leaf miner

(plant drawing)

Drawings
(leaf drawing)
Leaf miner

(drawing)
White fly

Natural Enemies
Not observed

Observation
1. Weeds: Amaranthus, Comelina, Gallant soldier, Oxalis, Wild finger millet
2. Irregular irrigation
3. White fly
   Leaf miner were observed

Recommendation
- Hand pulling (spot weeding)
- Adjustment of irrigation system (service) leakage
- Establish an insect zoo to determine if natural enemies are present
- Insect infestation is low = no spraying. Close monitoring to continue

b) MASAA FFS- Group 3

AESA CHART

General Information
Spacing - Inter row - 40 cm
Inter row - 40 cm
Time of Obs - 11.00 a.m.

(tree drawing)

Agronomic data
Height 60 cm
No. of trusses/plant 3
No of fruits/truss 8
No. of fruits/plant 9
No. usable fruits N/A
No. of fruits/kg N/A

Observations	Recommendations
• White flies	Spray with Metasystox
• Leaf mining	Continue applying Karate
• Young weeds	Pull them out (hand wee)
• leaf curling and necrosis	Spray with fungicide (Ridomil)
• Plant irrigated and poly mulched	Continue with the same
• Grass hopper	Ignore
• Black and red ants	Observe their effect on tomato
• Plant trained	Continue
• Pruning done	Highly recommended

10. ORGANIZATION AND MANAGEMENT OF FFS

a) Project Conditions for a sustainable FFS

- Common need/interest
- Should be registered
- Have a bank account
- Have an income generating activity on the ground or willing to start e.g. tree nursery
- Have access to a plot at least 0.5 acres
- Engages in some farming activities
- Members ready to contribute a certain amount of money to the group
- Volunteer land
- Form group: Minimum - 25, Maximum - 35
- Members should be active farmers
- Encourage to balance in gender
- Farmers should be willing to provide 20% of the initial cost of establishing the field school
- Available Technology options to be taken to the farms
- Technical back stopping - feed back from farmers
- Provide labour for school activities
- Some members should be able to read and write
- Group members should be able to initiate more FFS
- Group norms
- Demand for technology
- Commercialization

b) Criteria for site selection

- Problem area
- Central and accessible by farmers as well as facilitators
- Accessibility, security
- An expressed need
- Social community - able to work in groups
- Representative
- Suitable for technology development
- Should be ideal for school activities
- Democratically selected by farmers
- Site must have a soil-related problem

c) Selection of participant (Criteria)

- Must be an active farmer
- Must be committed
- Must agree to the rules of the group
- Must belong to the same village
- Must be willing to attend all lessons during the crop-growing season.
- People who are willing to work in a team
- People willing to work and share ideas with others, particularly non- members
- Willing to contribute financial or material inputs to the school
- Work in consensus
- Practicing farmer
- Must be interested in the technology

d) Groundworking

Definition**:**
A collective term for activities conducted at the village with end view of preparing or paving the way for the introduction of a new concept or program in the area. Ideally, the activities should begin a season before or atleast a month prior to a planned farmers field school (FFS)

Objectives:
Identify or determine the actual needs of the area, which will be the basis in developing ICM/IPPM program at various levels.
Address farmers needs, set relevant trials to address them.
It is variety of team building exercises employed during training.

Purpose

- To develop the participants into a closer knit team
- To establish a learning climate that is enjoyable as well as fruitful
- To help participant experience and identify such aspects of teamwork as mutual support, the importance of individual roles to a team's success and behaviour that can build or hinder teamwork.
- To help participants experience what can be accomplished by working together as a team

e) Participants group and class

- All learning is done in sub-groups
- Each group is responsible for a treatment or a series of different treatments for comparison studies
- Treatments are at the learning sites
- There are no replication in the same field school
- Each group plays host on day of FFS activities
- Each FFS has officials
- Each sub-group has off FFS therefore has seven leaders at different levels

f) FFS Curriculum

- The FFS are based on a solid tested curriculum, which covers the entire crop/livestock cycle. The field guides, study fields plus a collection of group dynamic exercises provide the basis for the field school curriculum. These materials are used according to their appropriateness.

- Training in the farmer field school is experiential and discovery based. The training activities are designed to have participants learn by doing. Most of the training time is

spent in the field. Exchange of information and generation of knowledge is facilitated through sharing observations, brainstorming and long discussions.

- A corner stone of the FFS methodology is agro-ecosystems analysis (AESA) which is the establishment by observation of the interaction between a crop/Livestock and other biotic and abiotic factors co-existing in the field. This involves regular (usually weekly) observations of the crop. Participants work in sub groups of 4 or 5, and learn how to make and record detailed observations including:
  - Growth stage of the crop
  - Insect pest and beneficial numbers and weeds and disease levels.
  - Weeds and disease levels
  - Weather conditions
  - Soil condition
  - Overall plant health.

- The farmers then take management decisions based on these observations. An important aspect of FFS is helping and encouraging farmers conduct their own experiments, to test out ecological crop management methods.

- There are no standard recommendations or packages of technology offered. Farmer groups collectively decide which methods or aspects of crop management should be studied, and undertake action based on their own findings. In this way, farmers become active learners and independent decision-makers through a process of learning by doing.

- These together with a group dynamic activity and a special topic, which concerns what is happening in the field, form the core of the field school curriculum.

- FFS day is divided into: -
  - AESA and its relevance to growth stage
  - Group dynamic activity
  - Special topic related to specific village level conditions or problems

g) Field School Schedule

- FFS meet for half a day on the prescribed days
- A typical day for a field school is divided into: -
  i) Prayer/roll call
  ii) Review of the previous day
  iii) Briefing on today's activities
  iv) Field observation of the crop/livestock
  v) Discussion and presentation of field observation for decision making
  vi) Group dynamic activity in small or large groups
  vii) Special topic activity and discussion in the small or large group.
  viii) Planning for next week
  ix) Summary and closure

h) Group Dynamics

It is a variety of team building exercises employed during training

Purpose

- To develop the participants into a closer knit team
- To establish a learning climate that is enjoyable as well as fruitful
- To help participants experience and identify such aspects of team work as mutual support, the importance of individual roles to a teams success, and behavior that can build or hinder teamwork
- To help participants experience what can be accomplished by working together as a team.

i) **Lessons Learnt in Farmer Field School**

- Facilitators should have local knowledge in terminologies used (pests/diseases)
- FFS has an in built Monitoring & Evaluation
- Can be effectively integrated into other participatory methods
- Access to micro-credit enhances adoption of technology through FFS
- Concept and procedure are flexible enough so that it could be modified to fit into the local condition.
- FFS can be made cost effective
- Effective linkages between stakeholders are established
- Need to document the process end the results

j) **Condition For Successful FFS:**

- Organized community and dedicated/committed & willing
- Well trained facilitators
- Well defined priority problem
- Adequate resources and logistical support
- Clear understanding of the concept and procedure by all stakeholders
- Support and good will of the Authorities at various level
- Availability of appropriate technologies

11. FARMER FIELD SCHOOL FIELD GUIDE

Time	Activity	Objectives	Materials	Responsible Persons
8.00–8.05 a.m.	Prayer	To commit the days activities to the Lord		Host team
8.05 a.m.	Field monitoring (AESA)	To collect the data	Note books and pencils	All facilitators
9.00-9.30 a.m.	Processing of AESA	To present the output of the analyzed data		Facilitator
10.00 a.m.	Group dynamic	To revitalize the participants		Host team
10.30 a.m.	Special Topic (selection of mother stock)	To input on the specific topic	Pens, pencils Note books	Facilitators
11.30 a.m.	Planning for next week	To plan for the activities of the following week		Paxes and faxes
11.50- 12.00 noon.	Prayer	To thank God for the days activities		Host team

12. THE BALLOT BOX EXERCISE

(Evaluating knowledge and skills)

When is this exercise most appropriate?

- In the FFS, and TOT as a pre-and post-training evaluation of the participants ability in identifying crop growth stages, diseases, weeds, insect pests, the damage they cause and their natural enemies.
- It becomes meaningful because actual field situation or problems are presented.
- Participants need not know how to write to be able to participate in the activity. In cases where some participants cannot read, facilitators must make it a point to walk with those concerned and assist them by reading out the questions to them.

Learning Objectives:

- To measure participants' knowledge and skills in identifying crop growth stages, diseases, weeds, insect pests, the damage they cause and their natural enemies.
- To develop participants skills in the preparation of Ballot Box questionnaires.

Materials:

- Pieces of cardboard or folders
- Vials, rubber bands, marking pens, thread, thumb tacks
- Bamboo sticks
- Actual, live or preserved specimens

Steps:

- Collect live, actual specimens and preserve insect pests and natural enemies in vials and mount the same on pieces of cardboard or folders.
- Prepare questions focused on identification of crop stages, plant parts, diseases, insect pests, the damage they cause and their natural enemies. The questions should be in the dialect or vernacular.
- Write the questions on the cardboard or folders. They should be of a selection type where participants only choose the letter of the correct answer. Questions may be as follows:-
    - What insect causes this damage?
    - Which of these insects is a pest?
    - Which of these insects is a friend?
- Mount the cardboard or folder on bamboo sticks with the thumb tacks and set up the "ballot boxes" in the field. Use rice/maize plants in the field showing actual insect damages for the exercise.
- During the exercise, the participants select only their answers by dropping a piece of paper with their assigned number in a corresponding "ballot box" attached to the cardboard or folders.
- Process the activity to determine participants performance and to solicit comments on how to improve the exercise for future use.

13. PARTICIPATORY DISCUSSION ON FOLK MEDIA

<u>Principles of FFS folk media</u>

- Community based (avoid sophistication)
- Involves peoples participation especially FFS

- Self-reliance - use locally available materials
- Indigenous (in Dindiri/Ng'ombeni) to put a clear message to the community (i.e. song/dance combination)
- Should be within the programme perspective (IPM-maize based)

Application of human creativity and theatre art in IPM
Direction:- Develop your own folk media with originality => creativity
Defining human creativity

Creativity [Formulae] (mathematical definitions)
- Stereo type => 1+1 =2 (acceptable)
- Pathological => 1+1 = 11 (its irregular, sick, not acceptable)
- Creativity => (1+3) - 2 = 2 => being creative

Note:- Avoid mindsets
- Go beyond mind sets e.g. nine dot game

Dimensions of creative communication
a) Flexibility
   - the ability to see with a fresh pair of eyes
   - to shift from one perspective to another
   - to move from a different stand point
b) Fluency a free flow of words, images and ideas
c) Originality
   - the capacity to produce fresh response arising out of each person's unique perspective, personal history and experiences

d) Synthesis elaboration
   - Ability to develop an idea or image, make connections fill in details and to transform existing ideas or images into a new and integrated form or pattern.

POEM
(Using broken sentences)
I used to ……
But now …….
I used to be …….
But now I am …….
I used to think …….
But now I know …….
I used to wish …….
But now I have ……..
I used to believe ……
But now I feel …….
I used to fear …….
But now I ……..
I used to …….
But now …….

POEM

Develop A poem (example)

I used to spray …….
But now No more …….

I used to be a killer ……..……
But now I am a friend ……..
I used to think all insects are pests but now I know most of them
are friends (N.E) ……..
I used to wish a clean environment ……
But now I have a polluted environment ……..…
I used to believe healthy but now I feel sickly ……
I used to fear of the future generation ……..…..
But now I can restore it ……..……..
I used to destroy the environment ……
But now conservationist ……

14. NON-FORMAL EDUCATION METHODS

a) **Principles of Adult Learning**

Principle 1: Learning is an experience, which occurs inside the learner and is activated by the learners
Principle 2: Learning is the discovery of the personal meaning and relevance of ideas
Principle 3: Learning (behavioral change) is a consequence of experience
Principle 4: Learning is a co-operative and collaborative process
Principle 5: Learning is an evolutionary process
Principle 6: Learning is sometimes a painful process
Principle 7: One of the richest resources for learning is the learner himself
Principle 8: The process of learning is emotional as well as intellectual
Principle 9: The process of problem solving and learning is highly unique and individual

b) Types of non-Formal Education Approaches used in FFS

Key non-formal Education (NFE) Approaches used in the Farmer Field School learning include:

i) Sharing
ii) Case study
iii) Role play (dramatized sessions)
iv) Problem solving exercises
v) Panel discussions
vi) Group dynamics
vii) Small group and large group discussion
viii) Brainstorming
ix) Simulation game

<u>Sharing</u>

Procedure: Knowledge, ideas and opinions on a particular subject are freely exchanged among trainees and facilitators.

When method is most appropriate:

The method is suitable where the application of information is a matter of opinion. It is suitable when attitudes need to be induced or changed. Trainees are most likely to change attitudes need to be induced or changed. Trainees are most likely to change attitudes after discussion. The method is also suitable as means of obtaining feedback about the way in which trainees may apply the knowledge learned.

Points to watch:
The trainees may be led away from the subject matter or fail to discuss it usefully. The whole session may be vague. Trainees may become entrenched in their attitude rather than be prepared to change them.

Case study
Procedure: A history of some event or set of circumstances with relevant details is examined by the trainees. Case studies fall into two broad categories.

- Those in which trainees diagnose the case of a particular problem
- Those in which trainees set not to solve a particular problem

When method is most suitable:
This method is most suitable when participants need to view a problem objectively or free from the pressures of actual events. It provides opportunities for exchange of ideas and consideration of possible solutions to problems the trainees will face in their work situation.

Points to watch:
Trainees may get the wrong impression of the real work.

Role play
Procedure: Trainees enact, in the training situation, the role they will be called upon to play in their job. Use role playing mainly for the practice of dealing with face-to-face situation, i.e., where people come together in the work situation.

When method is most appropriate:
This method is suitable where the subject is one that is a near-to-life practice to the training situation. The trainees can practice and receive expert advice or criticism and opinions from fellow trainees in a "protected" training situation. This gives confidence and offers guidelines. The trainees get the feel of the pressures of the real-life situation.

Points to watch:
The trainees may be led away from the subject matter or fairly to discuss it usefully.

Problem Solving Exercise
Procedure: Participants undertake a particular task that should lead to a required result. The facilitator provides rules. It is usually a practice or a test of knowledge put over before the exercise.

Before further information or new ideas are introduced the method may help to discover trainees' existing knowledge or ideas. Use problem-solving exercises with individuals or with groups.

When method is most appropriate
Use this method when participants need to practice following a particular pattern or formula to reach a required objective. The trainees are on their own thereby ensuring a highly active form of learning. Use problem-solving exercises to find out the extent of assimilation of participants. There is a big room for experimenting and trying out things using this method for the imaginative facilitator.

Points to watch:
The exercise must be realistic and the expected result reasonably attainable by all participants or they will lose confidence.

Panel Discussion (as a method for presenting case studies)

Procedure: Divide participants into small groups of five members each. Write questions on the board to be answer by groups. A facilitator will serve as moderator, timekeeper and at the same time set the rule and regulations for the activity. Ask the groups to draw lots as to which one will be the first discussant and the first to act as panel of interrogators, and so on. Assign questions for each group to answer. After a group has presented its answers to their assigned questions, the panel of interrogators can ask questions related to the discussions/answers made. This questions and answer activity will go on until all groups have been able to present their part. While the activity is going on a panel of facilitators may rate the participants as to:

- Answers and questions raised
- Group and individual performance/participation

When activity is most appropriate:

This exercise is appropriate for assessing learning and participants' performance in trainers' training. It is also effective in farmers' training with 20-25 participants where group members share their learning/experiences through question and answer. The activity help develop capability to communicate ideas and knowledge with other participants.

Group dynamics

Procedure: Put participants in situations where:

- The behaviours of each participant is subject to examination and comment by the other trainees.
- The behaviours of the group or groups as a whole is examined.

When method is most suitable:

This method is a suitable way for participants to learn the effects of their behaviour on other people and other people's behaviour on them. It increases participants' knowledge of how and why people at work behave as they do. It increases skills in working with other people and in getting work done through other people. This method is valuable in learning the skills of communication.

Points to watch:

Problems may arise if what the participant learns about himself is distasteful to him. They may "Opt-out" if they feel turned off by the searching examination of motives. It is important that problems arising within the group are resolved before the group breaks up.

Small group and big group discussion

Procedure: Divide participants into small groups, giving each group a particular task to accomplish and discuss. Give every member of the small group the chance to share his ideas about the assigned task. Leaders that each of the groups choose lead the discussions. After a certain given time, as all groups to convene and process their discussion with the bigger group.

When method is most suitable:

This method is suitable when eliciting participation and sharing of experiences as well as ideas from individual in-groups. It is easier for an individual to share his ideas with a small group than in a big group. This is true all the more when participants are not comfortable with the big group yet as in instances when the training program has just started. Sometimes, participants may feel intimated or threatened when asked to share their ideas with a big group. Thus, it becomes helpful to structure training's in such a way that small group discussions precede large group work/discussions.

The ideal size for small group discussions is at least five and not more than ten members. Big group discussion should not exceed thirty members.

Points to watch:
Some members of the group may impose on others, i.e., insist on their ideas. There is also a danger that some participants may use up much time in presenting their opinions. These situations may lead to others not having the chance to speak. The facilitator should always be sensitive to these behaviours and be able to handle the group so that each member is given a chance to be heard. Accept all opinions to show respect for individual members. It might be helpful if the facilitator will remember that there are different kinds of people, i.e., need to be encouraged to speak up or some; need recognition. It is his role to clarify inputs and tasks to avoid problems that may arise as a result of differences in personalities. Facilitators must maintain good judgement and not be swayed by opinions of any one of the group members.

18. Brainstorming
Procedure: Either in small groups or as a big group, give participants an issue or problem to be discussed about and deliberated on exhaustively. Accept all ideas during the discussion. After a thorough deliberation on the issue or problem, the entire group comes up with a consensus as a final output.

When Method is most suitable:
The method is suitable when tackling issues and problems that need or call for group decision-making. It is particularly helpful when participants are expected to actively join in the deliberation and share their ideas, experiences as well as knowledge about the issue on hand. A group of not less than five and not more than ten members should give the best results.

Points to watch:
If the issue or problem is not clear to the group/s it is possible that participants will not be able to come up with what is expected of them. Discussions may move away from the topic.
As in the small and big group discussion methods, some members of the group may impose on others, i.e. insist o their ideas. There is also a danger that some participants may use up much time in presenting their opinions. These situations may lead to others not having the chance to speak. The facilitator should always be sensitive to these behaviours and be able to handle the group so that each member is given a chance to be heard and a consensus reached. However, it is important that all opinions be accepted to demonstrate respect for individual group members.

<u>Simulation game</u>
Procedure: A simulation is an abstraction or simplification of some real life situation or process. In simulation, participants usually play a role that involves them in interactions with other people and/or with elements of the simulated environment. A business management simulation for example, might put the participants into the role of production manager of a corporation. Provided with statistics about business condition, she negotiates a new labour contract with the union bargaining team.

A simulation game combines the attributes of a simulation (role playing, a model or reality) with the attributes of a game (striving towards a goal specific rules). Like a simulation, it may be relatively high or low in modeling or reality. Like an ordinary game, it may or may not entail competition.

When method is most suitable:
This method is a suitable way for participants to learn the effects of their behaviour on other people and other people's behaviour on them. It increases participants' knowledge of how and why people at work behave as they do. It increases skills in working with other people and in getting work done through other people. This method is valuable in learning the skills or negotiation.

Points to watch:
Simulation can vary greatly in the extent to which they can fully reflect the realities of the situation they are intended to model. A simulation that incorporates too many details of a complex situation becomes complicated and time consuming for the intended audience. On the other hand, if the model is over-simplified it may fail completely to communicate its intended point. A well-designed simulation provides a faithful model of those elements that are most salient to the immediate objective. It informs the facilitator and participants about elements that have been simplified, abbreviated, and eliminated completely.

15. PARTICIPATORY TECHNOLOGY DEVELOPMENT (PTD)

(a) Definitions

Participatory Technology Development (PTD) or Participatory Action Research (PAR) is a process of collective and collaborative inquiry with the purpose of initiating community action on solving local problems. PTDs 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, organizing and evaluating development activities.

Participatory Technology Development (PTD) means all relevant stakeholder do what only researchers usually do. It can be seen primarily as a learning strategy for empowering participants and secondarily as producing research results in conventional sense. PTD as a learning process empower in three ways:

i) It empowers because of the specific insight, new understandings and new possibilities that participants discover in creating better explanations about their social world
ii) Participants learn how to learn;
iii) It liberates when participants learn how to create new possibilities for action.

(b) Considerations in Establishing PTDs In FFS Sites

The following considerations are utilized as guide in establishing PTDs in FFS sites to ensure that specific local farm problems are addressed effectively:

i) Sufficient Groundworking activities by the TOT facilitators and village immersion activities by the TOT participants should prioritize local field problems.

ii) PTD activities to be set up in the FFS sites shall be jointly identified, established and managed by the FFS participants and facilitators based on the prioritized local field problems in close co-ordination and consultations with researchers.

iii) Innovation, technology gap and new problems resulting from the PTDs activities shall be utilized as additional basis for prioritizing; problems and activities in future PTDs to be established in the community.

iv) PTD methodologies shall be standardized and data base system shall be established in the community. A compilation of all possible studies form previous PTD activities shall be made available as reference for conducting future PTD activities.

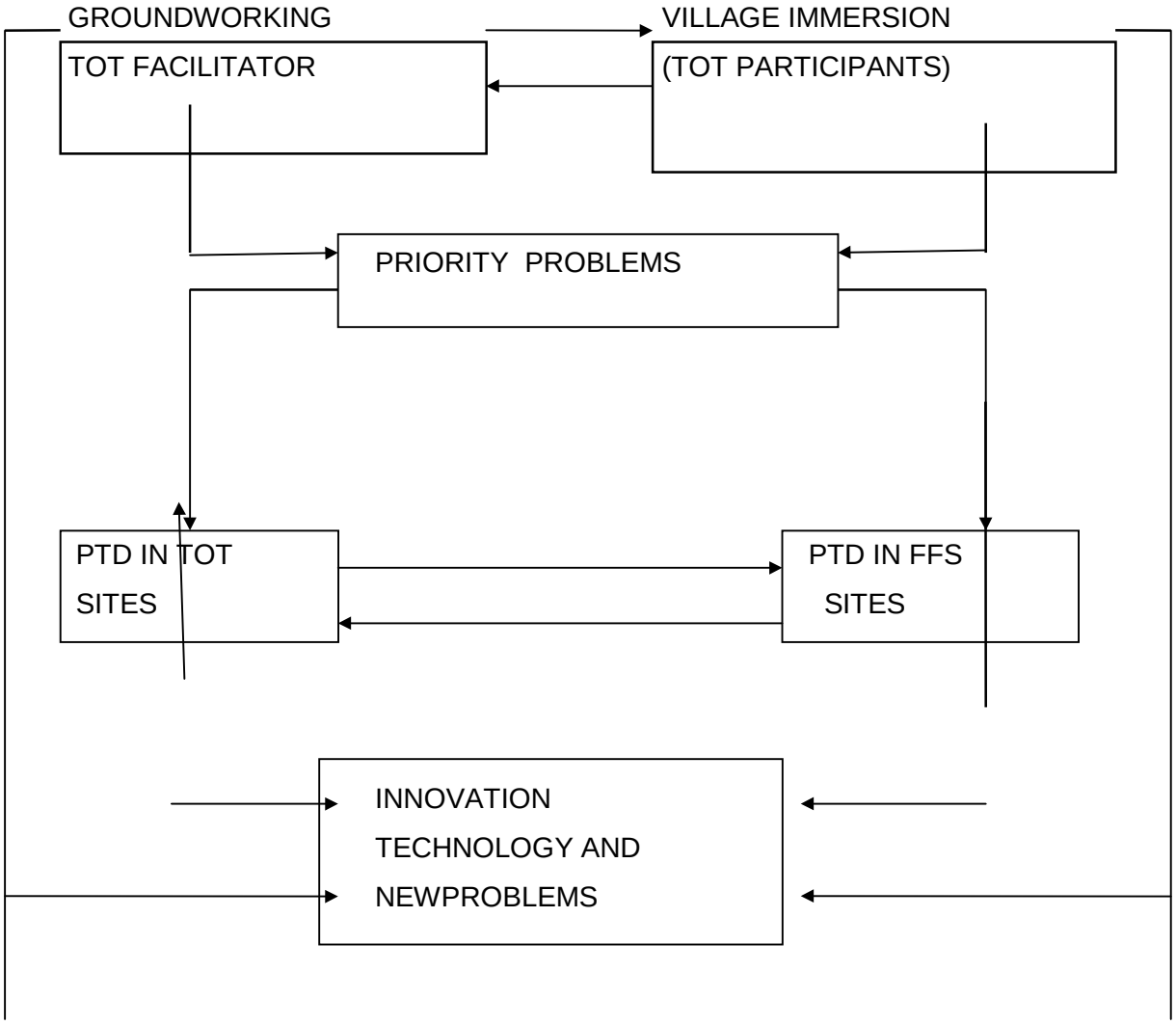
(c) Steps in Establishing PTD in TOT and FFS Sites

PTD in farmer's field schools can be best operational by combining local farmers' knowledge and skills with those of external agents to develop site specific and socio-economically adapted farming techniques.

It is a process of purposeful and creative interaction between local communities and outside facilitators which involves:

i) Gaining joint understanding of the main characteristics and changes of that particular agro-ecological system by conducting sufficient Groundworking and village immersion activities in the proposed PTD sites,
ii) Defining priority problem in the area;
iii) Experimenting locally with a variety of options derived from indigenous knowledge (i.e. from local farmers elsewhere and from researchers of formal science) by property planning, designing, and implementing PTD activities for the community;
iv) Enhancing farmers' experimental activities and farmer to farmer communication by properly collecting interpreting and utilizing PTD results.

FLOW CHART FOR ESTABLISHING OF PTD IN TOT AND FFS SITES



It is clear from the flow chart, that at least seven (7) important steps should be followed in conducting PTD at the TOT and FFS sites. These are as follows:-

Step 1: CONDUCT GROUNDWORKING ACTIVITIES
The TOT participants and introduce themselves and the programme to build up a good relationship with the local government officials (e.g. D.O. Chiefs, Assistant Chiefs, DEC's, DAO's and local leaders). In the process, board ideas on field problems, indigenous farm practices and cultural management techniques are gathered.

Likewise, initial contact with local researchers are established, which are useful at this stage to determine existing technologies that may be necessary in addressing perceived field problems. Board ideas about the attitudes, values and norms of the people in the community can also be shared during this stage.

Step 2: CONDUCT VILLAGE IMMERSION ACTIVITIES
The TOT participants, backstopped by the facilitators are immersed in the village identified as possible FFS sites, based on suggestions of the agricultural officials. Similarly, they introduce themselves and the program to build up a good relationship with village leaders and farmers. During this stage, local field problems and current farming practices gathered during Groundworking activities by the facilitators are validated with farmers in the community by participants.

Step 3: PRIORITIZING FIELD PROBLEMS
Utilizing the data obtained in the Groundworking and village immersion activities a baseline survey tool is utilized to obtain more specific details of the field problems in the proposed FFS sites. Field problems are then prioritized by analyzing the agricultural situations, which will eventually form a basis for cooperation with farmers and facilitators to start the process of participatory technology development. This includes widening the understanding of all involved about ecological, Socio-economic, cultural, and political dimensions of the current situations.

Step 4: PLAN AND DESIGN PTD ACTIVITIES
After prioritizing field problems, the planning and designing of PTD activities commence within the identification of promising solutions, in order to set up on agenda for experimentation. In this stage, the participants (facilitators and farmers) in close consultation with local researchers identify which PTD activities will be set up in the TOT and FFS sites. The PTD experiments should be simple enough, but which should give reliable results and can be managed and evaluated by the farmers themselves.

Step 5: IMPLEMENT PTD ACTIVITIES
Although some PTD activities are established in the TOT sites and some in the FFS sites, the participants should jointly evaluate all activities. Nevertheless PTD activities in the TOT sites are managed by the farmers' participants.

The decision as to what PTD activities should be set-up in the FFS sites should be agreed upon by the TOT and FFS participants and facilitators. Usually the problems that need to be addressed immediately with enough demonstration technologies (i.e. indigenous or research developed) are established in FFS sites. As the participants carry out, measure, and access PTD experiments, they simultaneously build up farmers experimental skills and strengthen their capacity to conduct and monitor their own experiments.

Step 6: COLLECT AND INTERPRET RESULT OF PTD ACTIVITIES
Depending upon need for information, the participants should be able to collect and interpret PTD results. Since farmer field school training is focused on agro-ecosystem analysis (AESA), this helps the participants to gain insight into the ecological interactions in the field and they are able to develop innovations or discover technology gaps or new problems for consideration in succeeding PTD activities for the community.

Step 7: UTILIZE RESULT IN SUCCEEDING PTD ACTIVITIES
In order to make PTD a sustainable way of addressing future field problems in the community, PTD results should be continuously utilized. Any innovations developed in conducting PTD activities should be utilized in addressing similar field problems in futures. Technology gaps or new problems discovered in previous PTD experiments. Likewise, will have to be addressed in succeeding PTDs by utilizing them as additional basis in planning designing and implementing PTDs for succeeding TOT and FFS activities in the community.

16. DEVELOPMENT OF PTDS BASED ON TECHNOLOGY TO BE SCALED UP

KITALE NATIONAL AGRICULTURAL RESEARCH CENTRE
a) Quality Seed production

Objective: Assist small-scale farmers produce quality seed to use in SM project

Curriculum development

- Introduction
  - Basis for developing varieties
  - Altitude, rainfall, temperature
  - Lightly methods of development
- Type of varieties
  - Characters of good seeds
  - Hybrids, open pollinated (composites
  - Isolation
- Selection of crop and variety to plant
  - Source of good quality seed
- Land preparation and field layout (per crop variety)
- Planting - site selection and time of planting
  - Weeding - noxious weeds
  - Crop management - as per crop
- Weekly observations, monitoring and data collection
- Harvesting - time of harvesting and economic analysis
  - Seed processing - (as per crop) threshing, cleaning, pure g. seed
  - Seed treatment - (as per crop) i.e. use insecticide/ash), fungicide
  - Seed storage - Temperature, humidity (as per crop
    Data to collect
    as per crop variety
  - Include seed processing
- Seed storage

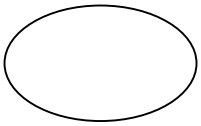
Seed Production
Name of FFS: AESA

AESA No. …….. Date: …….

Group No:……..

Week No……

General Information	Parameters	Treatments
Crop type:	Plant height	1 2 3 4
Variety:	No. of leaves/plant	
Type of Variety:	Days to 50% flowering	
Date of planting:	No. of ears/plant	
Spacing:	No. of seeds/ear	
Fertilizer rate:	Colour of seeds	
Age of crop:	No. of seeds/kg	
Weather:	Yield of seed	
Time of observation:	Storage	

Off Types	Drawing	Pests/Disease
- ……	 Specimen	- ……..
- ……		- ……..
- ……		- ……..

Observations	Recommendations
- General plant health	- ……
- Fruiting stage	- ……..
- Noxious weeds	- ……

b) Suitable crop varieties for different AEZ's in Kitale Region

General Curriculum

- Introduction
    - Basis for developing varieties e.g. altitude rainfall, temperature etc
    - Diversity of AEZ in the country
    - Participatory description of the environment
    - Establish farmer practices and reasons – (Ground working)

- Participatory selection of treatments from the basket
- Land preparation and field layout
- Planting, weeding, topdressing, pest management (and general crop management)
- Weekly observation, monitoring and data collection
- Harvesting and economic analysis

Layout – Different improved varieties and FP (maize, sorghum, finger millet

Data to be collected

- Germination
- Plant height
- Days to 50% tassling (maize) and type of flowers finger millet and sorghum
- No. of leaves
- Ear heights (maize)
- No. of cobs or fingers or pods per heads and sizes per plant
- Yield
- Lodged plants

Colour of seeds (sorghum and finger millet)
Any other farmer preferred criteria

AESA SHEET

Name of Farmer Field School …….. Date: ……..

AESA No.: ……
Group: …..
Week no: ……

General Information	Parameters	Treatments			
Type of Crop	Plant height	1	2	3	4
Variety:	No. of leaves/plant				
Spacing:	Days to 50% tussling (maize)				
Date of planting:	Types of heads/finger millet				
Time of observation:	Ear height (maize)				
Age of crop:	No. of cobs				
Method of planting: ….	Size of cobs/heads				
Fertilizer application:	No. of fillers (stf)				
Weather:	Colour of seeds				
	Yield				
	Useable ears				
	Unusable ears				
	Lodged plants				

PEST (includes weeds)

- ……..
- ……..
- ……..

Specimen i.e. variety

Observations
- General plant health
- Fruiting stage
- Noxious weeds

Recommendations

c). Low Cost soil Conservation methods

Curriculum Development

a) Activities in the farmer field schools
   - Soil evolution/genesis
     - Profile study
   - Importance of soils to crop/livestock production
   - Soil degrational processes
   - Soil erosion continuous cropping
   - Soil erosion concept
     - causes – overstocking, poor soil management
     - agents – water, wind
   - Soil erosion control methods

Method

Contour/strip cropping	-	2-7%
Unploughed strip	-	2-35%
Fodder/grass strip	-	12-35%
Trash/stone lines	-	Rocky/stony shallow soils
Cut off drains (COD)	-	Upper part of land with
Fanny Juu	-	Safe discharge; Upto 35%
Escavated terrace	-	35-55%
Agroforestry	-	All
Cover crops (Legumes)	-	All

- Laying of different structures – to be done on selected farms basing on slopesApply simple methods (techniques) of laying contours e.g. eye height, line level (liaise with soil conserve teams in divisions)

- Benefits of soil conservation
  - e.g. retain, maintain soil fertility
  - water retention
  - provision of livestock feed e.g. Napier on structures
  - Increased yields
  - Improved environmental conservation

- Layout of trials
  - Carry out reconnaissance survey on selected farms for farmer field school.
  - Select type for structure based on land slop.
  - Lay out the structure in the vicinity with farmers practice (unconserved)

Unconserved	Conserved
……	……..
……	…….
……..	…….

AESA SHEET

Name of FFS – Kitale Date: 14.3.2001
AESA No. : ……..
Group No: 1

General Information	Agronomic Data		
Types of structure - grasstrip		G/Strip	Farmers (unconserved)
Structure spacing – 24 m	Slope	0.5%	0.02%
Date of Esab. April 2001	Estimated soil loss	1.5 Ton/Ac	2 tonn/are
Age of structure – 0	Vigor		
Weather – dry	- Maize	2.5	0.5
Est crop – Maize	- Grass	3.0	
Time of observation – 11.30a.m.	Yield - Maize - Grass	 15 bag/acre 100kg/structure	 1 bag/acre Nil

(Drawings)

Conserved Unconserved

Observations	Recommendations
Grass on structures vigorous Maize on conserved more vigorous Slop on conserved in reducing Less soil loss on conserved plot More soil loss on farmers practices	- Continue to take data - More workshops/training on soil conservation methods

EMBU REGIONAL RESEARCH CENTRE

Title: Improve Soil Fertility Using Legume Green Manure

Learning Objectives
i) Introduce farmers to legume green manure
ii) Demonstrate the management of green manure legumes in maize inter-crop
iii) Increase adoption rate of green manure legume and cover crop in Karurina
Time needed: 14 half-day lessons
Materials required:
i) Certified maize seed
ii) Legume seeds
iii) Land preparation implements
iv) Fertilizers/manures
v) Felt pens and flip charts
vi) Books and pens
vii) Learning field

Steps

Wk1: Introduction of soil infertility; causes and existing solutions
Wk2: Land preparation
Wk3: Acquiring of legume seeds; certified maize seeds, manures and fertilizers
Wk4: Introduction of green manure legume and its important
Wk5: Planting
Wk6: Gapping
Wk7: 1st weeding
Wk8: Pests control measures
Wk10: Management of green manure legume cover crop
Wk11: Adoption rate of green manure legume cover crop
Wk12: 2nd weeding
Wk13: Special topics
Wk14: harvesting
Wk15: Storage
Wk16: Land preparation and legume incorporation

Suggestions

(to facilitate group discussions)
Answer the questions

What?
When?
Why?
How?
-problem solving
-sharing of idea and discovery

KISII REGIONAL RESEARCH CENTRE

a) Low cost soil conservation

Curriculum

i) Soil

- Definition
- Importance
- Genesis
- composition
- Management (general

ii) Soil Erosion

- Definition
- When?
- Why?
- How?

iii) Soil Conservation

- Definition
- Importance
- When?
- Why?

iv) Soil Conservation Structures

- Biology Structures
- Physical Structures

v) Economics of Soil Conservation

- Maintenance of soil conservation structures

Options/basket

Both biological and physical

Biological structures

- Makarikari, ventiver,trash line, napier grass

Physical structures

- Fanya juu,Stone lines, fanya chini

Field layout

Options

T1: Makarikari
T2: Vetiver
T3: Trash lines
T4: Napier
T5: Stonelines
T6: Fanya juu/chini

Soil Conservation AESA sheet

Name: Igemo FFSS Date: 14.3.2001
AESA No.: Week no.:
Group no:

General Data	Technical Data	Treatments			
	Parameters				
Soil Type		1	2	3	4
Soil depth:	% slope				
% Slope:	Runoff				
	Soil (kg)				
	Water (mm)				
Land size:	Yield (kg)				
Rainfall p.a.:	Soil depth (cm)				
Structure type:					
Date of recording: ……	Test crop				
	Existing conservation structure				
	Agronomic practices				

Fanya Juu

Observations	Recommendations
Weeds	……..…….
% Slope	…..……..
Runoff	……..
Agronomic practices	

Lesson plan:

Soil Erosion

Objectives
To define “soil erosion” and its causes

Time duration
Start: 8.30 a.m.
Stop: 11.30 a.m.

Materials: Eroded field, flip charts,felt pens, note books,video

Steps

8.30 a.m.	Prayer
8.35 a.m.	Field (AESA)
	Processing (AESA)
	Group dynamics
	Presentation/video
	Group dynamics
	Special topic
	Planning for next week
	Announcement
11.30 a.m.	Prayer

Expected output
- Appreciate disadvantages
  Soil erosion
- Know when it starts
- Know why it starts
- Know how it starts

b) Bean varieties tolerant to beanfly and root-rot
Curriculum
i) Importance of beans (food, soil improvement, income generation)
ii) Problems related to bean production(diseases, pests, soil fertility)
iii) Problems limiting bean production in the area (Marani)
iii) Bean-fly pest-Infestation, Life-cycle, effect on plant viro
iv) Root-rot disease – Infection, Typical symptoms, effect on crop
v) Establishment of insect zoo (bean-fly)
vi) Farmer evaluations of the different varieties – size, colour, taste, yields, cookability (ranking to be one)
vii) Special topics as need arises
viii) Seed production – selection, storage, treatment

Layout

Plot size – to be determined at the site together with farmers
Treatments – 5 varieties (groups to serve as replicates)

Plot

VAR 1	VAR 4	VAR 2	F.P*	VAR 3

*- Represents farmers conventional variety

Data to be collected;
Date of planting, Spacing, fertilizer rate, date of emergence, plant height, number of leaves, date of flowering, no. of pods/plant, pod length, data of harvesting, and yields

AESA CHART: Bean varieties
Name of FFS: …… Date: ……
AESA No. ……. Week no. ……
Group No: ……..

General Information	Parameters	Treatments
Spacing:	Plant height	1 2 3 4
Date of planting:	No. of leaves/plant	
Age of crop:	No. of pods/plant	
Fertilizer rate:	Date of flowing	
Weather: ……	Pod length	
Time of observation	Date of harvesting	
	Yield (kg)	
Pests	Drawing	Natural Enemies
Observations		Recommendation

c). Suitable Crop Varieties for different AEZs
Crops: Maize and finger millet

Finger millet variety - Evaluation at Marani
- Curriculum for PTD activities for FFS
  - Groundworking/emersion
    [varieties grown, constraints faced farmer management (current)]
  - Identification of possible interventions
  - Acquisition of seed and other inputs
  - Agreement on layout (treatment, prolot size, spacing
  - Land preparation
  - Sowing
  - Weeding, crop protection/ crop management
  - Harvesting/threshing/winnowing/storage
  - Field days/evaluations (a) Grain formation (b) Harvest
  - Utilization workshop

- Layout for PTD trial (draft)
  Varieties
  - Farmers 1. Enyaikuro – V1
  - Research;

  P224, Sirare, Gulu E and Ikhululle

Layout

SM	SM	SM	SM	SM
5M ▽ 1	▽ 2	▽ 3	▽ 4	▽ 5

- Data to be collected through out the growing season
  Date of planting, date of emergence, date of thinning/gapping, colour of leaves, thickness of stem/height of plant, date of flowering, head size, head appearance, blast incidence, blast severity, % Bird damage, grain yield, grain colour and taste – ugali, uji, brew

- **AESA Sheet**

Name of FFS: ……. Date: …….
AESA No. ……. Week no: …….
Group no. …..

General Information

i) Variety _____
ii) Spacing _____
iii) Date of planting _____
iv) Age of crop _____
v) Fertilizer rate _____
vi) Weather _____
vii) Time of observation _____
viii) Date of emergence _____
ix) Date of thinning/gapping _____
x) Date of flowering _____

Agronomic Data

Parameters	Treatments				
Leaf colour	1	2	3	4	5
Plant height					
Stem thickness					
Head size					
Head appearance					
Blast severity					
% Bird damage					
% Grain filling					
Yield (grain)					
Grain colour					
Taste					
- Ugali					
- Uji-					

Drawing
Pests

Observations Recommendations

Lesson plan: **……**
Topic: Finger millet ……
Of activity Utilization workshop ……
Objective: To find varieties preferred for ugali, uji and brew
Session Duration: 3 hours

Material required: - Flour from 5 FM varieties, water, sufuria, fire wood, cooking stove, mean or bean stew , matchstick, sugar, pens an scoring sheets, flip charts, maize or bean seed for scoring

Responsibilities

Farmers - Brewing, cooking uji and ugali
- providing firewood, water and place for cooking
- Participate in taste panel to evaluate the varieties

Facilitator - Organize group, provide other items needed during workshop such as flip charge, pens and scoring sheet
- Emphasize farmer soberness

Steps to follow:

- Organize for brewing/week in advance
- Confirm that brew is ready 1 day in advance
- Organize firewood, water, flour etc to be ready 1 day in advance
- Arrive at 9.00 a.m. on the day of workshop
- FFS members start cooking Ugali and Uji and stew
- Brew is brought to the site of workshop
- Organize farmers in 3 groups of 8 members so that each group evaluate 5 FM varieties in terms of uji, ugali and brew
- 15 seeds given to each farmer to use in scoring for FM variety for each parameter: Uji, ugali and brew
- Record data
- Analyse resist and report

Facilitation to help group discussions

- Ask farmers to list criteria used in uji, ugali and brew quality evaluation
- Using matrix ranking – Let farmers rank varieties in groups

Expected output;
Varieties for uji, ugali and brew

Main points from fingermillet variety utilization workshop

- Farmers able to identify best variety for community and show reason why the variety in chosen

17. ACTION PLAN FOR THE SEASON LONG TOT

KITALE NATIONAL AGRICULTURAL RESEARCH CENTRE

a) Improved Forage Production and Utilization

Action Plan

TIME FRAME	ACTIVITIES	BY WHO
1ST Week April 4 days	Ground working	Facilitator, Extension Farmers
2nd Week April	Selection of farmers for FFS	"
2nd Week continued	- Identification of FFS site - workshop on introduction of technology - develop FFS norms	"
3rd week of April	- Field layout and - Acquisition of inputs FYM, Planting material, fertilizers	"
4th week April	Monitoring Preparation of holes for (Tumbukiza)	"
2nd Week May	x Planting x Development of AESA chart x Criteria and data to collect	"

3rd Week May	Monitor Germination and Gapping - Teach group on dynamics	"
4th week May	Teach Farmers on benefit of intercropping within Tumbukiza - Planting of intercrops x Sweet potatoe x Beans	"
1st Week June	Weeding plots	Farmers
Week 2	- Monitoring establishment - Measuring napier height	Facilitator,Farmers
Week 3	Disease scoring	Facilitator farmers
Week 4	- Crop management (weeding) - Measuring height of napier	Farmers
July	- Top dressing - Scoring diseases	Facilitator, Farmers
Week 1	- Top dressing - Scoring diseases	Facilitator Farmers
Week 2	- Crop management - Measuring height (Napier)	Farmers
Week 3	Crops Management	Farmers
Week 4	Field-day	Facilitator, Extension Farmers
August Week 1	Utilization of forage i.e. harvesting techniques demonstrated to the farmers	Facilitator, Extension Farmers
Week 2	Crop management (weeding continuous)	Farmers
Week 3	Data collection scoring tiller number produced after harvesting	Facilitator, Extension Farmers
Week 4	Measuring height and scoring disease incidences on napier	Farmers
September	Crop management	Farmer
October - Week 1	2nd harvesting	
Week 2 to week 4	Crop management	Farmers
November	Workshop on feed conservation	Facilitator, Extension Farmers
December	Graduation	FFS, Facilitator

b) Crop varieties and seed production
(Maize, Finger Millet, Sorghum, Groundnuts)

ACTIVITY	TIME FRAME	BY WHO?
Ground working - RRA *Sensitizing admin & farmers to understand their farming system - socio cultural set-up - existing CBOs and their interests * synthesis of the information	1st week April	SMP Team + community
Selection of farmers and school site (FFS)	2nd week April	SMSs + community

Workshop to introduce farmers to FFS concept - Group norms - Registration of members *Introduction to the technology *Selection of treatments - Plots sizes	2nd week April	SMSs & selected farmers
Field layout & planting crop management	3rd week April	SMSs & selected farmers
AESA chart development Criteria & data to collect - Data recording * Germination monitoring	4th week April	SMSs & selected farmers
- AESA chart - Special topic - Implementation of recommendations	1st week May	SMSs & farmers
- Gapping, weeding, etc., AESA chart * Topic: Pest & diseases *Dusting for stalkborer	2nd week May	SMSs & farmers
- AESA chart and special topic Top dressing *Visit other existing FFS in Bungoma	3rd week May 4th week May	SMSs & farmers
- Field days	4th week August	SMSs & farmers
- AESA chart *Lodging *Ear height	September	SMSs & farmers + community
- Harvesting - Special topic: storage AESA	October	SMSs & farmers + community

c) Low cost soil conservation method

ACTIVITY	TIME FRAME	BY WHOM	MATERIALS
Groundworking (RRAs, sensitization)	1st week of April 2nd week of April	Researchers, Extension Officers, Local leaders, farmers, TOT team	Flip charts, felt pens
FFS - Formation norms, laying of conservation structures	3rd and 4th week of April	1 R.O. & Ext, Division (DPT), farmers, TOT team	
Soil genesis/evolution/AESA	1st & 2nd week of May	1 R.O.s, 2 E.O.s, Farmers	Soil conservation tools - Jembes, spade etc.,
Soil Degradation/AESA	3rd & 4th week of May	1 R.O.s, 2 E.O.s, Farmers	Flip chart, posters, video show
Soil erosion concepts/AESA	1st & 2nd week of June	1 R.O.s, 2 E.O.s, Farmers	Flip chart, posters, video show
Soil erosion control methods/AESA	3rd & 4th week of June	1 R.O.s, 2 E.O.s, Farmers	Flip chart, posters, video show
Laying of contours (terraces)	1st week of July	DIVCO, RO's, EO's ,Farmers	Line levels
Laying of contours (terraces)	2nd & 3rd week of July	DIVCO, RO's, EO's, Farmers	Line levels
Benefits of soil and water conservation	4th July & 1st week of August	RO's, EO's, Farmers	Video shows, posters, charts
AESA, Test crop data	2nd & 3rd week of August	1 R.O., 2 E.O. team, farmers	Flip charts, felt pens
Harvesting of short season crops (beans), AESA	4th week of August	1 R.O., 2 E.O. team, farmers	Flip charts, felt pens
Collection of Data on test crop(s)/AESA	1st week of September	R.O., EO & FFS Farmers	Flip charts, felt pens
Special topics AESA	2nd week of September (as need arise	R.O., E.O., FFS-Farmers, SMS	Flip charts, felt pens
Field day/demonstration	3rd week of September	R.O.,E.O., FFS, Farmers, other farmers, DALEO, DSMS, DIV. SMS	Posters, felt pens etc.,
Monitoring,	4th week and 1st week of October	R.O., E.O., other farmers trainers	Posters, felt pens etc.,
Slope data taking AESA	2nd & 3rd week of October	R.O., E.O. Other farmers	Posters, felt pens etc.,
Harvesting of maize	4th of October 1st November	R.O. Farmers	Posters, felt pens etc.,
Processing of (gradation) results	2nd until 1st week of December	R.O., Farmers	Posters, felt pens etc.,

d) use of plant extracts to control crop pests

ACTION PLAN

TIME	ACTIVITY	BY WHOM
Week 1: April	Ground working	SMP Team + community
Week 2: April	Formation of FFS and implementation of the layout (PTD)	SMS + community
Week 3: April	Farmers training on crop pests and their control	SMS + selected farmers
Week 4: April	Train farmers on use of plant extracts for pest control	SMS + selected farmers
Week 1: May	Identify with farmers problematic pests in their area and identify any L.T.K. for pest control presently with the farmers	SMS + selected farmers
Week 2: May	Collection and preparation of the plant extracts. Training of farmers on application	SMS + selected farmers
Week 4: May	Demonstration on application of plants extracts	SMS + selected farmers
Week 1: June	Training the farmers on pest monitoring and AESA chart formation	SMS + selected farmers
Week 2: June	Monitoring and special topics taught	SMS + selected farmers
Week 3: June	Special topics on kales production & nursery management. Nursery establishment	SMS + selected farmers
Week 3 July	Transplanting of the kales	SMS + selected farmers
Week 4: July	Collection and preparation of the plant extracts for use on kales	SMS + selected farmers
Week 1: August	Demonstration on application of plants extracts on kales	SMS + selected farmers
Week 2: August	Training the farmers on pest monitoring and AESA chart formation	
Week 3: August to Week 3: November	Monitoring of pests (weekly for kales); (Monthly for maize)	
Week 4: November	Harvesting of maize > scoring for pest damage	
Week 1 > Graduation December		

NB: Backstorming to be done at facilitators convenience

e) Quality seed production in small holder farms

CROPS: Groundnuts, Sorghum, Finger Millet, Napier grass		
Activity	**Time Frame**	**By who**
Site selection Acquisition of planting materials (seeds) & stationery	3rd week: March	Facilitators
Groundworking - Formation of FFS - Development of FFS norms, AESA charts - Registration of FFS (social service if not done) - Introduction on seed production concepts	1st week: April	Facilitators & Farmers
Selection of seed production plots - Field layout demonstration - Planting	2nd week: April	Facilitators & Farmers
Check germination and gapping	3rd week: April	Farmers
1st weeding, monitoring, data collection	4th week: April	Farmers & facilitators
Dusting and spraying against pests and diseases - Pesticides + fungicides	1st week: May	
2nd weeding, data collection - Top dressing	3rd week: May	Farmers
1st Inspection of crop - Backstopping	4th May	Facilitators & Farmers
2nd Inspection of crops at flowering - Data collection	2nd week: June	Facilitators & Farmers
3rd Inspection at seed set - Noxious weeds - Seed borne diseases	1st week: July	Facilitators & Farmers
Field day - Stationery	1st week: August	Facilitators, FFS & Community
Visit to seed company - Kenya Seed Company	3rd week: August	Facilitators & Farmers
Harvesting - Evaluation of seed characters	4th week: August	Facilitators & Farmers
Processing of seed - Threshing - Cleaning	1st week: Sept.	Facilitators & Farmers
Seed treatment - Seed packaging	2nd week: Sept.	Facilitators & Farmers
Graduation	4th week: Sept.	Facilitators & Farmers

f) Organic manure management and its use in combination with inorganic fertilizers for crop production

DATE	ACTIVITY	BY WHOM
1ST Week: April 2nd week: April	Groundworking • Sensitization of farmers administrations • RRA's • Establish existing CBO's and their objectives Village Emerson • Introduction of technologies • Formation of FFS • Various schools develop their norms • Identification of a school (field) • visit individual schools • Introduction of FFS concepts • Land preparation • Teach and train on introduction (Nursery management and planting	Whole term Whole term Whole term Whole term

3rd week: April	Teach and train
	• Soil genesis
	• Soil management technologies
	• Collection management and use of manures
	• Demo on compost management preparation and storage
	  • Collect materials
	  • Set up compost
	  • Monitoring
	FYM management
	• Boma composting
	• Collection of crop residue into cattle Boma
		Sub-team (Researcher, Extension & Farmers

4th week: April 1st week: May 2nd week: May 3rd Week: May 4th Week: May	- Teach aspects of maize production - Treatment options discussed - Plot layout - soil sampling - Plant maize (use available FYM/compost) - Check nursery **(*AESA CHARTS)** **-** 1st turning of compost - Check maize germination of maize and gap - Check on vegetable nursery (***AESA CHARTS)** Monitor maize and vegetable nursery - Brainstorm on disease and insect pests control for maize & vegetables (identify any ITK's) (***AESA CHARTS)** Turning compost/FYM Check on maize and vegetable nursery Special topics? **AESA CHARTS** • Preparing land and its importance; check on maize • Remove compost/FYM to use on vegetables • Layout, treatments options	

1st Week: June 3rd Week: June 4th Week: June 1st week: July 2nd week: July 3rd week: July 4th Week: July 1st week: August to 4th week: Aug. 1st week: Sept. 2nd week: Sept 3rd week: Sept. 4th Week: Sept. 2nd Week: Oct. 3rd Week: Oct. 1st Week: Nov.	• Transplanting vegetables **AESA CHARTS** • Check on take up of vegetables and gap • Check on maize and week if necessary Monitoring of vegetable/maize Special topics **AESA CHARTS** Monitoring of vegetable and maize Brainstorm on harvesting, utilization, presentation and marketing **AESA CHARTS** Check on maize & vegetables Start harvesting vegetables **AESA CHARTS** Monitoring and evaluation of both vegetables & maize Harvesting vegetables continues **AESA CHARTS** Monitoring and evaluation Harvesting of vegetables continues Special topics? **AESA CHARTS** Monitoring & evaluation maize/vegetables Harvesting vegetables continues FIELD DAY Teach about seed production such a **AESA CHARTS** Monitoring & evaluation Harvesting of vegetable continues Special topic? **AESA CHARTS** Monitoring and evaluation Harvesting of vegetables continues Raising vegetables I the nursery for short rains **AESA CHARTS** Teaching on harvesting, storage of maize. M&E vegetables and maize Monitoring of vegetables & maize discuss on necessary action **AESA CHARTS** **FIELD DAY MAIZE** Monitoring of vegetables and maize Preparing vegetable fields to plant 2nd crop, monitoring maize **AESA CHARTS** Transplanting vegetables and monitoring maize **AESA CHARTS** Checking on vegetable take up Gapping (vegetable) Harvesting of maize **AESA CHARTS** Graduation School continues Initiation of new schools?	Farmers, sub team Farmers, sub team Farmers & sub team

B) KISII – REGIONAL RESEARCH CENTRE

a) Finger millet varieties

ACTIVITY	TIME FRAME	BY WHO	WHERE
1. Groundworking	July 2001 - 1st week (2 days) - 2nd week (3 days)	Farmers, Faculty and Administration	Kebaga
2. Acquisition of materials/inputs	July 2001 - 2nd wk	Facilitators, Farmers, Registered Coordinator	Kisii - RR Marani Division
3. Layout and start of FFS action	July - 1st wk	Facilitators, Farmers	Kebaga FFS
4. Land preparation	July - 3rd wk	Farmers, Facilitators	"
5. Sowing	August - 1st wk	Farmers, Facilitators	"
6. Crop management monitoring (AESA) and special topics	Start August 2nd wk - Weekly - End Dec. 2001	"	"
7. Harvesting and Post Harvest Handling & storage	Nov. - 2nd week (1 wk)	"	"
8. Evaluations (Field days) 1. Grain formation 2. Harvesting stage	1. October (1st wk) (during grain formation) 2. Nov. 2nd wk	Farmers, Facilitators, Coordinators, Administration	"
9. Utilization - workshop	Dec. 2nd wk	Farmers, Faculty	"
10. Overall (final evaluation & graduation	Dec - 3rd wk	Farmers, Facilitators, Coordinators	"

b) <u>Low cost soil conservation structures action plan - Kasipul village (Kisii rrc)</u>

ACTIVITY	TIME FRAME	BY WHOM
Ground working: Sensitization visits ... Daleo + staff ... ... Administration	April Wk 1	3 RO's, 2 EO's; DALEO + staff, Chief and village elder
Sensitization workshop	April - Wk1	3 ROs, 2 EO, Farmers
Village Emersion Diagnostic workshop	April Wk 2	3 RO's; 2 EO, 1 LEO
- Formation of FFS - Participant selection - Selection of site	April - Wk 3	School, 3 RO's, 2 EO, 1 LEO
Acquisition of materials		
Plot layout and establishment of soil conservation structures	April - wk 4	School, 3 RO's, 2 EO
Weekly visits and monthly - special topics	April - August	School, 3 RO's, 2 EO
Field days	December	School, Farmer, 10 RO's; 8 EO's
Evaluation	August	School, 3 RO's, 2 EO
Graduation	August	School

c) Organic and inorganic combination

ACTIVITY			No. Of Days	BY WHO
	WEEK	MONTH		
1. Site selection (area of school)	1st	April	1	TOT
2. Ground working	2nd	April	4	TOT, Farmers
3. Village Emerson and FFS formation	4th	April	1	TOT, Farmers
4. Sensitization of FFS - Training of Members	2nd	May	3	TOT, FFS
5. Soil Genesis	4th	May	1	TOT, FFS
6. Different fertilizers (inorganic)	1st	June	1	TOT, FFS
7. Organic manures, materials	2nd	June	1	TOT, FFS
8. Making of compost	3rd	June	1	TOT, FFS
9. Monitoring special topics, group dynamics	4th	June	1	TOT, FFS
10. Monitoring group dynamics	1st	July	1	TOT, FFS
11. Compost turning group dynamics	2nd	July	1	TOT, FFS
12. Monitoring group dynamics	3rd-4th	July	1	TOT, FFS
13. Compost Turning Group dynamics	1st	August	1	TOT, FFS
14. Monitoring Group dynamics Land preparation	2nd	August	1	TOT, FFS
15. Compost turning Group dynamics	3rd	August		TOT, FFS
16. Utilization input acquisition	2nd	August		Stores, KARI

TOT = 1 RO, 2 EO

d) Organic and inorganics

ACTIVITY	**WHEN**		**DAYS**	**BY WHOM**
	START	END		
	Wk Mo	Wk Mo		
1. Agreement on layout & roles	During formation training after FFS			Farmers + trainers
2. Land preparation for FFS	3 8	3 8	1 day	FFS Farmers + Trainers
3. Planting of PTD trials (PTD)	4 8	4 8	1 day	FFS Farmers + Trainers
4. Monitoring + GD (vegetables)	2001 1 9	2002 1 1	17 days	FFS Farmers + Trainers
5. Monitoring + GD (maize)	2001 1 9	2002 4 2	24 days	FFS Farmers + Trainers
6. Harvesting (vegetable)	2001 2 10	2002 1 1	12 days	FFS Farmers + Trainers
7. Harvesting (maize)	2002 4 2	2002 4 2	1 day	FFS Farmers + Trainers
8. Field days	2001 4 10 2 maize 12	2002 1 1	2 days	Farmers + trainers
9. Graduation	Maize Vegetable	1 3 2 1	1 1	Farmers + trainers

e) Use of soil imrpoving legumes

Activity	Time frame			Requirements	who
	Wk	M	Yr		
*Ground working	3	5	01	Pens Flip charts, field note books etc	RO, EXT, Comm
*Village immersion select FFS part	4	6	01		RO, EXT, FFS, Part.
* Prioritize, plan and design PTS	1	7	01		“
*Identification & acquisition of suitable legumes	1	7	01		RO, Ext.
*Land Preparation	2	7	01		RO, Ext., FFF part.
*Laying out trials	3	7	01		“
*Planting test crops AESA CHART DEV	4	7	01		“
*Planting legumes and	1	8	01		“
Legume for seed	2	8	01		“
*Crop management, observation, data collection (field days etc.)	3 4	8 12	01 01		RO, Ext., FFF part.
* Harvesting	1	1	02		“
* Evaluation w/shop	2	1	02		“
*Land prep & legume incorporation	3	1	02		“
*Harvesting legume seed	4	1	02		“
- Laying out trials	1	21	02		“
Planting test crops	3	1	02		“
Planting legumes	4	1	02		“
Crop Management, observation, data collection (field day)	1 4	3 6	02 02		RO, Ext., FFF par
Harvesting					
Evaluation w/shop	2	7	02		

f) High yielding forage species for milk production

ACTION PLAN

ACTIVITY	WHEN	BY WHO	REMARKS
1. Sourcing of materials	1st week: June	3 TOT; 2 Ext; 1 driver	
2. Ground working	1st week: June	- do – plus 2 local leaders	
3. FFS formation and sensitization w/shop	2st week: June	3 TOT; 2 Ext; 1 driver	
4. Acquisition of inputs	4st week: June	Farmer TOT member	
5. Start of FFS sessions (weekly	4st week: June	3 TOT Farmer, 2 Ext; 1 driver	
6. Land preparation - Land preparation - Clearing - Ploughing - Harrowing	1st week: June 4th week: July	3 TOT; 2 Ext.; 1 driver; Farmer	
7. Establishment	1st week: Aug.		
8. 1st weeding/monitoring	4th week: Aug	- do -	
9. 2nd weeding/top dressing	3rd week of Sept.	- do -	
1st Sampling	4th Week: Sept.	3 TOT; Farmer; 2 Ext.; 1 driver	
11. 2nd Sampling	3rd week:Nov.	- do -	
12. Harvesting/ feeding/ milk production records	2nd week: Jan	- do -	
13. Season long monitoring of evaluation	1st week: March 1st week: May 1st week: July	- do -	
14. Field day	4th week: June	- do -	
15. Graduation	2nd week: July	3 TOT, Farmer; Guest; 2 Extension	

C) MTWAPA REGIONAL RESEARCH CENTRE

Green manure legume/cover crop technology

ACTIVITY	TIME FRAME	BY WHO
Ground-working - Village Emerson - Group Identification	WK4 March 2001	Facilitators
Acquisition of inputs	Wk 4: March 2001	Farmers
Acquisition of teaching materials	Wk4: March 2001	Facilitators
Weekly backstopping & FFS meetings	Wk1: April 2001 to Wk3 Jan 2002	FFS Specialist, Facilitators & Farmers
Land preparation	Wk 1: April 2001	Farmers
Layout & Planting maize	Wk 1: April 2001	Facilitators & Farmers
1st weeding	Wk 4: April 2001	Farmers/FAC
Planting Mucuna	Wk 4: April 2001	Facilitators & Farmers
Pest Control	Wk 4: April 2001	Facilitators & Farmers
2nd weeding	Wk 4: May 2001	Farmers
Pest control	Wk 4: May 2001	Farmers
Field day	Wk 3: June 2001	FFS sp. Facilitators, Farmers & community
Harvesting/storage	Wk 3: August 2001	Facilitators & Farmers
Cutting back Mucuna	Wk 4: Sept. 2001	Facilitators & Farmers
Mucuna incorporation	Wk 1: Oct 2001	Facilitators & Farmers
Planting maize	Wk 1: Oct 2001	Facilitators & Farmers
1st weeding	Wk 4: Oct. 2001	Farmers
Top dressing (where applicable)	Wk 4: Oct. 2001	Facilitators & Farmers
Mucuna planting	Wk 4: Oct. 2001	Farmers
Pest control	Wk 1: Nov. 2001	Farmers
2nd weeding	Wk 4: Oct. 2001	Farmers
Pest control	Wk 4: Oct. 2001	Farmers
Field day/graduation	Wk 3: Jan. 2001	Facilitators, Farmers, FFS SP. & Community
Harvesting/storage	Wk 3: Jan. 2001	Facilitators & Farmers
M & E	Once every month April 01 to Jan. 02	FFS SP.

D) KAKAMEGA REGIONAL RESEARCH CENTRE
Green manure legume/cover crop technology

Activity	Time frame	Who
1. Groundworking	3 weeks	Facilitators
- Pre-planning meeting	Wk 1 - August	"
- Planning meeting	Wk 2 - August	"
- Participant selection and briefing	Wk 3 - August	
2. Formation of FFS	Wk 4 August	Farmers
3. Training's - Acquisition of training materials		Facilitators
- Sensitization training's	Wk 1-2, September	Facilitators
4. Acquisition of land and land preparation	Wk 3: September	Farmers
4. Laying out and establishment of legume plot	Wk 3 September	Farmers
5. AESA process wk 4 Sept to wk 4 Jan	Wk4 September to Wk2 October	Facilitator
5. FYM making and management	Wk 3 October to Wk1 November	Facilitator
6. Set-up soil conservation structures (special topic)	Wk2 November to Wk 1 December	Extension
7. Acquisition of training materials Training on inorganic Training on seed	Wk 2 December Wk 3 December Wk 4 December	Facilitator " "
8. Field day	Wk1 January 2002	Farmers
9. Biomass incorporation	Wk2 January to Wk 4L Jan. 2002	Facilitator
10. Acquisition of inputs	Wk 1 Feb, 2002	"
11. Planting of maize	Wk 2, Feb	"
12. AESA process & discussion	Wk 3 Feb to Wk 4 July, 2001	"
13. Field day	Wk 3 June to Wk 1-2, Aug.2002	Farmers
14. Harvesting & post harvest handling	Wk1 January 2002	Facilitator
Graduation	Wk 3 August	
* Back stopping	4 times	Khisa/Mweri

E) EMBU REGIONAL RESEARCH CENTRE
Green manure legume/cover crop technology

Karurina farmers field school

ACTIVITY	PERIOD	BY WHO
Meeting to the village Emerson on FFS	July-Aug, 2001	Facilitators, R&E, P
- Back stopping - Farmer Recruitment		Facilitator (Nairobi office); Researchers; Extension; Farmer
- Stakeholder choose the farm for the FFS (school site)		
Train FFS on - soil components - soil structure - soil fertility - legume role in the soil - land preparation - acquire farm inputs e.g. fertilizer, seeds, manure and learning materials	September 2001	Facilitator (4)
- Layout the plots - Plant FFS crop	October 2001	F & P
- Learn crop management - Collect weekly data - Backstopping	November, 2001	F,P,T.
- Collect data - Crop management practice	December 2001	F&P
- Collect data - Field day - Back stopping	January 2002	T,F,P
- Collect data - Harvest	Early February	F & P
- Incorporate legume in soil	Late February 2002	F & P
Planting LR crop	March 2002	P & F
- Data collection - Field day - Back stopping	April - August	F, T & P
- Collect data - Harvest - Graduation	September, 2002	P & F
Start farmer led FFS - Follow up by facilitators	October 2002	P & F

18. FEEDBACK FROM FIELD TRIP TO FFS IN BUNGOMA

a) KISII REGIONAL RESEARCH CENTRE

Observations/ lessons learnt - positive/negative

Positive

- The welcoming by Sima was good using their slogan “Sima”
- Sima were well conversant with what they were doing - were informed according to the way they answered questions.
- The weekly funding “Table Banking” was a good idea for sustainability.
- The folk media was educative, entertaining and showed group cohesion.
- There was a very encouraging play, which encouraged hard work.
- The group was social, cooperative, dedicated towards their work-group dynamics was exploited.
- They seem to have promising future a sign of success.
- They had a good farm layout.

Negative

- The poultry space was underutilized which may be uneconomical.
- No proper records of various treatments of maize.
- Amani was not well conversant as pertains information, confident and under interference by extension officers.
- The activities at FFS were not copied by individual members at their homes.
- Farmers were being paid for working on their FFS.

Suggestions

There is need to compensate the farmers who volunteer their land, or other resources as a form of appreciation.

b) KITALE REGIONAL RESEARCH CENTRE

Observations of Field Trip

Positive observation

- Discipline among group members (Time keeping)
- Leasing of land for the school (creates a sense of ownership from members)
- Payment of registration fee. Enhances commitment.
- Clear vision of the goal by members.
- Table banking - Source of credit to farmers
  - Improves sustainability
- Good record keeping
- Dividends to farmers
- Facilitators (farmers & extension competent)
- Networking among FFS.
- Farmers paying facilitators - Motivates farmers
- Farmers take seriously the lessons > increased adoption

Negative Observations

- Role of the donor overemphasized - Masks contribution of other stakeholders.
- Need for establishing FFS may have been due to external influence
- Decisions made from only one season's observations (may lead to half baked graduates).

Improvements

- Increase the seasons for observations for some technologies.
- Availability of funds from a donor should not be the driving force behind the formation of FFS. But the need for knowledge to improve the farmers farming practices.

C) EMBU RRC

FIELD VISIT
AMANI AND SIMA FFS, BUNGOMA

Observations

- The membership started with a big number to allow for drop outs.
  e.g. Amani - 51 > 27 (active)
  Sima - 25 > 17 (active)
- There was a fairly good gender balance
- Groups are registered with social services.
- Farm sizes: Amani - ¾ acre
  Sima - 1.0 acre

Lessons Learnt
Positive
- Members eager to learn new technologies
- Members are starting new FF schools
- They are profit-making groups
- Table-banking a useful method

Negative
- Farmers did not look very confident
- Poultry activity did not seem to have much to learn or make profit

d) KAKAMEGA RRC

GENERAL OBSERVATIONS
Positive
- Organization was fairly good
- The adaptability of the approach was good.

Negative
- High member drop-out in extension led FFS

Comments
Farmer field school to source credit facility.

19. EVALUATION OF THE COURSE

What went well?

- The training syllabus was well organized, to flow and could easily be understood.
- The facilitators were well equipped and versed in the subject matters.
- Teamwork – the participants worked as a team, and were active.

- Alternating class and practical fieldwork made the course more interesting and well understood.
- Good meals and accommodation training.
- Handouts were dished out on time and nobody missed.
- Conducive environment for learning
- Gender balance
- The trip to Bungoma was interesting
- Certificates of participation were issued
- Convener/sponsor was a well understanding man and flexible to solve problems.
- Good reception.
- Host team concept very good.

What went wrong?

- Time – Time allocated for various topics was too short, and infact some topics indicated on the time table could not be covered. The breaks between sessions were too short.
- The sight visited (i.e. field school) was too far from the training Centre.
- Training materials (i.e. handouts) were given out long after the training sessions.
- Transport – The bus hired was too dusty and uncomfortable.
- Co-ordination – There was poor co-ordination during the trip. The activities of the day were not well arranged.
- Facilitators – The course content was too much for two facilitators only.
- Meals – sometimes meals were delayed and trainees had to wait from outside the dining hall.
- Discussions – The discussions became too long late in the evening thus boring some participants.
- Cleanliness of rooms – The residential rooms were not being well cleaned and they also delayed in changing bedding for 3 days.

Recommendations/suggestions

- Such a course should be conducted during a crop/growing season.
- The course should have taken 2 weeks.
- Involve more facilitators to ease the workload.
- Farmers and scientists should be trained separately because the understanding rate differs. Time should be allowed for slow learners.
- The FFS site should be near the training Centre to limit time spent on travelling.
- Networking should be (strengthened) formalized between farmers, extension and researchers.
- Handouts should be issued through team leaders from the RRC.
- Set up more FFS in other areas to increase adoption of technologies.

ANNEX I

INCORPORATING FARMER FIELD SCHOOL (FFS) APPROACH IN SOIL MANAGEMENT AND LEGUME RESEARCH NETWORK PROJECTS

TRAINING OF TRAINERS COURSE ON FFS METHODOLOGY

12th TO 16th MARCH 2001, CMRT, NJORO
PROGRAMME

DAY	*TIME*	*TOPIC*	**FACILITATOR**
1	8.00-10.00	• Opening programme • Participatory Introduction of Participants • Levelling of expectation • Setting of learning norms • Groupings • Functions of host team • Overview of the One week workshop	Dr. J . Mureithi Mweri B.A.M
	10.00-10.15	*BREAK*	**HOST TEAM**
	10.15-12.30	• Introduction of FFS Methodology (Historical Background) • Approach and Concept (Features) • Group dynamic activity(Nine-Dot Game) • Steps in conducting FFS(Classical Approach)	Khisa G. S
	12.30-2.00	*LUNCH*	*HOST TEAM*
	2.00-4.00	• Concept of Eco-system • Concept of what is this/what is that • AESA-Making a Group Management Decision • Group dynamic activity(Drawing Squares) • Field work- Appreciating types of Eco-systems	Mweri B. A.M Khisa G .S. Mweri B.A.M
	4.00-4.15	*BREAK*	*HOST TEAM*
	4.15-5.30	• Key Non-formal education Methods	Khisa G.S/Mweri B.A.M

DAY 2	8.00-10.00	• Group Dynamic activity(selecting a Mate)
		• Organization and Management of FFS
		  • Project Conditions
		  • Groundworking
		  • Site selection
		  • Selection of participants
		  • Participants group and class
		  • FFS curriculum
		  • Field school schedule
		  • Group dynamics
			Mweri B.A.M
			
			Mweri B.A.M
			
			Khisa G S

	10.00-10.15	BREAK	HOST TEAM
	10.15-12.30	Organization and Management of FFS Continued • Lessons learnt in FFS • Conditions for a Successful FFS	Khisa G S Mweri B.A.M

	12.30-2.00	LUNCH	HOST TEAM
	2.00-4.00	• The Ballot Box Exercise- Pre-test Evaluation • Participatory discussion on Folk Media	Mweri B.A.M
	4.00-4.15	BREAK	HOST TEAM
	4.15-5.30	• Group dynamic activity • Preparation of FFS Field Guide • Issues of institutionalization	Mweri B. A.M
DAY 3	8.00-10.00	• Participatory discussion on Participatory Technology development(PTD) • Steps in establishing PTD in FFS Sites	Khisa G S
	10.00-10.15	BREAK	HOST TEAM
	10.15-12.30	• Discussion on PTD Continued • Village immersion- do it yourself in the village • Participatory discussions on leadership	Mweri B.A.M Khisa G S
	12.30-2.00	LUNCH	HOST TEAM
	2.00-4.00	• Field Exercise- Field walk on transect walk • Processing facts on transect walk and discussion	Khisa G S
	4.00-4.15	BREAK	HOST TEAM
	4.15-5.30	• Participatory discussions on FFS Fieldday • Participatory discussion on Graduation •	Mweri B.A.M
DAY 4	7.00-6.00	• Field trip to Bungoma	Khisa G S
DAY 5	8.00-10.00	• Feedback on Field trip • Group dynamic activity • FFS Problems, lessons learned and opportunities • Participatory discussions on Qualities of a good facilitator	Khisa G S Mweri B.A .M
	10.00-10.15	BREAK	HOST TEAM
	10.15-12.30	• Assessment of strength and weakness of FFS and things to do to overcome them • Participatory discussions on report writing and documentation of FFS	Khisa G S Mweri B.A.M
	12.30-2.00	LUNCH	HOST TEAM
	2.00-4.00	• Post test Evaluation • Evaluation of the 1 week TOT • Closing	Khisa G S Dr. Mureithi

Annex II

Participatory Introduction of Participants

NAMES	INSTITUTION	POSITION	HOBBIES	LIKES	DISLIKES	EDUCATION	OTHER INFORMATION (discover for yourself)
1. David T. Cheruiyot	KARI-NARC, Kitale	Researcher/ Forage	Farming production in research development. Pasture production	Discoveries in new findings	Failures in research technology development	O' level	Usefulness of FFS - worked in hardship area, married with 7 children
2. Henry Nyambane Angwenyi	C.B.O Nyagonyi Y-Group	Farmer	Farming	Drinking when free (relaxing)	Depending on others	O' level	Married with four children - two sons , two daughters, Kisii District, Marani Division, Bomokona Village
3. Felix Ndenge Piko	MOARD, Ext., Kilifi	DCO	Reading newspapers, listening to music, watching football, Extension	Participating in discussions, working on the farm, others appreciating my work, new challenges	Being idle and idle people	Primary, Secondary and College	Married with two children - son and girl - Kilifi District, Kaloleni, Division - Village Mwembeni
4. Meschack Obwanga Ojowi	KARI-RRC, Kisii	RO	Reading, sharing and exchanging information	Making friends, discussing current events	Noisy people	Msc. Animal Production (Nutrition)	Married, talking to young people, 5 children
5. Ally Mwinyi Mzingirwa	KARI, RRC, Mtwapa	Lab. Tech	Food ball	Tour, cinema, swimming	Loud music, gossiping	Higher Diploma in Science Laboratory Technology	Married, four children, 2 boys, 2 girls
6. Powon Micah P.	KARI	RO	Football, looking after animals	Listening to Gospel music	Discos, drinking beer	B.Sc. Agric. (Horticulture)	Married, one wife, 2 kids
7. Thomas Kigen Kwambai	KARI, Kitale	RO	Volleyball, Reading-preferably Christian Literature, Table Tennis	Peach making, community service	Smoking and drunkards	B.Sc. Horticulture	Married, born again

8. Joseph Tanui	Farmer	Farmer, Kitale	Reading novels	Seminar - very interesting	Poverty, famine, hatred, laziness	Form IV	Dedicated farmer; 4 children; 2 girls twins, a Christian
9. Francisco Guevara Hernandez	RF, Mexico	R.& Ph.D. student	Read, walk, travel and navigate in the internet	meet new people and cultures, music	stay in long meetings, smoking	Bachelor degree in Agroecology; Msc. in Plant Physiology; Ph.D. student in Technology and Agrarian Development	I am a family man. Love very much to stay at home
10. Nyangeso Bernard Orago	Farmer	Farmer/R.	Reading, farming discussion meeting, meeting new faces, getting new ideas, loving my educator	Being successful, getting new ideas, improving my plots as a better examples for the rest to learn in	Not being unsuccessful. Failure in any duty at hand. Telling others about my improvement and educating them if they are ready for that.	Secondary School Certificate	
11. Evans R.N. Tong'i	KARI-RRC Kisii	R.O.	Reading, traveling all over	Honesty, Christian, vegetarian food, likes word of God, likes meeting new people	Pride in general	M.Sc. (soil Scientist)	Christian, straight forward man
12. Simon Karumba	KARI, Embu	T.O.	Football, traveling	Jokes, TV (wrestling), Radio	Lies	Diploma in Horticulture	Christian, with one wife - one boy, 2 girls. Horticulture (flowers)
13. Alice Mumbi Mwaniki (Mrs.)	LRNP, Embu	Farmer	Scrabble, darts	Singing Gospel music, sharing the word of God, making new friends	Smoking, pride	KCSE, Certificate in Agriculture & Home Economics	Interacting with ordinary mwananchi
14. Margaret Makelo	KARI, Kisii	R.O.	Socializing	Making friends	Being overworked for no apparent reason	B.Sc.	
15. Edward Koskei	Farmer	Farmer	Farming mboga and livestock	To be rich	Poverty	Farmer	

16. Stephen W. Muriithi	M.O.A.	DM&EO (A.O.I)	Reading novels and traveling	Creative artist, smoking	Drunkenness	B.Sc. Agric., U.O.N.	
17. Stephen G. Ndia	MOA&RD, Kisii	DEC, Marani Div.	Watching athletics, speculating football, meeting friends, reading the Bible	Team work, equal opportunities	Discrimination, being silenced, noisy environment, inefficiency	B.Sc. Animal Production	Young and newly married (1997), one child, 3rd year in employment, tracked 1 year, left college 1995
18. Caroline A.O. Kute	KARI-NARC, Kitale	R.O.	Discussing with farmers about research, Table tennis, playing cards, snakes and ladders, scrabble , (Indoor games), networking women groups. singing and dancing	Doing research work, meeting people and interacting with them	Cheating	Graduate in Agriculture	22 years in employment; 8 children, 3 RFs, 2 m.c., 2 un...?
19. Rose Kemunto Nyakeri	Farmer, Kisii	Farmer	Scrabble	Sharing the work of God, Singing God's Gospel, sharing talks with new friends	Smoking, lies	Farming - Form IV	Married, interested in farming, No. of children 6 - 2 boys, 4 girls
20. Paul Ochieng Tana	KARI, Kisii	R.O. - Agric. Econ		Watching movies, football, honesty and transparency	Boring lectures	Cert. in Agric, Dip - Agric & Food Marketing; B.Sc. Agric. Econ	First born, Parents alive. Husband one wife - 4 children own (4 boys,+ 3 others (2 boys, 2 girls) - a caring father. About to be born again. A very pleasant father.
21. Felicia Wambui Ndung'u (Mrs.)	MOARD	S.A.O.	Reading books, listening to Christian Music and Singing	Good atmosphere	Evil	B.Sc. Agriculture	Married with three children with one adopted, saved

22. Samson O. Makworo	KARI	T.O.	Football, Bird watching	Telling people the wonderful love of Jesus, being committed to any endeavor in process	Gossip, being idle, seeing poor Kenyans dyeing of hunger, diseases	Key to success, it should be undertaken by every person under the sun	He like helping farmers. Watching useful and harmful birds, A preacher, he likes peoples' success. Married - 6 children - 2 boys, 3 grand children
23. Kwach K. Johnson	KARI, RRC Kisii	R.O.	Indoor games	Reading story books	Smoking	B.Sc. Horticulture	Farmer cattle, maize, banana. Has a family of 4 children. He practice a little of his home due to working far.
24. Wycliffe Kiiya	KARI, Kitale	R.S.	Looking after cattle	Learning and practicing what I have learned	Cheating	M.Sc. degree in Agronomy	Married with children
25. William Bosire Nyatesi	Marani, Kisii	Farmer	Christian, reading the bible and watching sports - football	Honesty, respect to all people. Interaction of farmers F.S. and other extension officers	Lies, hatred to people	Std. 8	- 1 child
26. Paul Odhiambo	MOA (Ext.) Rachuonyo	DAR&T	Football, Music	Drinking	Smoking	B.Sc. Agric.	A charcoal dealer, married, no children
27. Elizabeth Wanjekeche	KARI	SRO	Sewing, cooking, listening to music, gardening	Good food, good health, clean environment	Sickness, disagreements	University - Food Science	I'm a lady - Married - 5 children
28. Julius W. Kwanusu	FFS	Farmer	Arable Farming & livestock farming, reading and discussions	Learning	Laziness	Form IV (P1 Teacher)	Non political, development conscious, retired teacher, 15 grand children, 5.00 p.m. milking, B/F in shamba, 60 years of age

29. Jura, J.R.	MOARD	CO/E (Yala)	Indoor games - darts, horticultural farming			Dip. Horticulture	Married, 2 sons, 2 daughters, monogamy, 1 acre for irrigated horticulture
30. Francis Kitalia Lukorito	Farmer	Chairman, Res. Cttee	Reading information books and experiencing any knew technology I get, view football	I like people who are transparent and accountable	Opposite of the above, idleness and backbiting others	O Level/Accounts	Research and information from KARI, Farmer for maize cattle, poultry. Has a family with 5 children
31. Hemedi Mkuzi Saha	KARI, Mtwapa	Agronomist (Soils)	Writing, reading	Music, movies	Alcohol, cigarettes	Msc. Agronomy (Soil Science) - University of Kentucky (USA) 1996	Married, 4 sons, farmer - 1½ acres, oranges, coconuts, bananas
32. Margaret Onyango	KARI, Kisii	SRO	Reading	Gospel music, studying the word of God and sharing with others	Loud disco music and other noises, gossips and idle talk	Msc. in Horticulture	Born again, looking forward to meeting the Lord Jesus Christ. Married, 4 children - 1 boy - finished Form IV, 4 girls - Form II, I and class 3. Rusinga Island
33. Ruth M.A. Onyango	KARI	Agronomist	Singing, Entertaining guests, cooking traveling	Music, reading, talking to people	Smoke from cigarettes, noise	Msc. Agronomy (1991)	I enjoy reading Christian Literature. single parent, son in Form IV from Siaya
34. Enock P. Mwadzambo	Mtwapa	Farmer	Preacher, Secretary Church Council	Reading Bible, Farming (maize, vegetables, potatoes) discussing current affairs with friends	Wasting time in aimless walking and talking, those people who are not working	O' level	-
35. Alloys Rioba Ondicho	KARI,RRC Kisii	R.O.	Football, Music, Wrestling, reading	Athletics	Smoking, drinking	Diploma in Agriculture	Married with 3 children

36. Cornelius Ontieri	Kisii	Farmer	Farming	Athletics, Football, Business	Drinking alcohol, smoking, idleness, disturbing	Form Iv	Married with four children
37. John Kinyang		Farmer	Listening to the Radio, films, newspaper	Athletics, games, tours	farming and higher yield education	'O' level	
38. James O. Odenya	KARI	R.O.	Reading, meeting with friends, traveling	General entertainment and time building	Confrontation, gossip, idlers, mischief	M.Sc. Agric. Extension (Stu)	Facilitator FSA, PRA and linkages) Has five kids, two girls in Secondary, three primary . Comes from Nyando District
39. Scholastica Nyakundi	Kisii	Participatory farmer (SMP)	Farming	Gospel music	Idleness, gossip	Form IV	Children 2 boys, 1 girls, married, husband teacher who like farming. Home district Kisii
40. Samuel M.O. Obaga	KARI, Kisii	R.O.	Football	Traveling, watching films, eager to learn new ideas	Disorganized activities, lateness	Agricultural physics	
41. Gideon Orina Mwagi	MOA	DRELO	Reading the bible, Christian literature, listening to Christian music, watching sports	Honesty, respect to all persons irrespective of position	Lies, hatred, oppression of the under-privileged	B.Sc. Horticulture	Always a person should think positive
42. David W. Munyi	MOA	DTARO	Table tennis, watching movies, making new friends	Being happy	Disorganization	B.Sc. Horticulture,, EU - 1990	Married with 2 children. Home - Kirinyaga
43. Joseph Wanyonyi Khaemba	MOALD West Pokot	E.O.	Watching football, traveling	Everybody	Bad habits of smokers and drunkards	B.Sc. Agronomy, Dip. Agric	Married 5 children. Home Kitale
44. Anne Jacklynne W. Kung'u	MOA&RD	RELO/MEO	Reading, Christian Literature	Watching television, indoor games and healthy discussions and strong team work	Unnecessary noise, lateness and heated arguments	Participatory community approaches	Lives in Eldoret for 13 years, has 3 boys, a Kikuyu but has lived all her life in Eldoret

45. Masinde Anne Aluoch	KARI, Kisii	TOL	Watching sports	Traveling and doing field work	Too much reading	Diploma in Farm Management (Highest)	
46. Michael Ochieng' Okumu	MOA, Kitale	E.O.	Music, Chess		Smoking, drunkenness	B.Sc. Horticulture	
47. Elizabeth A. Okwuosa	KARI, LRNP, Kakamega	R.A.	Playing basketball, swimming	Reading, community service	Drunkenness	Dip, Agric.	Born again, member of women Rotary group, Single
48. Oscar E.U. Magenya	KARI, Kisii	Entomologist	None	Reading Christian Literature	Loud secular music	literature (MSc.)	Born again Christian. 9 years in Kisii, Married with 2 children
49. David K. Bunyatta	MOARD - Keiyo District	D.A.O.	Music, volleyball, wildlife and nature trail	Good food, honest and truthfulness	Noise, Dishonesty	B.Sc. Agric. Econ	He is a Christian., does not drink, married
50. Margaret Kamidi	KARI	R.O.	Gardening	Truth	Lies	MSc.	She is married with children
51. Tom Njogu	Kitale	Farmer	Farming	Farming, Grows maize, beans, keeping livestock	taking beers	Std. 4	
52. Charles N. Kitumia	MOA&RD	DECO	Football/TV watching, visits (tours)	As above		Dip, Agric.	
53. Masai Mwawira Masai	C.D.A.	A.O.	Traveling to new places, community service	Making friends	Drunkenness	Diploma - FM; B.Sc. Agric. Econ - Student	Trained in Farmer Field Schools (FFS) extension approach
54. Eliud Wakoya Maala	KARI, Kitale	R.O.	Traveling (tours, farming)	Communication/reasoning with others	Quietness	B.Sc. (Hons) degree	SMP - cluster leader, Bungoma
55. Njiru Gitari	KARI	S.R.O.	Squash, jogging	Reading	Anger	MSc.	1978 - Married; 1993 - transferred to Embu from Njoro
56. Julius B. Wekesa	MOA&RD	E.O.		Reading the bible		Dip, Animal Health	
57. Selly C. Rono	KARI, Kitale	R.O.	Making friends	Sitting around with my kids	Dishonesty	Bsc. Agric.	

58. Bildad Gor Achuodho	KARI, Kisii	Socio-economist	Music, games, traveling	Efficient, sufficient, transparent, honest, accountable management of public affairs (good management)	(I) Opposite of the above (ii) Assumption and belittling of other brains (Akili ni nywele, kila mutu ana zake) !!!	BBA; Dip. FMGT; Dip. Agric. Dev.; Cert. - General Agric.	From Rusinga, Married
59. Evans Mongare Nyandega	MOARD, Nyamira	DEC	Listening to music, reading journals and indoor games	Respect of others views. Like innovative farmers	Smoking	B.Sc. Agriculture	
60. Beryl Akinyi Omamo	KARI, Kitale	R.O.	Getting to know new places and making friends	Honesty and transparency, singing, filling crosswords and listening to music	Smoking and uncouth behavious	B.Sc. Horticulture	
61. Samuel A. Maina	Kisii	D.O., Extension	Farming Research, meet new friends	Bible study	Failure of venture(s)	'A' level	Formally range extensionist for ISM in Tana River, married with 2 children (girls)
62. Korir Peter Kimutai	KARI, Kisii	T.O. III	Movies, Traveling	Making new friends	Bad company	Undergraduate	Married with 4 children
63. Benjamin A.M. Mweri	C.D.A., Mombasa	Head of Agric.	Participate in Evangelism/Church work	Making new friends	Gossiping	Degree level	

ANNEX III

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ANNEX IV
SMP AND LRNP TECHNOLOGIES FOR SCALING UP

- Improved preparation, management and use of organic manure to improve soil fertility.
- Different combinations of organic and inorganic fertilizers for maize, finger millets, forages and vegetables (kales and cabbages).
- Soil improving green manure legumes.
- Low cost soil conservation structures.
- Bean varieties tolerant to beanfly infestation and root rot.
- Food legumes other than beans for intercropping with maize.
- Suitable forages for waterlogged soils.
- High yielding forage species for milk production
- Suitable crop varieties for different agro-ecological zones.
- Plant extracts for control of crop pests (ITK).