FARMER FIELD SCHOOLS THE KENYAN EXPERIENCE

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Report of the Farmer Field School stakeholders' forum held on the 27th March 2003 at ILRI, Nairobi, Kenya

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"From being members of the FFS we gain in confidence. We get to know our strengths and weaknesses. Everyone in the group participates, even the quiet ones. As a result of being a member of an FFS, I have attended a lot of training courses. At these courses everyone thinks that I must be from the Ministry because of the knowledge I have acquired and share. Now when I disagree with some point an 'expert' is making I even have the courage to correct him!

I am a happy farmer who has gained much from FFS. FFS is the only project I know that has no gender bias. FFS makes women feel they can be good decision makers and teaches them that they can present their views. FFS is the best project so far I've been involved with.

Before I joined FFS, if somebody asked me what I do I used to say "nothing". Now I proudly answer : "I am a farmer"."

Kellen Catherine Wambui
Farmer and member of Mureri Farmer Field School, Nakuru, Kenya.

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Contents

Acronyms and abbreviations

AESA	Agro-Ecosystem Analysis
AHP	DFID's Animal Health Programme
DALEO	District Agriculture and Livestock Extension Officer
DFID	UK Government's Department for International Development
EU	European Union
FFS	Farmer Field School
FI	Farmer innovators
FPR	Farmer participatory research
FRC	Farmer Research Committee
IFAD	International Fund for Agricultural Development
ILRI	International Livestock Research Institute
IPM	Integrated pest management
IPPM	Integrated production and pest management
KARI	Kenya Agricultural Research Institute
LRNP	Legume Research Network Project
M&E	Monitoring and evaluation
MoALD	Ministry of Agriculture and Livestock Development
NALEP	National Agriculture and Livestock Extension Programme
NFE	Non-formal education
NGO	Non-governmental organisation
PFI	Promoting Farmer Innovation
PM&E	Participatory monitoring and evaluation
PTD	Participatory technology development
PTD	Participatory technology development
SIDA	Swedish International Development Cooperation Agency
SMP	Soil Management Project
SPFS	Special Programme for Food Security
ToT	Training of trainers
UNDP	United Nations Development Programme

Foreword

Farmer Field School Stakeholders' Forum

The Farmer Field School (FFS) is an innovative, participatory and interactive learning approach which was developed with assistance from FAO in the 1980s in South East Asia as a way for small-scale rice farmers to investigate, and learn for themselves, the skills required for, and the benefits to be obtained from, integrated pest management (IPM) practices in their fields.

The aim of the FFS is to build farmers' capacity to analyse their production systems, identify problems, test possible solutions and eventually adopt the practices most suitable to their farming system. The knowledge acquired during the learning process enables farmers to adapt their existing technologies to be more productive, profitable, and responsive to changing conditions, or to test and adopt new technologies.

The FFS approach, which was first introduced in Kenya in 1996, is now widely applied in the country and is used in a broad range of enterprises including crop, horticulture, livestock production and soil management. Currently there are over 1,000 FFSs on-going in Kenya under the coordination and funding of various agencies, and the approach is quickly gaining in popularity. At the same time, not all national institutions and collaborators are well informed on FFS activities and on what the FFS approach entails.

Having realised this, FAO, KARI and ILRI together with MoALD held an FFS stakeholders' forum where different FFS initiatives in Kenya were presented to a wide range of institutions, NGOs, projects, government officials and the private sector. The objective of the forum was to inform the different stakeholders about the FFS approach and existing activities in Kenya and discuss its role in the Ministry of Agriculture and Rural Development's extension policy. The aim of the forum was to assist in lifting some of the misconceptions that are common about the approach and build a foundation for increased collaboration among the different actors involved in extension, research and development at community level, as well as inform the donor community of future opportunities to support FFS activities.

George Hanek

FAO Representative to Kenya

Carlos Seré

ILRI Director General

Introduction

The Farmer Field School stakeholders' forum was attended by over 100 participants drawn from, amongst others, the Ministry of Agriculture and Livestock Development, the national extension service, farmers, non-governmental organisations, national and international research institutions, donors and international organisations. With the Farmer Field School (FFS) approach gaining increased attention in Kenya more than 1000 active FFS groups involving about 30,000 farmers the objectives of the workshop were to increase awareness of FFS and allow those already involved in FFS to be able to learn and benefit from the experience of others. The meeting included two major sessions: presentations and discussion. The presentations introduced the concepts of FFS, described the various FFS initiatives in Kenya, suggested possible financing arrangements, gave the FFS perspectives of a farmer and an extension worker and finally suggested how FFS can be integrated into mainstream extension in Kenya. The second part of the programme was a discussion session with topics selected by the forum participants.

Opening remarks

Mr Ngeno
Deputy Director of Agriculture (Research and Extension Liaison Division)

The MoALD sees the FFS as one of the methodologies that we would like to see incorporated into the Kenyan extension system to help solve some of the problems farmers are facing. Farmers' technical knowledge is sometimes inadequate and we are trying to bridge the gap. But there are other factors constraining small-scale farmers, who increasingly need to intensify their production. Inputs need to be acquired on credit, which is not always available, but structures are being put in place to overcome that problem. Infrastructure is of course important. And finally farmers need a market for their produce. We may have to reorient our thinking and start from the marketing end rather than production. Labour is also crucial to farms and HIV/AIDS represents a major problem with many farming communities devastated by this disease. These different challenges need ways and means developed to solve them.

The extension service has experienced several failures as different approaches have been tested. Previous approaches had one thing in common; the farmer was told what was right and what to do. With liberalisation things had to change and extension needs to change to fit the new order. In the past farmers simply delivered their maize to the NCCB. Now they need to look for a market themselves.

The FFS approach is one that has been adapted to solve these problems. FFS is intended to incorporate farming communities in the development and dissemination of technologies and in identification of problems and possible solutions. This represents a major shift from the past. FFS gives farmers choices through discovery based learning, so we need researchers here too. FFS builds farmers' capacity.

FFS was developed in Asia in 1989 and is now being adapted to Kenyan conditions and needs. For example, the method was developed under a monoculture system of rice production. Here farming is very different, with mixed agricultural enterprises on small plots. First introduced in Western Kenya and the Coast, FFS is now implemented in various parts of country for different enterprises.

So far FFS has had various degrees of success. Kenyan society is full of different cultures, and cultural norms may not permit some practices, e.g. it is generally desirable to plant with the first rains, but in polygamous societies in Western Kenya the first wife must plant before the other wives may do so.

FFS methodology has proved useful. It has a cost implication, but all extension methods have costs associated with them. The issue is, how best can we reduce the cost so they are bearable to the systems we are working with?

We are pleased that the FFS methodology has been adopted by a number of organisations. Now we expect to see yields increase. But the challenge then becomes, what does the farmer do with bumper yields when existing marketing infrastructures are not adequate?

Overview of the Farmer Field School approach

Godrick S. Khisa
MoALD

What is a Farmer Field School?

The term Farmer Field Schools came from an Indonesian expression s*ekolah lapangan* meaning field school. The expression reflects the educational goals; that the course takes place in the field, and the field conditions define most of the curriculum. Real problems are observed and analysed from planting through to harvest. A Farmer Field School (FFS) is described as a platform and 'school without walls' for improving decision making capacity of farming communities and stimulating local innovation for sustainable agriculture. It is a forum where farmers make regular field observations, relate their observations to the ecosystem and apply their previous experience and any new information to make a crop or livestock management decision with the guidance of a facilitator. According to Kevin Gallagher, a leading advocate of the FFS approach, 'the Farmer Field School is not about technology; it is about people development'.

Pretty (2002) considered the five key principles of the Farmer Field School to be:

- What is relevant and meaningful is decided by the learner and must be discovered by the learner. Learning flourishes in a situation in which teaching is seen as a facilitating process that assists people to explore and discover the personal meaning of events from them.
- Learning is a consequence of experience. People become responsible when they have assumed responsibility and experienced success.
- Cooperative approaches are enabling. As people invest in collaborative group approaches, they develop a better sense of their own worth.
- Learning is an evolutionary process and is characterised by free and open communication, confrontation, acceptance, respect and the right to make mistakes.
- Each person's experience of reality is unique. As they become more aware of how they learn and solve problems, they can refine and modify their own styles of learning and action.

Source: J. Pretty
Regenerating agriculture In: Ten years ofIPM training in Asia, FAO, 2002, p.6

A typical FFS is one or two crop seasons or a livestock production cycle. It consists of a group, usually 20-30 farmers, who set up a group study field on the crop(s) or livestock of their choice. The group is responsible for the care and maintenance of the study enterprise from soil preparation to harvesting/post harvest or egg to egg, etc. The approach is a season-long training

following a crop phenology or livestock cycle. The field is the 'teacher' and its conditions define the curriculum while the plants/animals form the most important learning material.

As an extension approach, it is a dynamic, hands-on, innovative and participatory discovery learning process built upon the principles of adult education. Every learner is a potential trainer and the facilitators must be technically strong. FFS enable farmers to discover and learn about their own agro-ecology and integrated management. On the basis of this knowledge, they become independent and confident decision-makers; experts in their own fields.
The FFS approach complements existing research and extension activities through shortening the time it takes to get research from station to adoption on farmers' fields by involving farmers in experimentation of their own; enhancing the capacity of extension staff to serve as technically skilled and group-sensitive facilitators of farmers' experimental learning; increasing the expertise of farmers to make logical decisions on what works best for them, based on their own observations of experimental plots in their FFS and establishment of coherent farmer groups that facilitate the work of extension and research workers, providing the demand for a demand driven system.

The cornerstone of the FFS methodology is agro-ecosystem analysis (AESA). This is the establishment by observation of the interaction between crop/livestock and other biotic and abiotic factors co-existing in the crop/livestock field. It is the main decision making tool used in FFS and involves regular (usually weekly, fortnightly or monthly depending on study activity) observations of the crop or livestock, although the frequency may vary based on the field conditions, study enterprise characteristics and growth stage. The process is holistic and farmers work in sub-groups of 4 or 5 under the guidance of a trained facilitator to enhance the participatory learning process.

AESA is a four-stage process starting with field observation. During this stage the small groups learn to sample the crop or livestock and carry out their structured observations of their crop/livestock. Growth stage, beneficial or pest insect abundance, weed status, crop health, weather conditions, soil condition, and any other others factors that have a bearing on the crop/animal performance are all recorded in the field observation. The facilitator's role is to assist in recognition and identifying ecological roles of organism found in the field.

The next step in the agro-ecosystem analysis is detailing the field observations on a presentation sized sheet of paper. This step reinforces field observations and creates a record of field activities. Each group prepares their presentations with a summary of data, pictures of the field situation, and decisions from the group as to the interventions required in the field. The facilitator's role is to move from group to group, asking questions and making observations.

The third step is where each small group presents their results and conclusions back to the full FFS. This presentation by participants strengthens presentation skills and requires group to defend their decisions with ecological arguments.

The last step is where the whole group synthesise the presentations for collective implementation of the decisions arrived at. The facilitator's role during this stage is to guide farmers to arrive at informed decisions and help farmers harmonise the different decisions from different sub-groups. Farmers own experience is incorporated in all stages of the analysis. Drawing and self-presentation during this process reinforce learning. This is done throughout the season as the problems and decisions being studied overlap with similar issues in participant's fields, and there is a strong 'learning readiness' element. The AESA is a 2 to 3 hour process. In addition to the field analysis, there are two other activities each learning week. One of these is on group dynamics leading towards team building and organising skills for the group itself. The other activity is a concept-based activity of the farmers' choice (commonly known as 'special topic'). These could include study on a specific topic, e.g. a pest or disease, discussion on crop varieties in the community that are doing well, or preparation of other activities such as a rat management scheme. These two activities are typically 1 to 2 hours so the entire FFS session is 4-5 hours long.

Profile of a FFS session for IPPM in vegetables

8.00 - 8.15am Prayer, roll-call, recap & briefing on day's activities
Host team leads the other farmers in prayer, finding out who is present, review of previous activities and briefing of the activities of the day.

8.15 - 8.45am Field observation
Farmers in small groups make observations of the whole field, and then examine 5-6 plants per plot, recording the height, number of leaves, number of trusses per plant, number of fruits per truss, the type and number of insects, and any other relevant details.

8.45 - 9.15am Agro-ecosystem analysis
Each group prepares drawings of their field observations including information on the condition of the plants, pests and diseases, natural enemies of insect pests, weather, soil and water conditions, etc.

9.15 - 10.00am Presentations and discussions
Each group presents their outcome and discusses their observations and conclusions. The whole group reaches a consensus about the crop management practices that they will carry out during the coming week.

10.00 - 10.20am Group dynamic activity
This activity aims to stimulate attention and participation, as well as strengthen group communication and increase solidarity.

10.20 - 11.30am Special topic
The facilitator guides the group in experiments, lessons, exercises and discussions on a 'special topic' related to what is actually occurring in the field or community.

11.30-12.00 Review of day's activities, planning for next session, announcements & closing prayer
Farmers evaluate activities for the day and plan for the following session, identifying the activities and special topic to be addressed.

Characteristics of the Farmer Field School approach

Farmers as experts: Farmers 'learn-by-doing', i.e. they carry out for themselves the various activities related to the particular farming practice they want to study and learn about. This could be related to annual crops, or livestock/fodder production. They key thing is that farmers conduct their own field studies. Their training is based on comparative 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 their 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 the 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 to their fellow farmers in turn. The extension worker may take part in the subsequent discussion sessions but as a contributor, rather than leader, so the group arrives at an agreed consensus on what action needs to be taken at that time.

Scientists/subject matter specialists work with farmers, rather than lecture them: 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: Crop husbandry, animal husbandry, horticulture, land husbandry are considered together with ecology, economics, sociology and education for 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 it would include the dry season to evaluate the quantity and quality at a time of year when livestock feeds are commonly in short supply. For tree production and conservation measures such as hedgerows and grass strips, training would need to continue over several years for farmers to see for themselves the full range of costs and benefits.

Regular group meetings: Farmers meet at agreed regular intervals. For annual crops such meetings may be every 1 or 2 weeks during the growing 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, ranging from drawings of what they observe, to the field trials themselves. These materials are always consistent with local conditions, are inexpensive 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 building communication skills, problem solving, leadership and discussion methods - all skills that farmers require. 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.

The non-negotiables in FFS

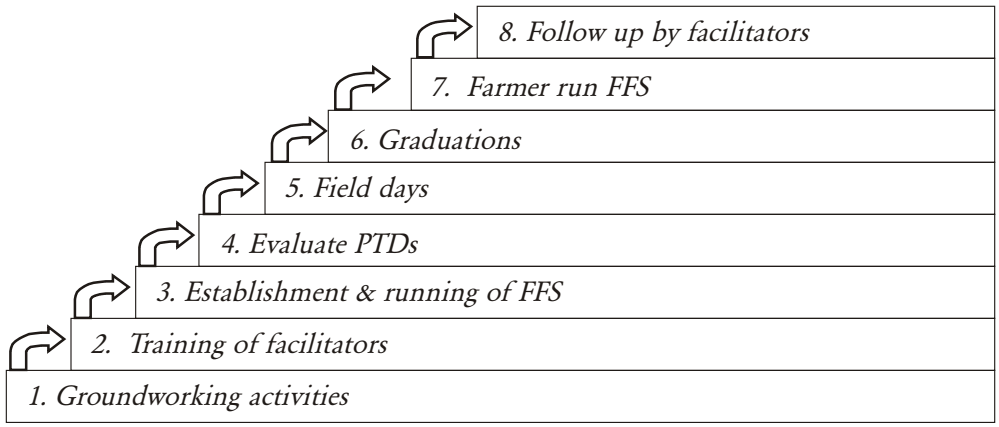
During an international learning workshop held in Indonesia in November 2002, participants believed that quality of FFS could be ensured if certain "non-negotiable elements" are maintained. Practitioners in FFS methodology should ensure quality of the process as they expand by maintaining the following non-negotiable characteristics of FFS:

- Ownership
- Empowerment
- Group discovery learning
- Systems approach
- Life education
- Self-hep and Self-propelling
- Farmer-centred
- Competent facilitators
- Curriculum development:
  - Topics should be chosen by the community
  - Training based on farmer's limited knowledge
  - Training based on basics needs of farmers
  - Participants are involved in curriculum development
  - Systematic training process
- Observation
- Group discussion and analysis
  - Conclusion and action plan (s)
  - Agro-ecosystem analysis
  - Regular and frequent meetings
- Education principles
  - Skill, not information, is the goal
  - Discovery learning
  - Learning by doing
  - Science-based
  - Experimental and/or problem-based learning
  - Experimentation and study plot
  - Non-formal education process

Source: CIP-UPWARD. 2003.
Farmer Field Schools: From IPM to platforms for learning and empowerment. International Potato Center Users' Perspectives with Agricultural Research and Development, Los Banos, Laguna, Phillipines. 87 pages.

Steps in conducting FFSs (classical approach)

The following figure summarises the eight classical steps involved in setting up and running a Farmer Field School.



1. *Groundworking activities:*
   - Identify focus enterprises
   - Identify priority problems
   - Identify solutions to identified problems
   - Establish farmers' practices
   - Identify field school participants
   - Identify field school sites

2. *Training of facilitators on:*
   - Crop/livestock production and protection technologies
   - Manuals on how to effectively deliver crop/livestock production and protection topics usingNon-formal education methods (NFE)
   - Participatory technology development (PTD) with emphasis on the approaches and developing guidelines on conducting PTD
   - Non-formal education (NFE) methods with emphasis on what, when and how to use NFEin FFS
   - Group dynamics
   - Special topics to be addressed at every stage of training

3. *Establishment and running FFS:*
   - Implement PTDs (test and validate)
   - Conduct AESA and morphology (form and structure) and collect data
   - Process and present the data
   - Group dynamics
   - Special topics

4. *Evaluate PTDs:*
   - Analyse collected data
   - Interpret
   - Economic analysis
   - Presentation

5. *Field days*
   - 1 or 2 per season
   - Farmers themselves facilitate during this day
   - Rest of the community is invited to share what the group has learned in FFS
   - A guest speaker is usually invited to address all the invited persons at the end of the day in a public baraza.

6. *Graduations:*
   - Done at the end of the season
   - Marks the end of the season long FFS
   - Farmers are awarded certificates
   - Done to recognise farmers input, time contribution/participation

7. *Farmer run FFS:*
   - FFS farmer graduates run their own FFS

8. *Follow up by facilitators*

Application of the Farmer Field School approach in Kenya

Augusta Abate and Deborah Duveskog
FAO, Kenya

FFS history

The Farmer Field School (FFS) approach was first introduced on a small-scale in Kenya in 1995 by the Special Programme for Food Security (SPFS) of which Kenya was one of 15 pilot countries. Due to the limited knowledge and experience in the country and in Africa in general about the approach, five Kenyan MoALD extension workers were selected and supported by FAO for 3 months FFS training of trainers in the Philippines, to build up the national FFS capacity.

The approach had been developed in Asia for small-scale rice farmers to investigate and learn for them selves the skills required for, and the benefits of adopting, integrated pest management (IPM) practices. Even though there had been efforts made to apply the approach for other farming situations, the experience was still quite limited outside the fields of rice and IPM. Bringing the approach to Kenya therefore required a range of adaptations and modification of the approach in order to make it applicable for the specific farming systems of Africa, with its wide diversity of crops grown and where pests are not necessarily the major production problem. The Kenyan context also provided specific challenges, different from those in Asia, such as long distances between farming communities, limited national funding for public extension system, and highly unpredictable weather patterns with frequent droughts.

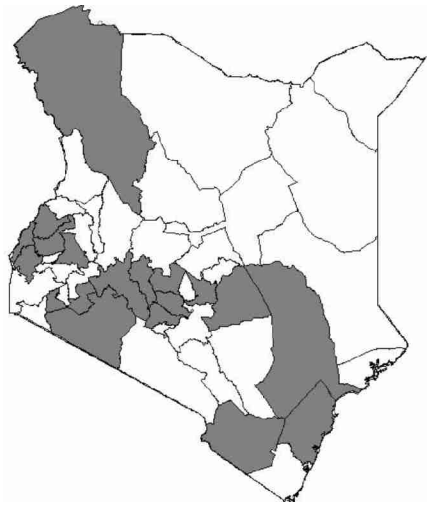
FFS implementation in Kenya

Since 1995 the FFS approach has been tested and adapted for a wide range of crop and livestock enterprises and, compared to Asia, FFS in Kenya has been applied more as a production tool rather than just for IPM. In 1999, the FAO Global IPM Facility launched an East African sub-regional pilot project for FFS on Integrated Production and Pest Management (IPPM) covering three districts in Western Kenya. With IPPM as the entry point, the FFSs have included other aspects that have a bearing on production and livelihoods in general.

Following the success of the IPPM program, a couple of years later several new FFS initiatives were initiated and the approach expanded to new enterprises and study topics. The UNDP funded PFI-FFS project was started in 2001, including FFS on such diverse topics as bee keeping and soil management. At about the same time ILRI initiated the Livestock FFS project with DFID-Animal Health Programme funding, with the aim of adapting the FFS methodology to health and production issues of smallholder dairy production. In central Kenya an FAO funded initiative was launched, focusing on export vegetable production, and KARI initiated a pilot project to scale up successful soil fertility management technologies.

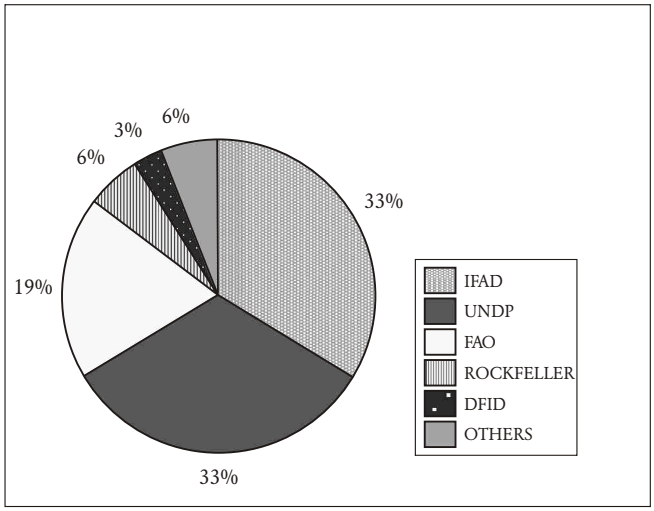
Table 1. Districts in Kenya with FFS activities

Rift Valley Region	**Coast Region**
Nakuru	Kilifi
Narok	Taita-Taveta
Bomet	Tana River
Nandi	
Turkana	**Central Region**
Trans Nzoia	Kiambu
Eastern Region	Nyandarua
Mbeere	Maragua
Kitui	Nyeri
Mwingi	Muranga
Embu	
	Western Region
Nyanza Region	Kakamega
Kisii	Busia
Bondo	Bungoma



The districts that currently have FFS activities can be seen in Table 1. A total of about 1500 FFSs have been implemented in Kenya in 23 districts. The numbers of FFSs, the diversity of topics, and FFS innovations makes Kenya a leading country in Africa for FFS development.

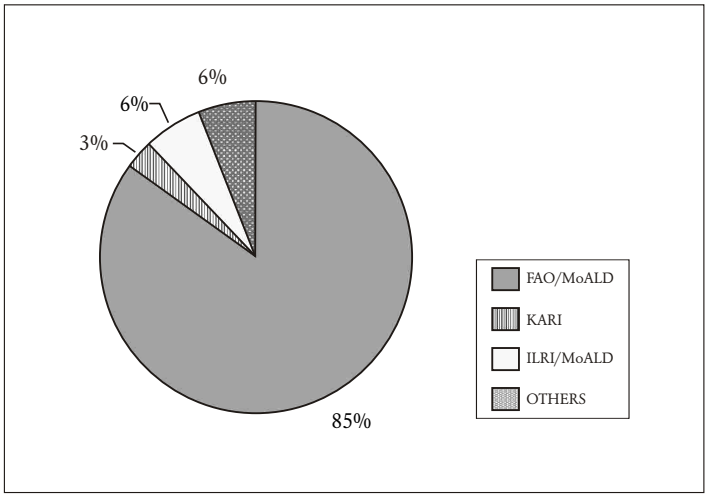
Figure 1. FFS donors in Kenya (as per number of FFS supported by 2003)



Up to 2003, IFAD, UNDP and FAO have been the largest donors of FFS initiatives, while Rockefeller and DFID have funded smaller, research-based FFS initiatives. Apart from these there are a wide range of NGOs and local institutions in the country supporting FFS on a location specific scale, such as Action Aid, Plan International, CREDIS, Catholic Church, Anglican Church and KAIPP. With increased demand for FFS in programme areas, an increase in self-funded FFSs have been emerging. The approach has further been taken up by MoALD within the national extension programme and without external funding in a number of districts, such as Bomet, Tana River and Nandi. The various donors of FFS in Kenya can be seen in Figure 1.

The main implementing agency of FFS initiatives in Kenya, as well as in other parts of the world, has until recently been FAO. However, as more and more institutions and agencies pick up the approach, and more experiences on FFS are gained by others, this trend is changing and in the coming years the role of FAO in FFS implementation is expected to be reduced. Most of the FFS initiatives in Kenya are implemented in very close collaboration with MoALD and FFS facilitators are in most cases district/divisional extension staff. In Figure 2 the FFS implementing agencies can be seen.

Figure 2. FFS implementing agencies in Kenya (as per number of FFS implemented by 2003)



Most of the FFSs in the country have been carried out through a grant system, where farmers receive an initial grant to pay for costs related to the group farm trials and to pay for extension services (usually in form of lunch and travel allowances). The groups open a bank accounts and money is transferred to the groups after a detailed work/study plan has been prepared by the group. In most cases the level of the grant has been $300 for farmer-led FFS and $600 for extension-led FFS.

Farmer-led FFSs have proved to be a powerful way of rapidly scaling up and scaling out. Since the numbers of extension staff in the field is limited, and costs are high for transport due to large distances, farmer-led FFS has been an integrated part of FFS implementation in Kenya. Farmers who have graduated from a staff led FFS have received brief training and then been supported to run their own FFS.

Achievements and lessons learned

Preliminary data show that FFS is an effective and comparatively cheap tool for speeding up the uptake of improved technologies at community level, improving rural food security and income generation, and empowering farmers to find solutions to their livelihood problems.

The efforts by various agencies and institutions to adopt and test the approach for various topics have proved that the FFS approach can be successfully applied for a very wide range of crop/livestock/natural resource management enterprises.
The direct funding to farmer groups, for payment of extension services in FFS, has drastically improved the performance of extension delivery and accountability of extension providers and introduced farmers to a demand driven extension system where farmers are empowered to choose the extension activities they are involved in.

Through the system of scaling up by farmer-led FFS, a large number of farmers have benefited from the FFS programs. In Kenya, about 250 extension staff have acted as extension facilitators

up to 2003, and about 34,000 farmers taken part in FFS activities. This has meant that through the FFS approach each extension worker has managed to reach many more farmers than is possible in most other extension approaches.

FFS experience show strong empowerment impacts at community and district level, demonstrated though strong and cohesive FFS networks and associations pushing on marketing and policy issues. These FFS networks have proved to emerge without external support and have considerable potential in acting as a platform for community based extension activities.

On average about 70% of FFS participants in the country are women. The approach is highly appreciated by both sexes but women seem to especially value the approach due to the practical, field based, learning focus and the social value of the FFS groups.

Challenges and way forward for FFS in Kenya

Through the efforts of the IPPM project in western Kenya, a model for a self financed FFS system has been developed and tested. Starting in 2004, a large majority of the grants for UNDP and IFAD funded FFS will be given on a cost recovery basis whereby groups borrow the amount necessary for running their FFS and repay the amounts at the end of the FFS cycle. This is an encouraging development to reduce the costs in FFS implementation, but poses a big challenge of putting in place the institutional architecture needed for managing such revolving funds.

In many of the FFS initiatives it has proved clear that a stronger focus is needed on input supplies and produce marketing in FFS initiatives. This has led to an increasing focus on these issues in new and emerging FFS initiatives.

Monitoring and evaluation (M&E) of FFS impacts and achievements have been poor by all FFS initiatives in the country. There is a need for development of M&E frameworks and tools for FFS and for analyses on cost effectiveness, sustainability, empowerment and impacts of FFS on rural food security and poverty reduction.

There is a need to support the development of an FFS-related skill base beyond that of FAO, to establish a national institutional capacity for FFS training and implementation, and to ensure quality control and coordination of FFS activities in the country.
As the interest for FFS expands, there is a rapidly growing demand for literature on FFS, facilitators' manuals and FFS curricula for various topics and enterprises.

There is a need to support the emerging apex organisations, FFS networks, farmer associations, etc., in their efforts to provide services to their members. Such topics as leadership skills, fund management, savings and credit systems and organisation management have proved to be in especially high demand.
The opportunities to apply the FFS approach in a pastoral context with semi-nomadic or nomadic communities have yet not been explored due to the inherent challenges in operating an extension system in such contexts. However, there is a growing demand by the dryland districts of Kenya for the approach and, with the increasing interest by the Kenyan government to assist pastoral communities, these opportunities should be explored further.

Table 2. Basic information about the major FFS initiatives in Kenya, 2003

Project	Districts	Lead Institution (Donor)	Start Year	Main topics	Capacity building: Trained field staff Graduated farmers	FFS groups formed : Staff led FFS Farmer led FFS	FFS Innovations and adaptations
IPPM-FFS	Busia Bungoma Kakamega	FAO/MoALD (IFAD)	1999	IPPM, Maize, Vegetable, Poultry	33 12,990	0 0	FFS on integrated pest and production Poultry FFS
VEG-TCP	Maragua Nyeri Muranga Kiambu	FAO/MoALD (FAO)	2000	Export vegetable IPM	36 1,008	36 72	Development of a self-financed FFS system FFS for commercial vegetable export production
PFI-FFS	Nakuru Narok Bomet Kitui Mwingi Taita Taveta Kilifi	FAO/MoALD (UNDP)	2001	Maize, soil fertility, vegetables, poultry	63 2,526	140 252	Integration of the FFS approach with the promoting farmer innovation (PFI) approach for a stronger recognition of indigenous knowledge in FFS. FFS for a range of new topics such as bee-keeping, fodder production, poultry etc.
KARI pilot	Kakamega Kisii Tranz nzoia Embu Mtwapa	KARI (Rockefeller F)	2001	Soil Management	49 472	21 0	FFS by researchers for-up scaling of technologies FFS for soil fertility management
INMASP	Mbeere Kiambu	ETC/ KARI (EU)	2002	Nutrient management	0 0	4 0	FFS for integrated nutrient management
Horn of Africa Bondo TCP	Bondo	FAO/MoALD (FAO)	2002	Food security, Nutrition, HIV/Aids	35 0	40 60	FFS for integrated food security (including HIV/AIDS, nutrition etc)
Livestock FFS	Nakuru Nyandarua Narok Kilifi	ILRI/MoALD (DFID)	2001	Dairy Indigenous cattle	25 189	20 0	Testing and adapting the FFS approach for small-holder dairy production system
FARMESA	Kakamega Mbeere Kilifi	MoALD (SIDA)	1999	Water harvesting, crop prod, poultry	11 275	0 0	FFS for water harvesting and other new FFS topics
Various other	Kilifi Kakamega Bungoma Busia	PLAN Int. Self funded Catholic ch. Credis KAIPP Anglican church.		IPM, crop, poultry	no data 0	about 80 no data	Various new funding arrangements and FFS implementation strategies tested

Applicability of Farmer Field Schools in crop-based technologies

Titus Mutinda and Dorothy Maye
MoALD

When FFS was first introduced in Asia about 20 years ago the focus was on integrated pest management in rice. Most exercises and guidelines for group trials where thereby developed for FFS on rice. However, with time the FFS methodology has been applied for a wide range of other crops. When FFS was first introduced in Africa there was a need to adapt the approach to crops important in the local context, and the first FFSs that were started in Kenya were thereby focusing on maize production. Due to the highly diverse farming system found in Kenya, the FFS study focus quickly grew to cover a whole range of different crop enterprises, varying from subsistence crops such as cassava to export crops such as French beans. Overall, the FFS methodology has been found successful in development and dissemination of most seasonal crop based technologies. It has been slightly more difficult to adapt the approach for perennial crops, due to the long cropping cycle involved. Various FFS initiatives are starting to apply the approach for other enterprises than crops, such livestock or focused on soil fertility. However, the majority of FFSs in the country are still focusing on crop based enterprises.

The various crop enterprises undertaken as FFS study topics in Kenya include:

- Food crops - maize, millet, sorghum, etc.
- Legumes - beans, green grams, cowpeas, etc.
- Vegetables - kales, tomatoe, cabbage, okra, onions, etc.
- Root crops - potato, cassava, etc.
- Fodder crops - napier grass, desmodium, etc.
- Fruit crops - passion fruit, coconut, etc.
- Industrial crops - cotton
- Export crops - snow peas, French beans, etc.

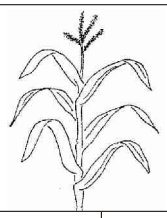
The training in FFS seeks to assist farmers in developing their ability to make critical and informed decisions that will render their crop production system more productive, profitable and sustainable. Analysis and action in the FFS revolve around three basic principles:

- Grow a healthy crop through the use of improved varieties, better seed selection processes, efficient nutrient and water management;
- Conserve beneficial predators and parasites; and
- Observe fields weekly to determine management actions needed to produce a profitable crop.

In FFS, farmers go through a season long training covering all aspects of the cropping cycle, from land preparation, through planting, weed control, pest and disease control, harvesting, post storage to marketing of produce. By following the whole cycle of the chosen enterprise farmers gain skills and learn to make management decision applicable to any stage in the crop development cycle.

Every week farmers practice agro-ecosystem analysis (AESA), which includes crop, water, weed, insect pest, disease and nutrient management, as well as observation and collection of insect pests, beneficial predators and parasites. The purpose of the exercise is for farmers to learn to make regular field observations and analyze problems and opportunities encountered in the field. Through observation, drawing and discussion, farmers analyze what is observed in the field and come up with management decisions bases on these findings. This helps improve farmers' decision making skills. By doing this exercise regularly in the FFS, farmers develop a mental checklist of indicators to be observe when monitoring their crops.

Figure 1. A typical crop AESA sheet

NAME OF FFS: AESA NO: GROUP NO: PLOT NO: PROBLEM ADRESSED:		DATE: WEEK NO:
GENERAL INFO.	**PARAMETERS**	**TREATMENT**
Variety : Date planted: Age of crop: Spacing: Fertilizer: Weather: Time of observation: Plant population: Germination %:	Length of leafs: Width of leaves: No of leaves: No of diseased leaves: No of dead leafs: Length of plant: No of pods:	Treatment schedule: Management practices:
INSECT PEST	**PLANT DRAWING**	**NATURAL ENEMIES**
Pests observed:		Natural enemies observed: 
OBSERVATIONS		**RECOMMENDATIONS**
Soil moisture: Diseases: Insect pests: Plant health: Deficiency: Weeds: Predators:		What management practices should be applied? :

The FFS groups establish trials on a common group plot to study and evaluate different management practices. These study plots usually vary in size from 500-2000 m^2. The group decides together which aspects they want to investigate in the farm trials, after a series of problem identification and priority ranking sessions. At the establishment of the trials farmers decide on which indicators to monitor in the trials. A whole range of indicators are identified, often very different from the indicators researchers would choose to monitor. The most commonly types of crop trials carried out in FFS are can be seen in Table 1.

Table 1. The most common types of FFS trials on crop enterprises

Type of trial	Objective of the trial	Typical indicators monitored
Varietal performance	Rate the performance of local crop varieties against various improved varieties in order to learn to make informed and critical decisions in the farms as regards to which crop varieties are best suited to local conditions.	• Time to maturity • Plant vigour • Yield levels • Post harvesting qualities • Cost of production • Cooking qualities • Accessibility of the seeds
Soil fertility	Subjecting selected crop varieties to different levels of fertilizers/manures and other soil fertility options in order to learn to make decision on suitable treatments for improving soil fertility and their proper use in terms of rates and timing of application.	• Yield levels • Ease of application • Cost • Availability • Crop performance
Pest management and IPM	Evaluate various options for pest and disease management and compare the pros and cons of chemical pesticides against biological options, in order to learn how to grow healthy crops as cost effective as possible.	• Level of disease/pest problems • Cost • Yield levels • Availability of required inputs

Below are some of the results or recommendations made by FFS farmers in Eastern Province as a result of their group trials evaluating crop varieties.

Table 2. Farmer evaluation of crop varieties

Crop	Trial treatments	Major observations by farmers
Bulbrush Millet	Varieties comparison: KPM1, KPM2, KPM3 and Local	KPM3 was rated the best overall due to early maturity, tolerance to bird damage, ease to thresh and grain size as draught tolerance. However, with good rains KPM3 could potentially yield more. KPM2 matured early but yielded poorly. KPM3 was renamed "Kasati" due to shiny appearance of its head and ability to fight hunger. Most concluded they would be planting mostly KPM3 and less of the other varieties
Beans	Varieties comparison: Rose coco, Mwitemania, KB1, Wairimu	KB1 was rated best overall, due to early maturity, good cooking quality and tolerance to diseases. It was followed by Mwitemania, local and Rose coco. Most farmers opted to plant more KB1 followed by Mwitemania. A few would, however, plant a bit of Rose coco due to good market price as it is known by grain traders.
Green grams	Varieties perfomance: Local, KS20	Although local gave better grain yield, KS20 was rated higher due to its early maturity, larger grain size, and good cooking quality. Out of every 1 kg of KS20planted, 30 kg were obtained. Farmers decided to sell to FFS members a kg of KS20 at 10 KSh above market price of local green grams for further multiplication. The farmers also concluded that in future they would commercialize the production by planting more of KS20 for marketing within and outside Mwingi.
Maize	Varieties comparison: Pioneer 3253, DH01, DLC1, Katumani CB, Local	Although DH01 gave the highest yields, followed by pioneer, Katumani and local, farmers concluded that the result was attributed to unusually prolonged rains. Farmers decided to be planting more of Katumani CB and a bit of DLC1 due to its early maturity and ability to recycle seeds for more than two seasons. A few able farmers said that they would be planting a bit of DH01 and pioneer especially in October/ December rains. With good selection of seeds from known local sources, the majority of farmers felt they could still plant local landraces

There is often pressure to get the field school implemented. However, it is important to synchronise the FFS with the planting season. The FFS is designed to run parallel with the growing season so that farmers can observe field ecology issues through all stages of plant growth. If start-up of the FFS does not mesh with the planting seasons, two things happen. First, as the season wears in it becomes more difficult to establish study plots for the FFS. Secondly, starting late means that participants are not given an opportunity to study the enterprise at all stages of plant growth.

Value adding and marketing of produce is an integrated topic in crop based FFS as well as the concepts of "farming as business". The farmers are trained on marketing and in how to increase the value of their produce by local level processing in order to take advantage of available market opportunities.

Table 3. A typical FFS market survey form to evaluate market opportunities

	Indicator	Product A	Product B
1	Potential product	Avocado juice	Cake
2	Competitive product	Coca cola	Chapati
3	Competitors price	KSh 10	Ksh 20
4	Competitors market share	300 people	100
5	Target market share	50 people	50 people
6	Quantity sold per day	50 glasses	50 pieces
7	Price per item	KSh 8	KSh 15
8	Cost of production	Ksh 330	KSh 2,350
9	Income per 7 days	KSh 2,800	KSh 5,250
10	Profit per week	KSh 2,470	KSh 2,900

FFS groups are also encouraged to engage in a commercial enterprise alongside their study topic that can give some extra income for group activities.

FFS with a focus on crop production have to a high extent attracted private sector collaborators. Various seed companies have worked together with FFS groups to test and evaluate new varieties development and marketed. Bayer E.A. collaborated in the supply of gaucho-treated cotton seed to FFS in Kitui. Farmchem has been doing promotion of their seed products by supplying demonstration vegetable and maize seeds to FFS groups in Kitui. Pioneer seeds have been tested and evaluated by several groups in Nakuru among other. Experience has shown that it is important to handle partnerships with private sector with cautiously in order to avoid unintended promotion of specific products. The agenda of the proposed collaboration should be determined by farmers and the aim should be to provide farmers with the opportunity to test and evaluate for themselves a wide range of farming options and technologies in order to determine which is most suitable for their specific needs.

KARI's Farmer Field School pilot project

Joseph Mureithi
KARI

Introduction

The FFS pilot project commenced in March 2001 and aimed at incorporating the FFS approach in the Soil Management Project (SMP) and Legume Research Network Project (LRNP) of KARI. The SMP and the LRNP were initiated in 1994 to combat declining soil fertility in smallholder farms in Kenya. The SMP was implemented through two KARI Centers: the National Agricultural Research Centre at Kitale and the Regional Research Centre at Kisii. The SMP adopted the Farmer Participatory Research (FPR) approach to implement research activities so that farmers and other stakeholders could participate actively in technology development and transfer. In addition to decline in soil fertility, farmers identified lack of suitable crop varieties and livestock feed as important constraints limiting smallholder agricultural production that the project needed to address. The LRNP was began as a legume screening network primarily to screen suitable green manure legumes in eleven sites spread across the country at altitudes ranging from 15m to 1900m above sea level. The Network expanded its activities to include coordinated studies in legume residue management, evaluation of legume green manure as a component of integrated soil management and livestock feeding studies based on selected legumes.

The first phase of these projects ended in year 2000 after being on the ground for six years. At the end of the phase about ten technologies were identified as being ready for scaling up (i.e. wide scale dissemination in neighbouring villages and regions with similar agro-ecological characteristics to the study sites). These technologies were:

- Improved preparation, management and use of organic manures 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.

The FFS approach was one of the scaling approaches adopted by the two projects to disseminate the technologies. Others included conventional group extension approach and Farmer Research Committees (FRC) as dissemination agents. It was adopted on a pilot basis for three years beginning March 2001, by five KARI centres: Kitale, Kakamega, Kisii, Embu and Mtwapa (Figure 1).

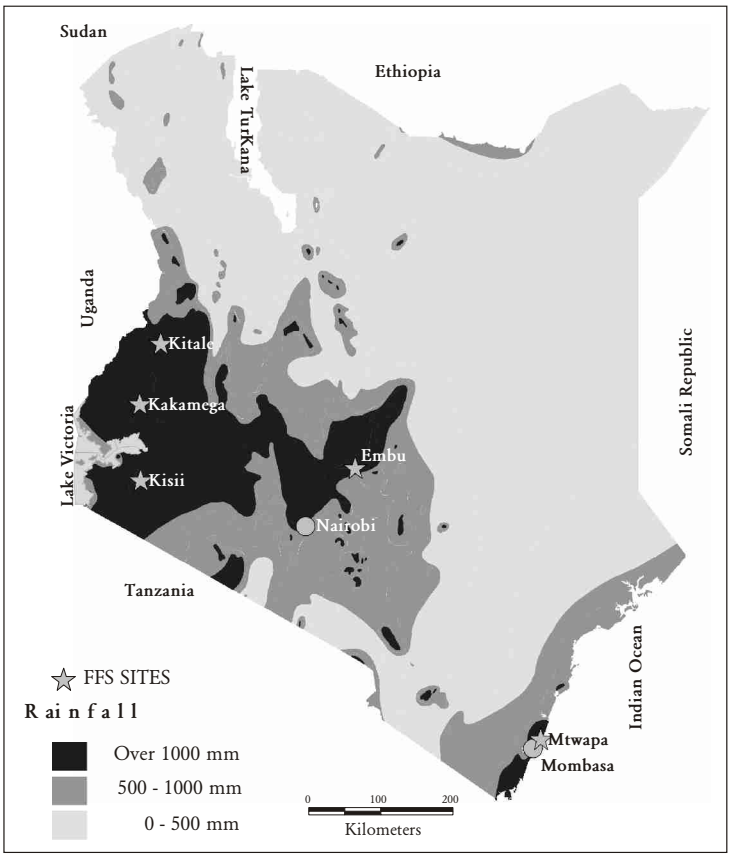


Figure 1: KARI centres running Farmer Field Schools

The FFS pilot project has six major activities, which are;

1. A FFS sensitization workshop.
2. Training of Trainers course (ToT) on the FFS approach.
3. Development of farmer training curricula of the technologies to be scaled up.
4. Development of participatory monitoring and evaluation tools for the FFS approach.
5. Support of four MSc students.
6. Running of about 45 FFS in five KARI centres.

Each of these activities is briefly described below:

FFS sensitization workshop

This workshop was held from 6-8th March 2001 in Western Kenya. Its primary objective was to sensitize senior managers of KARI and the Ministry of Agriculture and Rural Development (MoARD), researchers and extensionists implementing SMP and LRNP, and farmers on the FFS approach for information transfer and scaling up of agricultural technologies. About 90 participants attended the workshop. The workshop covered: genesis of FFS approach and its principles and concepts; FFS ToT course and running FFS in the field; development of FFS training curricula; monitoring and evaluation of FFS; and FFS for integrated soil fertility and nutrient management and conservation. Country experiences on FFS approach from Philippines, Indonesia and Kenya were shared during the workshop.

Training of Trainers (TOT) course in FFS approach

The aim of this course was to equip the SMP and LRNP staffs with methods, skills, attitudes and knowledge to design, facilitate and implement FFS in their project mandate areas. The participants came from KARI centres at Kitale, Kisii, Kakamega, Embu and Mtwapa. The course was in two parts. The first part covered the theory of the FFS and the second part was a season long training in the field. FAO Kenya provided two facilitators to conduct the training. The first part was held at Egerton University from 12 to 17th March 2001. Topics covered included introduction to FFS methodology, steps in conducting FFS, organization and management of FFS, and non-formal education methods. It also included field exercises, group discussions and plenary sessions. During the training, participants developed tentative workplans of the schools they were going to initiate in the field. They also developed tentative training curricula of the technologies to be scaled up.

The second part of the ToT was a season long field-based training on how to run a successful FFS. The workplans developed during the first part of the training were used to initiate and run the schools. KARI centres in Kitale and Mtwapa started their schools in April 2001 because the long rainy season had just begun in their sites. Schools in Kisii were initiated in May/June while in Kakamega they were started in late June. Embu was the last to start its school in late August 2001. Table 1 gives details of the FFS that were formed and when they were terminated.

The FAO trainers provided technical backstopping and visited Kitale every first Monday of the month and Kisii every third Thursday of the month.

Development of farmer training curricula of the technologies to be scaled up

During part one of the ToT course participants developed draft training curricula for the FFS they were to initiate in their respective project areas. These draft curricula formed the basis for preparation of weekly lessons for the FFS. The ToT participants met once a week to prepare the lessons for the following week and also improve the contents of the lesson of the previous week using feedback from farmers. At the end of the ToT, the weekly lessons were compiled into a farmer training curricula for each of the technologies to be scaled up. Participants were encouraged to document different stages of the technologies being demonstrated which were to be used to enhance the quality of the curricula.

Table 1. Summary report of Farmer Field Schools initiated during the season long Training of Trainers course

KARI Center	Name of farmer field school (FFS)	Technology being scaled up	Number of school members		When initiated	When terminated
			Male	Female		
Kitale	1. Bikholwa (Action) FFS	Combinations of organic and inorganic fertilizers for maize production	18	4	10 April 2001	December 2002
	2. Bulala (Unity) FFS	Food legumes other than beans	15	10	20 April 2001	
	3. Busime (Love) FFS	Management of organic and in organic fertilizers for vegetable production	5	12	20 April 2001	
	4 Twende Mbele (Move forward) FFS	Suitable maize varieties for Kitale mandate region	4	8	30 April 2001	
	5. Upendo (Love) FFS	Quality seed production in smallholder farms	7	23	10 April 2001	
	6. Khuyetena (Helping one another) FFS	Forage crops establishment, management and utilization	12	11	20 April 2001	
	7. Mteremko (Steep slope) FFS	Low cost soil conservation measures	5	9	14 May 2001	
	8. Mutua (Last born) FFS	Use of plant extracts to control crop pests	9	16	21 May 2001	
Kisii	1. Riboba (cultivated plot) FFS	Combinations of organic and Inorganic fertilizers	10	18	4 May 2001	April 2002
	2. Mlango (Door) FFS	Improved soil conservation measures	29	23	4 May 2001	August 2002
	3. Etono (small edible mushrooms) FFS	Integrated pest management on bean production	8	19	27 June 2001	April 2002
	4. Keroka FFS	Improved fodder production	25	20	10 June 2001	August 2002

Table 1 (Cont'd). Summary report of Farmer Field Schools initiated during the season long Training of Trainers course

KARI Center	Name of farmer field school (FFS)	Technology being scaled up	Number of school members		When initiated	When terminated
			Male	Female		
	5. Riomwando (Inheritance) FFS	Finger millets varieties tolerant to blast disease	5	27	10 July 2001	April 2002
	6. Umoja (Togetherness) FFS	Use of soil fertility improving legumes	11	25	13 June 2001	August 2002
Kakamega	Malanga FFS	Green manure technologies for soil fertility improvement		38	25 June 2001	September 2002
Embu	Karurina FFS	Up-scaling green manure technology		31	August 2001	October 2002
Mtwapa	Jembe (Hoe) FFS	Combination of green manure legume with FYM and inorganic fertilizers	7	8	28 March 2001	September 2002

Development of participatory monitoring and evaluation (PM&E) tools for the FFS

This was to be done during the methodology development workshop and by four MSc students who were expected to undertake research to refine the FFS process and test some tools developed during the workshop.

a) PM&E methodology development workshop

The aim of the workshop was to jointly develop tools/frameworks for participatory monitoring and evaluation of the effectiveness of FFS as an approach to scaling up soil management technologies and information. This workshop is the gist of this paper and is discussed in greater details in the later sections.

b) Support for four MSc students

The MSc training was included in the project so that the students could undertake research that would contribute to the development and refinement of M&E tools for the FFS process. They were also expected to evaluate the rate of technology spread and the impact it is has on smallholder farming. Tentative titles of the MSc Research work are:

i) Factors influencing group effectiveness in FFS approach for up-scaling agricultural technologies: A case study of Kisii District
ii) Effectiveness of FFS in validation and dissemination of soil management technologies among small scale farmers in Trans-Nzoia District, Kenya
iii) Economics of using FFS an extension approach
iv) Evaluation of the effects of farm-yard manure, phosphorus and potassium on the growth and tuber yields of Irish potato using the FFS approach.

New schools initiated in March/April 2002

So far a total of 30 new FFSs have been initiated in three KARI centres (Table 2). Nine of them are farmer-led and one extension-led. The farmer-led ones are near the old sites and are technically backstopped by researchers and extensionists.

Table 2. New FFS initiated in 2002

KARI centre	Researcher-led	Farmer-led	Extension-led
Kitale	13	4	1
Kisii	6	4	
Mtwapa	1	1	
Total	**20**	**9**	**1**

Development of Farm Field School methodology for small-holder dairy farmers in Kenya

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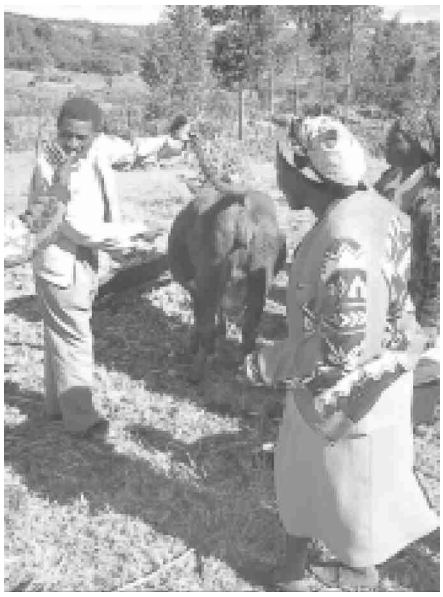
Conventionally, scientists are primarily involved in generating new information and are rarely involved in the dissemination of their results other than to fellow scientists. Although the so-called "baskets of options" are actually full with technologies, most research programmes record very poor adoption rate and insignificant impact. The challenge facing the research and extension services in the livestock sector of developing countries is to help farmers to increase productivity while sustaining and enhancing the productive potential of the available natural resources. Unfortunately, conventional information dissemination projects or programmes have also very poor success rates in changing or improving animal health and production practices. Dissemination has traditionally been seen by research and extension as finding effective ways of transferring technology, and passing on relevant, usable information to farmers. In complex situations, where farmers need to adjust to a changing situation, such as animal health and production, this approach has been shown to be inadequate because farmers are generally insufficiently involved in identifying problems, or in selecting, testing and evaluating the possible solutions.

Farmer Field Schools (FFS) are based on an innovative, participatory and interactive learning approach. The aim of the FFS is to build the farmers' capacity to analyse their production systems, to identify their main constraints, and to test possible solutions, eventually identifying and adopting the practices most suitable to their farming system. The knowledge acquired during the learning process can be used to build on existing knowledge enabling farmers to adapt their existing technologies so that they become more productive, more profitable, and more responsive to changing conditions, or to adopt new technologies. The current ILRI/DFID-AHP/FAO livestock FFS project is developing the methodology for similarly complex situations found in animal health and production. The purpose of the project is to adapt and test FFS methodology for animal health and production, focussing upon smallholder dairy farmers. The approach is applied to developing integrated methods to control vector-borne diseases and helminth infections and to improve the efficiency of utilization of available feed resources and the management of nutrients within the crop-dairy system.



Ten FFS groups of 30 to 35 farmers with similar interests were established in five different agro-ecological zones in Central, Rift Valley and Coastal Provinces of Kenya. Facilitators trained in FFS approaches worked with established groups to prioritize the main constraints to improved efficiency

of milk production using participatory pairwise and matrix ranking techniques. Based on the results of this exercise, individual grant proposals were prepared by each group including a detailed work plan with a corresponding budget. A maximum grant of US$600 was deposited in an account controlled by elected members of the FFS group to cover the cost of field activities and the cost of facilitation, i.e. the transport and lunch allowances to enable the extension worker to visit. Management of this budget empowered the farmers to demand and control activities covered by the FFS and ensured that the extension services offered responded to farmers' actual priority problems and needs. All FFS groups meet weekly, from 9 to 12 am. In each session farmers work with the extension facilitator in a structured manner, organized by a different group of farmers each week who are nominated from the group. The main activities are participatory technology development (PTD) in which farmers focus on solving local problems through a process of collective and collaborative inquiry using comparative studies and the special topic.

The PTDs are implemented to empower participants (both farmers and facilitators) with analytical skills to investigate cause and effect relationships of problems in farming practices. Since the main objective of the PTD is to develop farmers learning skills rather than just increase knowledge of a particular technical issue, record keeping and accurate observation are an important component. For this the AESA technique (agro-ecological system analysis) is an integral component of the PTDs. The AESA technique is used to record and observe the results of the PTD experiments and is designed to improve observation skills and to develop decision-making skills, through analysis of a field situation. It is the establishment of an understanding, through observation, of the interactions between livestock and other biotic and abiotic factors co-existing in the field, as they relate to the problem or technology being studied. For example, where the subject is expected to have a direct outcome on the animal, such as a feeding or health management practice, the AESA is focused on the animal. Practically, farmers are divided into small groups and observe an animal from one of their farms. Observations are guided by a check-list including general information, the life history, parameters defining the level of production and observations describing the health status of the animal. Each group presents their results in a standardized format to the rest of the school, where the findings are discussed allowing farmer-to-farmer information dissemination as well as evaluation of progress as part of the PTD.

The establishment of PTD is one of the biggest challenges for livestock FFS. Indeed, while it is relatively easy to design a comparative study for crop integrated pest management, the high economic value of cattle does not allow any experiment involving any risk or even short-term losses in animal productivity. Therefore, one of the objectives of the on-going livestock FFS project is to establish what type of PTDs could be performed without any risk or detrimental effect and still allow farmers to experiment with new technologies. Three types of PTDs have emerged from on-going activities:

1) *Classical PTDs Although livestock are the focus for the FFS, a lot of activities of the livestock keeper are crop related. This is particularly the case for fodder production and grazing improvement and PTDs include:*
    - Establishment of alternative sources of fodder. A range of fodder crops are planted using different planting methods, treatments and/or different fertilizer regime.
    - Preservation of fodder using different techniques, such as silage making and the box baler for hay.

2) *Comparison of existing farmer practices Observation and evaluation of the different practices of farmers, in and outside the FFS group, provide the opportunity for farmers to address issues that do not lend themselves to experimentation because of the high risk in terms of animal well-being or high cost of implication. Examples include:*
   - Tick control: comparison of efficacy of different acaricides and/or of different application regimes.
   - Vaccination efficacy: comparison of disease incidence in immunised and non-immunised animals.
   - Comparison of milk quality and losses due to milk spoilage in relation to the quality of the milk parlour infrastructure.

3) *Ex-post PTD analysis In ex-post analysis, farmers compare actual experimental results with practices that were used before. Results may be quantitative if records are available from the past or from similar situations, or qualitative where farmer perceptions are evaluated. This also include the "Stop and Go" method, where the treatment is stopped and re-introduced several times to show its effect using an animal as its own control. Those tested include:*
   - Water availability: the amount of water available to the dairy animal is changed according to the calculated needs. Milk production on the new regime is compared with previous records of production on the old regime.
   - Genetic material: artificial insemination is used to compare calf birth weight with other calves or with the expected weight.
   - Prophylactic programme: a prophylactic programme is applied to a group of cattle and their performance is compared with previous productivity and with neighbouring herds. This could include deworming, trypanocide and/ or vaccination against prevalent diseases.

Not every problem can be easily dealt with by a "learning by doing" approach. Some problems, dealing with contagious diseases, for example, are not suitable or too dangerous for experiment. Others may be too abstract to be demonstrated physically, such as the importance of epidemiological status or immunological reactions and these can be addressed in special topic sessions where issues are discussed. Since the facilitator cannot be an expert in every subject, he will help the farmer group to invite the right person to talk about the subject chosen by the farmers. This empowers the FFS group to contact other organisations such as NGOs, national or international research institutes. Special topics can also include livestock and non-livestock related issues, giving the opportunity for farmers to access information responding to their priority at a particular moment. For example, talking to the community about trypanosomiasis when the village is threatened by a cholera outbreak is unlikely to be addressing a priority issue; advice about cholera control would clearly be more relevant.

Conclusions

If scientific research is to achieve real impact on farm productivity and livelihoods, new methodologies for dissemination of information have to be developed. Participatory approaches, which facilitate farmer demand for knowledge, give the opportunity to the end users to choose, test and adapt technologies according to their needs. Through participation in FFS, farmers develop skills, which allow them to continually analyse their own situation and adapt to changing circumstances. The ILRI livestock FFS project, funded by the DFID Animal Health Programme, is testing and adapting a participatory method to create a sustainable relation between farmers, extension officers and research institutes. These relationships are thought to be a fundamental tool for scientists to collect appropriate data and to transform developed technologies into products adapted to the end user needs.

Using the FFS approach, the project is developing an innovative process through which farmers adapt existing technologies and try out new ideas, which are developed through interactions between farmers, scientists and extension workers. This unique relation is an excellent platform for epidemiology studies using participatory methods to disseminate information on diseases prevalence, to design relevant participatory technology development, and to introduce more successful disease surveillance and control strategies.

Acknowledgements

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Harnessing indigenous knowledge and innovation in Farmer Field Schools

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Introduction

Due to the highly diverse farming systems of Africa and the need for context specific solutions, Farmers Field School (FFS) initiatives in East Africa have sometimes faced problems in finding appropriate technologies for testing and dissemination. It has also proved a challenge to integrate indigenous knowledge at all stages of the FFS approach and to ensure a dynamic blend of technologies developed by research agents and practices evolved by local farmers. At the same time Africa has an enormous resource of untapped traditional knowledge and promising innovations and initiatives that could bring substantial benefits for other smallholder farmers if more widely applied. Despite this, there sometimes tend to be a bias in agricultural extension activities and FFS towards technologies based on 'western science' and farmers' initiatives are often invisible (Chambers, 1990; Simpson and Owens, 2002).

The PFI-FFS project

The integrated approach for 'Promoting farmer innovation in Farmer Field Schools' (PFI-FFS) was evolved by blending and modifying two existing methodologies for participatory extension: 'Promoting Farmer Innovation' and the classical FFS methodology. PFI-FFS, is a 2-year UNDP funded initiative. The project started in 2001 under the coordination of FAO and the Government of Kenya.

The objective of the project is to increase the role of indigenous knowledge and promote farmer innovations in extension activities. This is achieved by ensuring dynamic interactions between innovators and FFS farmers. Currently the project, which has a focus in semi-arid regions, operates in seven districts in Kenya (Kitui, Mwingi, Narok, Nakuru, Bomet, Kilifi and Taita Taveta). During 2001-2003, 630 extension-led and farmer-led FFSs are being implemented within the project, focusing on a wide range of crop and animal enterprises.

The PFI-FFS methodology

The PFI-FFS project has aimed at combining the two approaches in order to capture the most positive aspects of both. The combined PFI-FFS methodology, as developed by the initiative (Figure 1), includes most of the steps and activities of the normal FFS process, but with added elements of PFI.

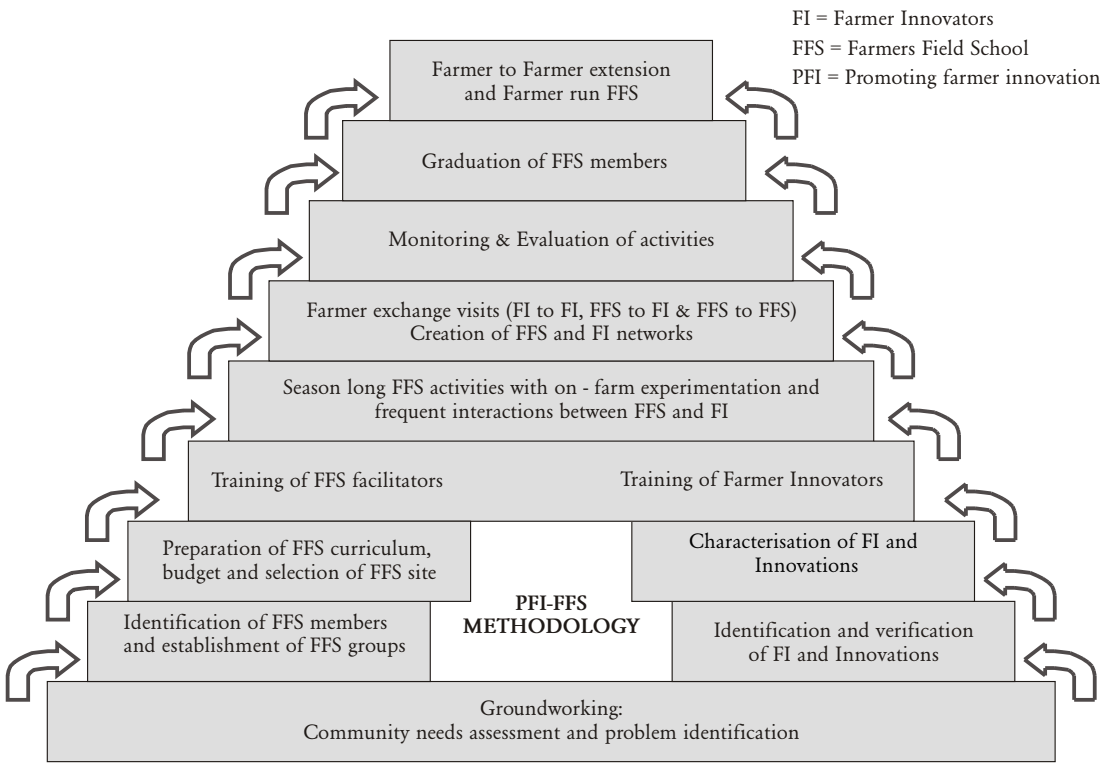

Figure 1. The approach for promoting farmer innovation in Farmer Field Schools

The identification of innovators is done by screening for potential innovators by collecting information from various stakeholders such as farmers, extension staff and NGOs. Verification is then done by following up on this information through visits to the suggested innovators for confirmation on whether the innovation is genuine and important in terms of its potential for bringing benefits to other smallholder farmers. Characterisation takes place in the form of recording and documenting some basic information about the innovator and the innovation. A short, 1-2 day training session is held for the farmer innovators in order to enhance their presentation skills, so that they can be more effective when training other farmers. It is also important for the innovators to meet and interact with each other in order to stimulate and inspire each others experimentation. Throughout the regular FFS activities, which includes learning sessions, on-farm trials, experimentation and discussions, farmer innovators are facilitated to interact with FFS groups in a variety of ways. Farmer exchange visits are a highly effective mean of facilitating sharing of ideas and improved practices among farmers or 'releasing creativity' among community members. These visits can be done between innovators, between different FFS groups or between FFS and innovators. Exchange visits are also where the foundation for farmer networks are created, when individuals or groups interact with each other.

Who are the innovators and what are their innovations?

The definition adopted by the PFI-FFS project for innovators is: *'Farmer innovators are farmers or "land users" who innovate, test and try new methods of conservation or production, on their own initiative, often using ideas from various sources.'* (Critchley et al, 1999). At the start of the process of identifying innovators, a set of guidelines was set up for the initial screening of potential innovators and these criteria serve as a rough description of 'who' the innovators are. Through the PFI-FFS project a total of 224 innovators have been identified, up to January 2003.

The general definition of an 'innovation' adopted by the project is: *'Better or modified traditional or introduced systems or initiatives or something new, tried and tested or currently under experimentation.'* By September 2002, 252 innovations had been identified and verified in the PFI-FFS project. Some innovators have developed several innovations. There is a very wide diversity in the types of innovations identified, ranging from crop production to animal health and agro processing. A big proportion of the innovations (37%) relate in some way to efficient use of water resources. In Figure 2 the number and types of innovations identified can be seen.

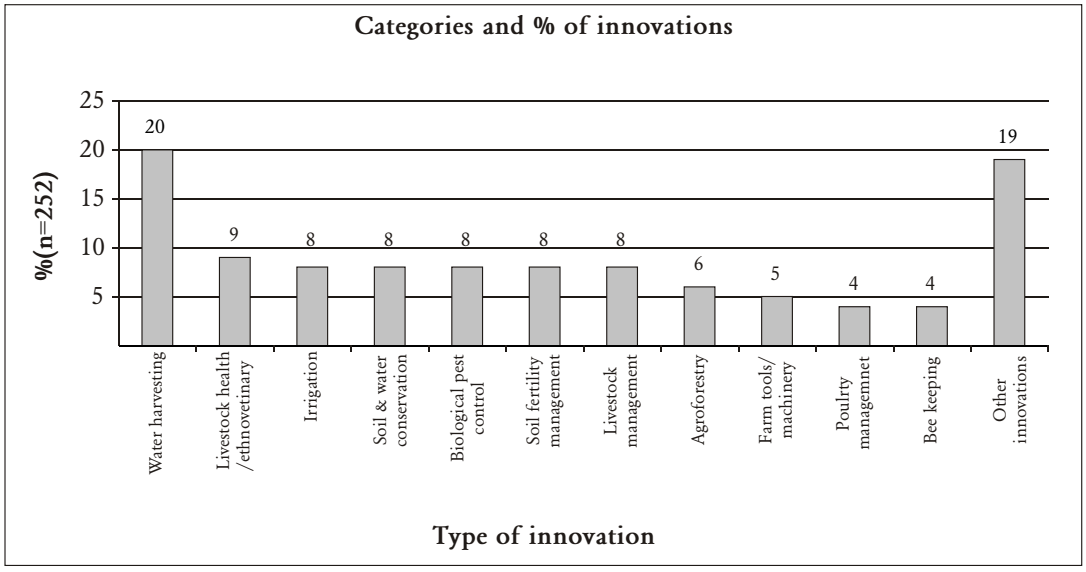

Figure 2. Percentage of major categories of innovations identified and verified in the PFI-FFS project

Ways of integrating farmer innovators and innovations in the FFS process

The integration of farmer innovators or innovations in the FFS process can take place in different ways. Various options for interactions between innovators and FFS groups are being tested and evaluated in the PFI-FFS project:

- *Innovators as members of the FFS groups*
  The innovators are regular members of the FFS and take part in all activities through out the season just as any of the other members. In the groups the

innovators will be important resource persons on their specific area of expertise and on the ideas and procedures for on-farm experimentation and local technology development.

- *I*nnovators as guest trainers
  The innovators are invited once or several times to the FFS as guest trainers to facilitate on their innovation, as part of the regular FFS curriculum or as facilitators during special topic sessions.
- *Study visits to the innovators' farms*
  The FFS groups are taught and showed the innovation during study visits to the innovators' farms.
- *Documentation and dissemination of innovations*
  By documenting the innovations they can be spread in the FFS without necessarily requiring personal interaction between the innovator and the FFS members.

Many innovations have to be taught on the site of the innovation (such as soil and water conservation, land management options, etc) for the technology diffusion to be effective, where the visitors can see the innovation in its right context. Other innovations, such as herbal concoctions used for pest control can be disseminated by documentation of the innovation.

In order to 'market' the innovations among the farmer groups 'farmer innovator catalogues' are prepared in each district. In these catalogues the innovators are presented and the innovations described, together with contact details of the innovator. Through the catalogues the farmer groups can choose the innovators they would like to interact with or the innovations they want more information on.

Program implementation: challenges and recommendations

Establishment of FFS groups is much quicker than the development of a sufficiently big community pool of innovators and innovations. This means that if these activities commence at the same time, a constructive integration of innovators and innovations in the FFS can not take place until later in the project and the first set of FFS might miss out on these interactions. Ideally the process of identifying innovators should be initiated in good time before the establishment of FFS, in order to ensure fruitful interactions throughout the whole FFS process.

Implementation of FFS is involving and time consuming for the field staff (extension staff and farmer trainers). This means that activities related to identification and documentation of innovations by field staff easily get left on the side, causing delays in the development of a community pool of innovators.

Innovators tend to be very busy individuals who are highly involved in their own farm activities. This means that they sometimes find it hard to get the time to be involved in the training of other farmers or to be a member of a FFS. Further, some innovators easily become very popular among the FFS and thereby tend to be over-visited, or over-used as facilitators. This problem can be avoided by detailed monitoring of the FFS-FI interactions, and based on that information restrict the number of visits to popular innovators. The time an innovator is willing to dedicate to this kind of work is usually limited to two days per month. To avoid over-use of certain innovators there has to be a critical mass of innovators available for interactions with FFS.

However, in cases of being involved in training events frequently, farmer innovators often request for some financial compensation for the lost working time on their own farm. Generally, the innovators coming to the FFS groups as guest trainers have been paid the same amount as the farmer facilitators of the FFS, which is approximately twice the going rate paid by small farmers to agricultural day labourers. However, when groups visit an innovators' farm during a study tour or exchange visit the innovator has not been paid.

Due to the organizational structure and funding of the PFI-FFS project it tends to be skewed towards FFS. The project document was developed as a regular FFS project with a component of PFI. However, not all activities in a combined PFI-FFS approach can be combined and integrated. Some of the preparatory activities, such as identifying innovators and characterizing innovations, require more time and funding than a regular FFS project will allow.

Some of the local innovations identified are outside the technical knowledge of the field staff. Further, some innovations might include unapproved substances or for other reasons may be questionable as to whether the project wants to support a diffusion of them or not. For this reason it is important that researchers and subject matter specialists are involved in the verification of the innovations to make sure that the innovations truly have a positive contribution to offer other farmers.

By recognizing innovators and appointing them as facilitators they receive increased status in their communities. This increased status results in enhanced interest in the community for the process of innovation and discovery, and leads to an increased respect for indigenous knowledge among both community members and service providers.

Conclusions

Experience from the PFI-FFS initiative show that there is a real possibility for having a constructive fusion of external and indigenous sources of knowledge in the FFS. Many of the innovations identified are highly elaborate and of high value for other farmers. There is no doubt that local innovations can be as effective, if not more so, as research generated technologies in improving livelihoods of rural poor. Local innovations are thereby a valuable contribution to the basket of technologies to be tested, evaluated and disseminated in the FFS and the process of harnessing innovation should be seen as supplement to the FFS approach to boost its relevance and potency.

There are indications of higher level of adoption when new technology options are introduced by fellow rather than by external agents. Often when technologies are taught or demonstrated in a community by external agent, the focus is on the actual technology and even if the farmer appreciates the benefits of the new practice she/he might be too worried about risks such as not finding a market for the product or storage, etc. Since the innovators are ordinary community members who most likely are benefiting from the innovation, other farmers can easily follow the whole chain of actions and consequences, from technology to money in the farmer's pocket and are thereby more likely to adopt the technology.

The PFI-FFS methodology has made a positive contribution to furthering the development and sustainability of the FFS approach and has especially improved the adaptation of the approach to east African farming conditions where the diversity in the farming system result in a need for context specific solutions. Ensuring a focus on locally developed/adapted technologies increases the possibility for successful farmer-led FFS and sustainable farmer-to-farmer extension.

Indications show that individual farmers or FFS groups have continued seeking assistance from local innovators introduced to them through the FFS, even outside project activities. This gives hope for a sustainable farmer-to-farmer continuation of the interaction between farmer innovators and other community members. The PFI-FFS initiative has not created these interactions, but can be seen to have 'speeded up' the natural diffusion of ideas and creativity that since the beginning of humankind has always been the backbone of survival and livelihood.

The PFI-FFS project in Kenya has made rapid progress and laid a firm foundation. However it is important to remember that the final results of the initiative have not yet been seen. There is as yet no final data on the adoption of innovations, or of the number of interactions, or information on the extent that the innovators and the FFS members feel the interactions are beneficial to development of the area. These aspects are being carefully monitored and will be the subject of a final review and assessment by the end of the initiative, and the lessons learned from the PFI-FFS project will be important for the development of similar initiatives in the future.

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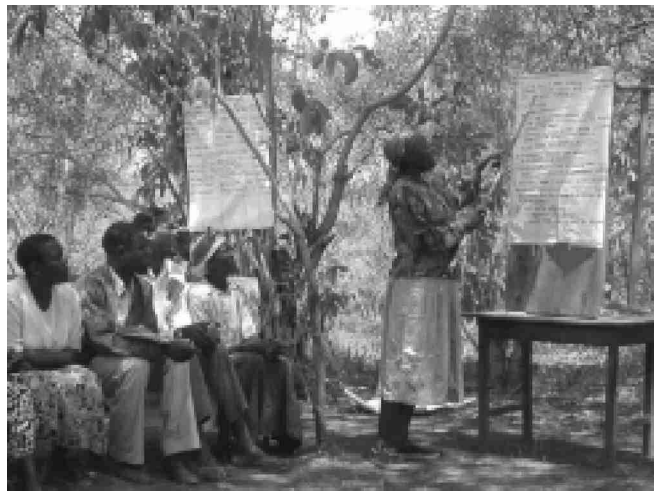
Self-financing Farmer Field Schools

Godrick S Khisa
MoALD

Financing of Farmer Field Schools (FFS) has been a critical question that has been raised several times. How does the self-financing mechanism work? The activities leading to the self financed FFS model were initiated in 1999 with the introduction of the grant system (semi self financed) where farmer groups write simple proposals for grants to run their FFSs. The first step is for a local sponsoring group or newly formed group to submit a grant proposal in response to an announcement that a grant is available. Grant forms include prerequisites, guidelines and applications for groups. Currently FFS grants require that the group have by-laws, have a multi-signatory account, agrees to record keeping and audits, and that the grant be used for FFS activities. An indicative budget is provided for partial guidance, but also states that extension staff should be paid based on officially published rates (although these can be negotiated). The grant form provides space for background, justification for grant and activities, workplan, budget and should include signatures of all members and the local agriculture office.

The next step is transferring grants to groups. The size of the grant for FFS is typically US$100 to $600 per season of study. The grant reporting must include book-keeping, maintaining receipts and accepting an audit. Grants can in some cases be transferred to accounts electronically and in other cases in cash. The handling and control of funds has in many cases led to farmers providing co-financing as well.

Payments to field school facilitators are made directly by the field school at pre-agreed rates. If the facilitator lacks technical skills, is a poor facilitator or even has inappropriate social skills (arrogance and top-down approaches are leading problems), the group may "release or fire" the facilitator (and indeed this is known to happen). Facilitators receive important feedback from this! If the facilitator does not show up or shows up in an inappropriate state (e.g. drunk, late, etc.), the group will not pay. On the other hand, the facilitators usually receive payment on the day they travel - a far better situation, they feel, than the filling out of paper work and waiting for a delayed payment typical of most extension travel allowances. Groups may also request special topics to be delivered by specialised staff (e.g. soils, nutrition, environment etc.) for whom they use the grant to pay transport.



The FFS participants also arrange their own field study plots where various educational studies such as comparative trials between IPPM and conventional practices, fertility management methods and new

variety testing are conducted. In addition FFSs have 'commercial plots' which are larger areas that the group manages together in order to raise more funds. It is the responsibility of the participants to provide the land and the labour for the study fields and commercial plots. It is the responsibility of the facilitator to provide a profitable educational activity including bringing in socially important issues such as HIV/AIDS, womens' reproductive health and soil fertility management.

Finally, proceeds from the FFS plots (study and commercial plots) are re-invested in the group's own account. The funds are used by the group for further study, purchase of animals or other activities, re-hiring extension facilitators to support their group, etc.
As a result of this grant process, groups have shown a very high level of ownership of the FFS process and many field schools enjoy a high level of matching funds, material inputs provided by the community and participants and an increasing ability to manage funds and activities ontheir own. Groups become independent of extension while extension has better partners.
The process of grants (making work plans, budgets, organising fields, paying facilitators and managing funds) also allows groups to organise themselves to continue on their own. Although FFS grants are intended to support a group for study purposes for a time bound period, many field school participants go on to develop longer-term associations due to their cohesion, trust and joint fund-raising ability, developed during the field school period. The grants capitalise groups and catalyse new ways of working together. Case studies from various beneficiary self-financed groups indicate that, if well guided, the groups are able to recover the whole grant after a couple of seasons.

Although semi self-financed FFS partially solve at least one issue of farmer group sustainability, extension officers need a new set of funds each season of FFS to keep the programme expanding year after year. As a result, self-financed FFSs have emerged where the grant has been transformed into an educational revolving loan (see Figure 1). The basic difference with this model and the semi self-financing is that the group is in receipt of revolving funds, not a grant. The loan-requesting group must agree by group contract that they will return the operational costs of the field school with interest at favourable rates to the revolving fund. The concept is similar to revolving seed funds in which one kilogram of seed provided at the beginning of the season is repaid with one or more kilograms of seed at the end of the season. In the self-financed FFS case, operational costs are pre-financed and the group returns the operational fee at the end of the season through funds raised in the field plots and through educational fees. This model allows very resource poor

farmers to participate as they are able to help generate funds for the FFS fund through contributing their labour through parts of the season.

Operational guidelines are still being developed by the core facilitators, farmer facilitators and representatives of the FFS networks on how best the educational revolving fund can be implemented taking into consideration key concerns like the security of the revolving fund from local 'leakage' and the problem of payback during drought or flood.

The self-financing FFS study programme opens the door to many farmers that would otherwise be left further behind. It is breathing new life into the extension service and to communities that have found new ways of working together, first through study and then action.

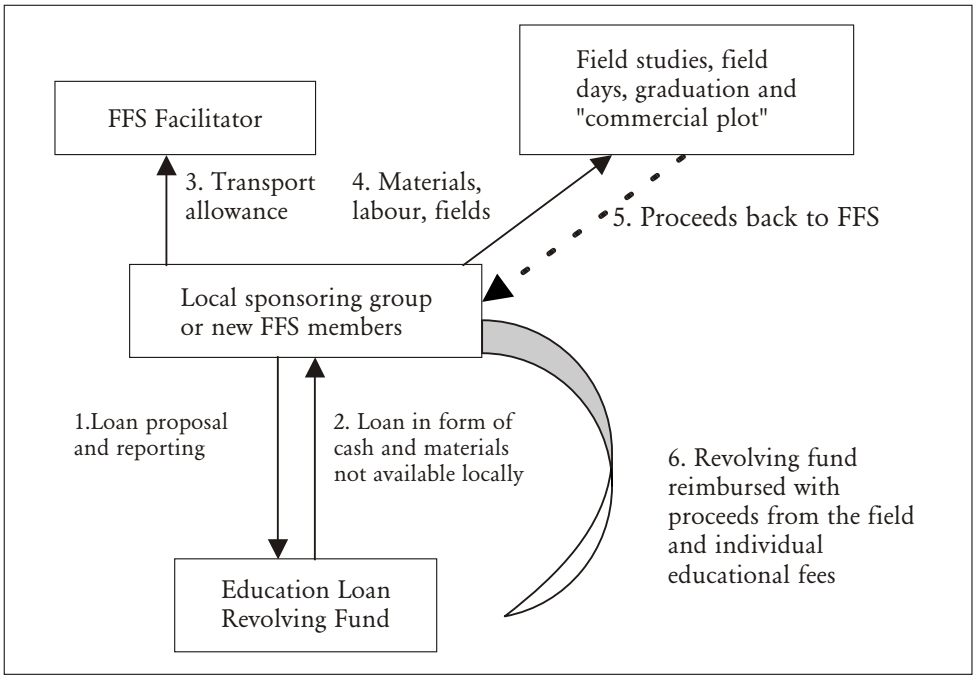


Figure 1 Self-financed Farmer Field School with capital provided by revolving fund and group reimburses fund at end of season

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Farmer Field Schools: A farmer's perspective

Kellen Catherine Wambui Mureri
FFS, Bahati Division, Nakuru, Rift Valley district.

As a member of an FFS I am not used to having walls around my meeting place we meet in the open air - and so I will not be using projectors like the other presenters at this stakeholders meeting.

The extension workers we work with in our FFS help to sensitise our communities and help us to manage time effectively. Our FFS starts promptly at 8.00am and finishes at 12.00 noon. We start with prayers and then move on to other activities like AESA. You have to be very organised to attend FFS and to use time as an effective resource. Some people think we are wasting our time attending the FFS, but if we apply what we learn we can not only help ourselves but also act as good examples to others. As the objectives of FFS are clearly stated when the groups are started, we members have a clear idea as to what was the starting point and the direction of movement, and we can clearly see the end result, which is going to have an impact on our lives.

I was involved in a French bean project back in 1992. They taught us to plant the beans and to harvest them. But there was no monitoring, unlike in the FFS where we monitor and evaluate our crops on a weekly basis. I attended the 'Farming as a Business' seminar last year. True, I learned very useful ideas, but no materials were issued to help in disseminating the information or putting it into practice. The FFS approach is more useful, as when we write our project proposal the cost of materials for our own practical trials are provided for.

We don't give answers to non-members, but we encourage them to join FFS. FFS farmers become informed decision makers. It is not the facilitator who tells us what to do. We share experiences with each other and come out with answers. Previously we didn't know we had that resource within ourselves!

We learn by doing. If I attend a seminar, I would just listen to the theory, but there would be no follow-up. Although the FFS activity 'special topics' is theory based, the rest of the weekly programme is highly practical.

In my FFS we have 10m plots planted with different varieties of maize and we also have different fertiliser treatments. Form our own trials we come out with result. Names like 'KARI' or 'ILRI' are just words to us; we do our own research, we are the researchers! At harvest we obtain our own results. We are now trained to differentiate between different crop diseases we don't need to go to KARI to find out what disease our crops are suffering from. Now we are proud to be farmers. I discovered that even the crop officers at the Ministry don't know AESA like we do! AESA is about studying plant in their environment.

The FFS methodology is the best method to get rid of extension officers who just visit and don't try it out for themselves. As farmers who have joined FFS, we are in the best position to say what to do, not someone who just learnt from books! For example, DAP fertilizer was routinely used for a long time, but we discovered that our crops did better with TSP. After using TSP we learnt that if we can't afford to buy it a certain plant which is locally available

contains a lot of phosphates and it can be used as a natural fertiliser to boast our maize yield.

From being members of the FFS we gain in confidence. We get to know our strengths and weaknesses. Everyone in the group participates, even the quiet ones. As a result of being a member of an FFS, I have attended a lot of training courses. At these courses everyone thinks that I must be from the Ministry because of the knowledge I have acquired and share. Now when I disagree with some point an 'expert' is making I even have the courage to correct him!

I am a happy farmer who has gained much from FFS. FFS is the only project I know that has no gender bias. FFS makes women feel they can be good decision makers and teaches them that they can present their views. Farmers feel empowered by being given a chance to share experiences and test new technologies and they are made to realise that what they already know, the traditional methods of farming, are also valuable. Due to better yields from using the recommended practises, FFS members will be in a better position to undertake non-agricultural profit generating activities as a method of re-investing their profits, thus avoid the cost and problems of taking out credit.

FFS is the best project so far I've been involved with. I thank everyone who has been involved in FFS in Kenya. Long live FFS!

Farmer Field Schools: An extension officer's perspective

John C. Njoroge
MoALD, Ol Kalou, Central Province.

I am a Dairy Officer, a facilitator for Livestock FFS and coordinator for Livestock FFS in Ol'Kalou, which is in Nyandarua District. I am also attached to the ILRI-DFID FFS project.

I had my introduction to FFS through attending a training of trainers course, organized by the ILRI-DFID project. The course lasted two weeks and took place at Mabanga FTC, Bungoma District in September 2001. The objective of the ILRI-DFID project is to translate the FFS approach that has been used successfully for crops to livestock FFS groups.

My duties before the introduction of FFS were training farmers in dairy related subjects such as fodder production, calf rearing, clean milk production and housing, and also reporting to the Ministry on all dairy related activities in the division. The method used in the old extension system was visits to individual farms, although this happened only rarely and on request from the farmer. Other methods included field days, *barazas* and demonstrations.

After the introduction of FFS, the methodology of training was changed. The FFS groups I now work with consist of approximately 35 members. The major differences between the FFS and former approach to extension include:

- extension staff stopped being the source of information and became facilitators;
- facilitators also learns from the community;
- members of FFS learn from each;
- the facilitator backstops, e.g. on points missed by the farmers;
- the facilitator is empowered to seek other sources of information and knowledge;
- farmers pay for services offered by facilitator, i.e. they pay transport and lunch allowances for extension officer/facilitator;
- facilitator's morale is boosted.
- extension officers/facilitators and farmers enjoy a cordial relationship; and
- FFS members pay more attention since what they learn is what they are interested in.

Group formation requirements

An FFS group can be either an existing or a new group of farmers who have a common interest. If it is an existing group, for the ILRI-DFID project the groups common interest has to be focused on livestock.

FFS groups have to be registration by social services, they have to establish their own by-laws to guide them, and they have to open a bank account, decide on the most appropriate day of the week for the FFS meetings and select a host farmer at whose homestead they can meet. All members should feel part and parcel of the group right from the initial stages.

Activities of FFS

Activities within an FFS group are often held in small sub-groups of 6 to 8 people. It is found that all members participate more fully in such small groups. Synthesis of results, for example from the AESA, is done within the sub-group. Presentation of the results to the entire FFS group is done by one member of sub-group, with all sub-group members eventually taking their turn over the course of an FFS. Verification of the results presented is done by the wider group. Members visit different FFS member's farms for AESA.

Success of FFS

Factors that contribute to the success of the FFS approach include:

- free interaction of members irrespective of age or social status;
- members come to understand more of their own environment;
- members exchange ideas/knowledge and experiences;
- members assist one another, e.g. welfare assistance;
- FFS members 'learn by doing' and so illiteracy is not a hindrance;
- members become more inquisitive and choose what they need to learn;
- FFS offers extension services beyond the immediate focal area;
- facilitators are challenged to look for up-to-date literature;
- Facilitators and members are both active participants.

We believe that adoption rates for technologies covered by Livestock FFS are between 40 and 75%, but monitoring and evaluation is still on-going.

Information dissemination about FFS

Information about the Ol'Kalou Livestock FFS was disseminated in a number of ways. Two farmers' field days were held, in October 2002. and 190 farmers who weren't FFS members attended. FFS members acted as facilitators during the field days. Two members from each of two FFSs from Ol'Kalou also participated in a District field day, again acting as facilitators this took place on 14th November 2002 and about 150 people attended. In addition, the local community is getting seedlings of newly introduced fodder crops from the member's demonstration plot.

General observations

- Livestock Farmer Field School can work though it requires more intensive training of members.
- Other GoK field staff should be introduced to the FFS methodology so they can also act as assistant facilitators.
- Regular weekly FFS group meetings make the farmers more committed.
- The workload of FFS facilitators can be too much especially where the facilitator is also involved in NALEP.
- FFS groups that have members with very low incomes may not be sustainable unless income generating activities are started.

Integration of Farmer Field School in extension

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DAO, Bomet District

In order to implement the National Agriculture and Livestock Extension Programme (NALEP) in the six divisions of Bomet District, an approach has been developed that borrows from the approaches of both FFS and the NALEP-SIDA implementation framework. The major steps of the approach were:

- Selection of the focal areas
- PRA/ ground working
- Group formation
- Develop group specific action plans
- Capacity building through AESA approach
- Result demonstration

Staff training

In order to implement the approach, staff from the divisions had to be taught the FFS methodology. In total, sixteen extension officers from Sigor, Siongiroi, Ndanai, Bomet Central, Mutarakwa, Longisa and Narok were trained.

Community mobilization

Community mobilization was done after training the extension staff. The methodology used was decided by the different divisions; these could be either the Participatory Rural Appraisal process as used in NALEP or ground working processes as used in FFS. Baseline data was also collected at this time. During the community mobilization phase the focal problems that will be addressed are identified and the Focal Area Development Committee (FADC) is formed.

Group formation

Promotion of opportunities is carried out after the PRA has been completed in order to address problems of the focal area. Common Interest Groups (CIG) or commodity groups are then formed. These groups become Farmer Field Schools, each with a membership of 20 to 30 farmers. The groups develop a specific Action Plan to address the commodity they have chosen and a host farmer is selected by the members of each CIG.

Groups formed

The following table shows FFS groups formed in Bomet District and their focal areas.

Division	Commodity group
SIONGIROI	i. Bee keeping ii. Dairy goats iii. Onion
BOMET CENTRAL	i. Tomatoes ii. Dairy cow iii. Poultry
MUTARAKWA	i. Soya beans ii. Maize iii. Bee keeping
LONGISA	i. Poultry ii. Tomatoes iii. Maize
SIGOR	i. Onions ii. Bee keeping & poultry iii. Tomatoes
NDANAI	i. Onions ii. Poultry

Training

Training curricula are developed for each CIG. This is done by the Subject Matter Specialist (SMS), Field Extension Worker (FEW) and Divisional Extension Co-ordinator (DEC) of the area. The farmers' groups meet weekly as is usual with the FFS methodology. Special training sessions that requires the SMS are organized and dates harmonized by the DEC.

Funding

The CIG finance the operations of the school in terms of inputs and materials but staff allowances are paid by the DALEO.

Group discussions

Following on from the presentations, topics for discussion were selected by asking participants to submit written questions. These were reviewed by the meeting organisers and clustered into three broad areas captured under the following headings:

1. Sustainability and cost
2. Monitoring and evaluation and impact
3. Marketing issues

The available time was therefore largely utilised to discuss these topics. First an overview of the background and issues falling under that topic were briefly presented by the participant best equipped to do so, and then workshop participants discussed the topics in plenary session.

Sustainability and cost

Godrick Khisa of the MoALD first provided some background information and then chaired the following discussion. The average cost of FFS in Kenya was given by FAO as $35 per trained farmer. This amount includes training of trainers (ToT) costs, actual costs for running the field schools and the hiring of field coordinators. ToT is usually residential and costs around Ksh10,000 per person per week. The funds channelled directly to the Field Schools as a one-off grant vary from $250-600 per group. The amount is about twice as much for extension-led FFS compared to farmer-led because of the additional cost of transport and allowances for extension officers. There is also a cost at the district level to allow district personnel, such as the DALEO, to be involved in implementation, monitoring and backstopping the FFS. This amount varies in the range $400-1000 per district per month.

The grant provided directly to the FFS covers expenses such as stationery, field days and transport and allowances for the facilitator. Funds provided to the district enable district personnel to be mobile and reach the FFS sites. The grants to FFS groups cover only one production cycle but activities often continue after graduation without further injection of external funding.

Discussion

Q: *In Southeast Asia, how much did FFS cost and how sustainable is it there? Who funds FFS?*

- In Southeast Asia, as in Kenya, FFS started with donor funding, but now the approach has been mainstreamed into the government system and local and central governments provide the funding.

Q: *Are NGOs in Kenya interested in supporting FFS?*

- NGOs are currently funding and implementing FFS in Kenya, for example PLAN International.
- In Kwale District the success of FFS has been due to support from NGOs and 41 people have been trained as facilitators. There is good collaboration between NGOs and district staff. In Kwale District there are 41 FFSs of which six have

graduated so far. Other potential donors are now expressing interest, e.g. DANIDA

- The NGO World Vision is assisting and funding the Livestock FFS. For example they sponsored Maasai livestock keepers to attend the recent FFS graduation ceremony held in Nakuru by ILRI/DFID/KARI.
- Regarding FFS sustainability and impact, this should be seen more broadly than narrow economic benefits. There are wider, spill-over benefits which also need to be considered. The traditional extension system was often measured in terms of number of visits made by extension officers. A much broader measure of impact is needed for FFS.
- At a recent seminar held in Nairobi, Jeffrey Sachs, (special adviser to UN Secretary General Kofi Annan and Head of the Earth Institute at Columbia University) stressed that extension services are expensive, but also that all education is expensive. Extension services, whether FFS or a different approach, will always cost something. It is necessary to consider the full benefits accrued not just in terms of agricultural production, but also enhanced social capital. '*If you think education is expensive try ignorance*'.

Q: *In the case of a revolving fund for FFS, whereby the individual FFS groups receive a loan rather than a grant, who should control and administer the revolving fund and what happens when there is a crop failure and the group cannot repay?*

- The FFS members themselves need to come up with solutions to question such as these. Regarding what to do it the event of crop failure, this is still being debated.
- In the case of a FFS focused on cotton production, the FFS in question linked up with the private sector, working with Bayer EA, who wanted to promote an agrochemical product. Bayer did not finance the whole FFS but contributed some of the materials.
- To exploit agri-business opportunities it is necessary to engage the private sector.
- FAO is exploring the issue of cost sharing arrangements with the private sector but discourages the private sector from running their own Field Schools. There is a risk of loosing the objective of FFS, with the emphasis on promotion of specific products rather than 'learning by doing'.
- Alternative funding sources are being investigated in the Livestock FFS. Based on the belief that the facilitators, as well as the farmers, benefit from FFSs, facilitators are being challenged to see if they can raise funds themselves through private sector support. The private sector does not need to be confined to the agricultural sector. FFSs offer the opportunity for a direct advertising forum; a single FFS represents more than 200 people including members, dependents, plus the wider community. Compared to the cost of an advertisement in a national newspaper, sponsorship of an FFS could offer cost effective advertising, e.g. to a multinational soft drinks company. It is necessary to investigate what the role of the private sector could be. Whilst wholesale privatisation of extension services is probably not desirable, attracting the private sector to co-fund FFS is an attractive possibility for further study. The Livestock FFSs are currently having a contest to see which facilitator will establish the first private sector funded FFS. There is a need for innovative facilitators just as there is a need for innovative farmers. This approach should enhance the sustainability of FFS post-project.

Q: *How strong is the organisational sustainability of the groups post-graduation? How does this link into ongoing mechanisms for provision of information and advice?*

- When individual FFSs graduate some groups still continue to meet, although not all. For example, one member of a graduated FFS group went to a workshop on organic farming, and then came back to his former FFS group and created awareness amongst the members. To be trained in organic farming techniques the organisation in question charged Ksh500 per person. Thirty members of the FFS groups paid for and received first level training and are they are now preparing for the next level of training.

Q: *In marginal areas, which are subject to frequent droughts, what mechanisms exist for sustaining FFSs in these harsh environments?*

- FFSs do not need to be expensive. The facilitators already receive a salary from GoK and they only need their transport costs paid by the FFS, which is typically shared between 25-30 farmers. If an FFS has access to more money, then they can buy materials, e.g. to run an on-farm trial. But if the individual members of an FFS are planting maize anyway, they can try out different treatments at little or no incremental cost. Individual FFSs can be adapted to match the funds available. No schools are totally free; there is always a cost that someone has to bear.

Monitoring, evaluation and impact

Dr. Mureithi of KARI first provided some background information and then chaired the following discussion. Adoption can include adoption of the FFS approach and also adoption of specific technologies. Impact may not be as simple as increased production or productivity. It may, for example, be production at a lower unit cost.

KARI recently held a workshop to develop a participatory monitoring and evaluation (PM&E) framework. Although there are many manuals and courses dealing with this topic, the solutions are still at a very general level. The objective of the KARI workshop was to develop PM&E tools specifically for the FFS approach.

The FFS approach consists of several steps leading to graduation and beyond. Questions considered at the KARI workshop included:

- What do farmers learn, what do they do with the knowledge they acquire and is the knowledge retained?
- Do farmers disseminate the knowledge gained to others?
- With regard to social capital, is empowerment occurring?
- Do FFS members learn how to experiment on their farms?
- Are the technologies to which farmers are exposed adopted?
- Are there measurable changes in income, food security, standard of living?

The workshop found the task difficult but they did come up with indicators to answer questions such as, what outcomes would we expect if the FFS lessons were learned well? From the indicators, tools were developed to measure the indicators. A further workshop will be held in June 2003 to review the information collected by the tools and to fine-tune as necessary. Two

types of tools were developed: a checklist and structured questions.
Monitoring occurs at different levels. Farmers need to monitor themselves; facilitators need to monitor the farmers; projects need to monitor their impact; and donors need to monitor the projects. In relation to adoption rates, these tend to be based on observations from fields at a local scale rather than substantive adoption studies.

Many people are grappling with issues related to Learning and Knowledge Management Systems and different organisations have developed different tools. What are needed are guidelines to help develop tools relevant to our sector.

Q: *In relation to Indigenous Technical Knowledge, such as the use of cow dung, milk or garlic for the control of the coffee disease blight, some of these technologies work better than others. But generally we don't have the scientific explanation for the protective mechanisms, nor do we know the active ingredient or appropriate rate of application. For farmer innovators, what are we researchers doing to help them understand what is happening?*

- ·Researchers and extension workers can pick up good ideas from innovative farmers and tease out researchable issues that need answering. Research issues will come up during FFSs and so it is good to have links to research institutes. This can help develop institutes' research agendas.
- ·As FFSs develop they need to develop effective networking and systems for information flow. In 1995 in central Kenya, an FFS was piloted in a coffee/horticultural vegetables collaborative project. Use of milk came up as a treatment for blight. After the FFS had graduated, a proper scientific evaluation of the farmer's technique was carried out with KARI. The results showed that milk does not control blight, but it does delay its onset. For blackrot in kale, a combination of liquid manure with a mulch reduced the disease incidence. Preparations based on chilli, widely used as a pesticide in Kenya, showed no effect in trials. There is a need to share this type of information within the FFS family. FFSs can also be used as a forum for upstream research; FFS members are the clients for whom solutions are being developed.

Q: *The goal of an FFS is to increase productivity. For crops, such as cabbages this can be evaluated in one growing season. But for livestock, what is the cycle to measure any increase in productivity?*

- To measure increase in productivity, we need to develop tools to collect base line information, so we can compare before and after FFS to show any impact.
- ·For livestock the cycle is generally much more difficult than for most crops. In the case of poultry, where the production cycle is short, it is possible to measure impact on productivity within a reasonable timescale. With cattle it is much more difficult, e.g. if working on aspects of fertility it will take a long time, even many years, to measure any impact. The Livestock FFS has just started looking at technical and social impacts of the FFSs. Social impacts deserve special emphasis. If a farmer is now accessing information that she didn't before, such as writing to KARI, this should have an impact on productivity. For technical issues, e.g. housing of cattle, one can assess how the farmers improved their animal's housing. But increased productivity is not down to just one factor. We shouldn't

only look at conventional parameters, but also indicators that will lead to higher production. Protection of assets is important as well as increasing productivity. Livestock can cause poverty if they all die; how is FFS giving tools to farmer to protect their assets?

- Need to also look at social benefits. An on-going study in Western Kenya has examined social aspects and a draft report is now available.

Q: *Whose agenda are we following is it donor or research organisation led?*

- Generally the FFS approach is not donor led. We have the idea first, then look for donor support.
- In the case of the DFID supported Livestock FFS it was donor driven. The donor was keen to answer the question, can FFS work with livestock? But we all share common goals; to help alleviate poverty and to see how extension can be most effective. As implementers of livestock FFS, ILRI is not only looking at Kenya but is interested in seeing how this approach can work elsewhere and how it can be scaled-up.

Marketing issues

What is FFS doing about marketing? What are the specific activities?

Titus Mutinda of MoALD first provided some background information and then chaired the following discussion. It was not a surprise that this issue came up. This is a real concern with the farmers themselves. Representatives from some crop-based FFSs in Kenya have received training on marketing, delivered by the Coast Development Authority. ToT training has also been undertaken in three regions under the UNDP's FFS programme. This includes exposure to marketing techniques; if one has a product how can one address appropriate markets? Added value is one aspect, e.g. processing citrus fruits to make juice and milk to make yoghurt; both add value to address a specific market.

Where farmers form networks this can enhance market information flow; farmers in region A are linked to region B and exchange market information. In several parts of Kenya FFS networks have been formed which are able to gather information on what other regions are producing. The Kenya Commodity Exchange links farmers in Western Kenya with the major supermarket chains based in Nairobi. Farmers can exchange marketing information with other networks, e.g. that there is a high demand for green grams in Western Kenya.

In Mwingi an FFS network has just been launched with a main objective of marketing green grams. In the past farmers derived little benefit and suffered at the hands of middle men, who were able to offer low prices. Now farmers can sell the produce through the network. The network has also written proposals to donors for obtaining credit to finance their operations.

A network in Nakuru sent representatives to survey markets in Nairobi. Seasonality of markets is important to determine when would be the best time to sell product. By doing so, farmers from the Rift Valley were able to time their production of tomatoes to benefit from a seasonally related premium price, which enabled them to buy a pick-up vehicle to further improve marketing of their crop.

Q: *Do these network provide logistical support?*

- In the case of the farmers growing green grams, they were assisted by FAO to obtain credit. However, it is not desirable to make support too sophisticated, since it is important that these farmer networks are managed and 'owned' by the farmers themselves.
- When Kilifi farmers formed a network they requested the district office for office space and were allocated an empty office by MoALD. Each FFS makes a financial contribution to fund the running of the network. Networks can become strong, e.g. One ·has 70 FFSs as members and is now registered as a CBO, which makes it easier to approach donors for funding. The network has acquired 13 motorised sprayers, which are hired out to members and the proceeds used to make the network self-sustaining. Bayer provided chemicals for the network to test. Once a network takes root, it can even evolve into an NGO.
- Most of these things are farmer driven and external agents shouldn't try to speed up the pace of development. Networks evolve and addressed problems as they arise: need for funds, offices, etc. Farmers drive the process and ask themselves questions such as, where can we get a computer?
- In regard to networking and the potential for partnerships and collaboration, there is a gap between what FFSs are doing now and what could be done.

Q: *Can identification of areas for FFS experimentation be influenced by facilitators?*

- Farmers grow with their enterprises and it is a process. Facilitators have been incorporating post-harvest techniques, such as shelf life; in this respect local varieties may be better than exotics.
- In Livestock FFSs, neither animal disease nor marketing emerged spontaneously as issues. However the technique of participatory epidemiology, introduced by trained facilitators, resulted in problems being raised that hadn't been considered by the farmers previously. Quality of facilitation is vital; a good facilitator will help farmers improve their perception of their problem. However a key principle of FFSs is to tackle problems as they are raised as a priority by the farmers.
- There is a huge opportunity for FFS collaboration with agri-business. Well organised farmers producing good quality produce is exactly what agri-business needs. As the FFS numbers grows, and information about FFS is disseminated wider, agri-business will become more interested in interacting with them.
- We should be careful about relying solely on participatory approaches. A judicious mix of farmers' knowledge with that of researchers and extension staff is best. It is not wrong for other stakeholders to make suggestions to the FFS group; participation should not be confined just to the farmers.

General questions and comments

Participants were urged to spread the message about FFS and the lessons they had learned today to their colleagues who could not attend.

- Marketing of agricultural produce from small-scale farms is a problem because of the small-scale production from the individual units. One answer is to aggregate commodities from FFS members and sell them together; one dairy FFS is turning into a small cooperative to market members' milk.
- There are opportunities that could be exploited by FFS groups. For example KENDAT has developed and promotes conservation tillage which has advantages in terms of labour saving. In mixed livestock/crop systems draught animals are often a neglected technology.

Q: *Resource poor farmer are hard to work with. Are there mechanisms to make FFS responsive to needs of the poor?*

- In some communities, e.g. Lesotho, there is a huge problem of AIDS orphans, with teenagers having to take responsibility both for their younger siblings and running the farm. Perhaps FFSs could aim to have an 'orphan balance' as well as a gender balance amongst their members? A general feature of FFSs is that they can be very flexible.

Closing remarks

Mr Kamau,
MoLAD, Senior Assistant Director of Agriculture (Extension Division)

The objective of the workshop was to help us to understand how FFSs work and how we can integrate them into our systems. This has been achieved. We all agree that farmers need information to succeed. Farmers operate in complex environments and need support to access information to enable them to make the right decisions. We need to build up their capacity to apply the information they acquire.

This is a demanding task. Farmers have to ask themselves lots of questions: what enterprise should be pursued, what technologies are appropriate? Unlike academic exams, where one can answer just some of the questions, the farmer has no choice but has to attempt all the questions!

Historically, extension advice has been applied with varying degrees of success. Certain attributes are needed to improve the success ratio: services need to be demand driven; extension agents need to be accountable to the farmer for the services they provide; it is important to collaborate with others as no-one can meet all the needs from production through to marketing; and participatory approaches to planning and implementation are desirable. FFS has all these characteristics and therefore appear to be a good approach to extension. Any extension approach used should be efficient and effective in empowering farmers to run their farms as businesses.

Farmers need to understand more about the principles of agriculture and seek more information and knowledge. It is a human trait that one always wants more training; if you have an MSc you want a PhD. Providing farmers with information lets them make informed decisions. The limitation is the cost and time factors.

FFSs are still evolving, and will become more and more refined. KARI's ongoing work of observation and research activities will contribute to improved delivery at least cost and in the shortest time. Already efforts are being made to integrate FFS into the mainstream extension service. Other service providers are perhaps trying the same approach with the common objective of making the delivery system as effective as possible.

We appreciate the effort to which the organisers of this meeting have gone to bring us together. The overall goal is to help farmers become better farmers. The backbone of the country is agriculture and the backbone of agriculture is the farmer. We need to keep on focussing on empowering the farmer.

Annex 1:

Agenda: Farmer Field School Stakeholders' Forum

	Time	Activity
Session 1: Opening & Introduction	**09:00 - 09.15**	Introduction and Opening Remarks (Representative, Director of Agriculture, MoALD)
	09.15 - 09.45	Overview of the FFS Approach and its Application in Kenya (Dr A Abate & Ms D Duveskog, FAO)
Session 2: Sharing experiences	**09.45 - 10.05**	FFS for Crop Production (Ms D Maye & Mr T Mutinda, MoALD)
	10.05 - 10.20	FFS for Soil Productivity Improvement (Dr J. Mureithi, KARI)
	10.20 – 10.45	Video: A school without walls
	10.45 - 11.15	**Tea/Coffee Break**
	11.15 - 11.35	FFS for Livestock Husbandry (Dr B Minjauw, ILRI)
Session 3: Innovation of the FFS approach	**11.35 - 11.50**	Promoting Farmer Innovation in FFS (Mr Mburu, MoALD)
	11.50 - 12.05	Self- financed FFS (Mr G Khisa, MoALD)
Session 4: Voices from the Field	**12.05 - 12.20**	FFS Perspective from the Field (by a farmer: Kellen Catherine Wambui, Nakuru)
	12.20- 12.35	FFS Perspective from the Field (by an Extension Officer: John Njoroge, Ol Kalou)
	12.35 - 12.50	Integration of FFS in Extension (DAO, Bomet: Mr F.O. Owino)
	13.00 - 14.00	**Lunch**
Session 5: Exchange of ideas	14.00 - 15.20	Discussions & Recommendations
	15.20 – 15.30	Closing remarks (Representative of Director of Agriculture, MoALD)

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