

Farmer Field Schools

in the

Agricultural Extension Component

(2006-2012)



Integrated Crop Management

LEARNING BY DOING

LEARNING BY EXPERIENCE

Introduction

In the early 1990s, FAO's rice IPM programme, funded by UNDP, introduced Farmer Field Schools (FFS) in Bangladesh. DANIDA has since 1997 supported the up-scaling and further development of the Farmer Field School approach, initially through the Strengthening Plant Protection Services projects (SPPS-1 and SPPS-2, from 1997-2006) and currently through its Agricultural Sector Programme Support phase 2 (ASPS-2).

In Bangladesh, two components under ASPS-2 currently use the FFS approach to train hundreds of thousands of farmers.

- 1) The Agricultural Extension Component (AEC) organizes crop-based FFSs on Integrated Crop Management (ICM) in rice in 328 Upazilas in all 64 districts of Bangladesh.
- 2) The Regional Fisheries and Livestock Development Components (RFLDC) organize FFSs on aquaculture and livestock in Barisal and Noakhali.

Not only the technical content, but also the implementation process of FFSs is quite different in these two ASPS components.

This document gives an overview of the FFS training process in the *Agricultural Extension Component*. It introduces the reader to the FFS approach, describes the history of curriculum development and technical content of the ICM FFS, and depicts implementation process and past and current strategies.¹

Information in this document is a compilation of information from different sources (see list of references) and contributions by staff of AEC and DAE.

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Hein Bijlmakers
Training and Extension Adviser

¹ For similar information on FFSs in RFLDC please see: Regional Fisheries and Livestock Development Project, February 2010. Guideline on the Process of Development and Implementation of Farmer Field School (FFS) under RFLDC Noakhali.

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Glossary of terms and abbreviations

This glossary contains abbreviations used in this document and explains some words and technical terms that are used in the context of an FFS programme.

AAO	Additional Agriculture Officer. This is a DAE officer at Upazila level.
AD	Additional Director
AEC	Agricultural Extension Component. One of three components under ASPS-2 (2006-2012)
AEO	Agricultural Extension Officer. This is a DAE officer at Upazila level. AEOs are agricultural graduates.
AESA	Agro Eco-System Analysis. A decision making tool used in FFS based on field observation and analysis by farmers to make decisions for crop management.
AEZ	Agro-Ecological Zone In Bangladesh the “Fertilizer Recommendation Guide – 2005” published by BARC gives fertilizer recommendations for crops and cropping patterns of 30 different agro-ecological zones.
ASPS	Agriculture Sector Programme Support. DANIDA funded programme to support the agricultural sector in Bangladesh. ASPS-1: 2002-2006. ASPS-2: 2006-2012.
ASPS	Agricultural Sector Programme Support
BADC	Bangladesh Agricultural Development Corporation
BARC	Bangladesh Agricultural Research Council
Block	The DAE divides each Union into a number of Blocks, with a SAAO who is responsible for extension activities in that area. A block comprises several villages.
BPH	Brown Plant Hopper
CBO	Community Based Organization
Concept	Idea, thought. In an FFS, participants learn “concepts” that can be used by the farmer in different situations. For example a farmer who attended a rice FFS and understands the concept of “conserving beneficial insects to promote natural pest control” can apply the same principles in another crop.
CPS	Crop Production Specialist. This is a DAE officer at District level.
Curriculum (FFS curriculum)	The entire study programme offered by a farmer field school. The curriculum can be divided in different modules (e.g. rice crop, homestead vegetables and fruits, nutrition and health). There is some flexibility in the content of the curriculum as topics are included or excluded based on the actual field situation and interest of farmers.
DAE	Department of Agricultural Extension. Under the Ministry of Agriculture.
DD	Deputy Director.

DDAE	Deputy Director of Agricultural Extension. This is a DAE officer at District level.
Decimal (or Decimel)	A unit of area used in Bangladesh equal to 1/100 acre, which corresponds to 40.46 square meters.
District	Bangladesh is divided into 64 Districts, which each are divided into several sub-districts or Upazilas.
Division	Bangladesh is divided into 6 divisions, which each are divided into several Districts.
DLS	Department of Livestock Services. Under the Ministry of Fisheries and Livestock.
DoF	Department of Fisheries. Under the Ministry of Fisheries and Livestock.
DPD	Deputy Project Director.
DT	Departmental Trainers. In AEC this abbreviation is used for staff of the Department of Agricultural Extension (AEOs, SAPPOs, and SAAOs) who attended a season-long training of trainers course to qualify as facilitators for organizing FFS.
DTO	District Training Officer. This is a DAE officer at District level.
ECRRP	Emergency 2007 Cyclone Recovery and Restoration Project A World Bank funded project implemented by FAO.
ELC	Experiential Learning Cycle. A learning process in which farmers participate with their knowledge and experience to solve problems or create innovations. <pre> graph TD A[Concrete experience [1]] --> B[Observation and reflection [2]] B --> C[Forming abstract concepts [3]] C --> D[Testing in new situations [4]] D --> A </pre>
Extension	A system of communication that is designed to affect the knowledge of rural people in a manner that supports the achievement of development policies.
Farmer Field School	A season-long training activity that takes place in the field. It is season-long so that it covers all the different developmental stages of the crop and their related management practices. The training process is always learner-centered, participatory and relying on an experiential learning approach
FC	Farmers club. Sometimes referred to as IPM club or ICM club.
FFS	Farmer Field School

FMA	Farm Management Analysis. A decision making tool (similar to AESA) to make decisions for farm management.
FP	Farmers Practice. In field experiments carried out in an FFS, the farmers compare an IPM or ICM plot with an FP plot. The FP plot represents conventional farming methods.
FT	Farmer Trainer. In AEC this term is used for farmers who were trained to be facilitators to organize FFS.
FYM	Farm Yard Manure
GNAEP	Greater Noakhali Aquaculture Extension Programme
GOB	Government of Bangladesh
HYV	High Yielding Varieties. These are registered varieties released by research institutes that have higher yields compared to local varieties.
ICM	Integrated Crop Management
IFM	Integrated Farm Management
IPM	Integrated Pest Management
IPNS	Integrated Plant Nutrition System
LF	Local Facilitator. A farmer trained to facilitate FFS in RFLDC. Similar to a Farmer Trainer in AEC.
MOA	Ministry of Agriculture
Module (FFS module)	<p>A module is a "unit" of education in which a single topic or a small section of a broader topic is studied for a given period of time.</p> <p>An FFS curriculum consists of a number of modules, each on a single major topic. Examples of FFS modules are: Crop (e.g. Rice, Potato), Poultry (e.g. Ducks, Chickens), Small ruminants (e.g. goats, sheep), Homestead vegetables and fruits, Nutrition, Club formation, etc.</p> <p>A module is usually spread out over several sessions.</p> <p>A module usually includes a range of topics and concepts relevant to that module (e.g. a "crops" module in an FFS may have topics on "pest management", "seed quality", "fertilizer management" etc. a "poultry" module may have topics on "feeding", "housing", "disease management" etc.)</p>
MT	Master Trainer. Experienced facilitator who can be used to train FFS facilitators.
NGO	Non-Government Organization
PD	Project Director
PME	Participatory Monitoring and Evaluation
PNA	Participatory Needs Assessment
PP	Participatory Planning
PPS	Plant Protection Specialist. This is a DAE officer at District level.
PTD	Participatory Technology Development
RFLDC	Regional Fisheries and Livestock Development Component

SAAO	<p>Sub Assistant Agricultural Officer. This is a DAE officer at Block level (there are several Blocks within a Union). SAAOs are agricultural diploma holders.</p> <p>In AEC the term “Tag SAAO” is used for an untrained SAAO who is responsible for the area (block) where the FFS is being organized. The tag SAAO is not considered an FFS facilitator but assists the facilitators in organizing the FFS.</p>
SAPPO	Sub Assistant Plant Protection Officer. This is a DAE officer at Upazila level. SAPPOs are agricultural diploma holders.
Session	<p>A day when school is open for classes</p> <p>In an FFS a session is a meeting of 2-3 hours duration. It is part of a module and may deal with different topics.</p>
SFFP	<p>Integrated Soil Fertility and Fertilizer Management Project. Was a DANIDA funded project based in DAE, which organized block demonstrations for farmers.</p> <p>SFFP-1: 1997-2002. SFFP-2: 2002-2006.</p> <p>SFFP-2 was one of the components under ASPS-1.</p>
SLL	Season Long Learning
SMS	Subject Matter Specialist. This was a DAE position at District offices.
SPPS	<p>Strengthening Plant Protection Services.</p> <p>Was a DANIDA funded project based in DAE, which organized IPM Farmer Field Schools.</p> <p>SPPS-1: 1997-2002. SPPS-2: 2002-2006.</p> <p>SPPS-2 was one of the components under ASPS-1.</p>
Topic	<p>A topic is a subdivision of a module. It usually deals with a single concept or skill. For example a module on “aquaculture” may have topics on “pond preparation”, “stocking density” “fish harvesting” etc.</p> <p>A topic may be spread out over several sessions, but some (smaller) topics could be completed within one session.</p> <p>For example a topic on “variety selection” will be spread out over several sessions as it includes setting up a “variety trial” which requires observations during the entire cropping season.</p> <p>A shorter topic such as “seedbed preparation” would be completed within one session.</p>
Trial / Experiment / Field test / Field study	<p>In an FFS, trials are conducted for “discovery based” learning. Usually a trial relates to a certain “topic” within a “module”.</p> <p>For example in a “crops” module, the topic on “variety selection” will include a “Variety trial” conducted by farmers.</p> <p>The outcome of trials is often already known by the facilitator, but farmers conduct the trial to discover something for themselves (e.g. defoliation trial). Some trials (e.g. variety trial or fertilizer trials) help discover location specific information.</p>

UAO	Upazila Agricultural Officer. This is the most senior DAE officer at Upazila level.
Union	The Upazilas of Bangladesh are divided into Union Parishads, which are the lowest level in the administrative structure. In the DAE, unions are divided in Blocks, each with a GOB extension worker called SAAO (Block Supervisor).
Upazila	Sub-district. Bangladesh is divided into 482 Upazilas, which each are divided into several Unions.
USG	Urea Super Granule

History of Farmer Field Schools

The first Farmer Field Schools (FFS) were conducted in 1989/1990 in Indonesia. These first FFS were designed to educate farmers on the principles of “Integrated Pest Management” (IPM) in order to deal with major outbreaks of Brown Plant Hopper (BPH).

Serious outbreaks of BPH occurred when abundant use of pesticides had wiped out populations of natural enemies (predators and parasitoids). In the absence of their natural enemies the BPH could multiply rapidly resulting in severe “hopper burn” and crop failure. The solution to this problem was to conserve the natural enemies by reducing pesticide use so that these beneficial insects and spiders could help controlling the insect pest population.

Traditional extension methods had failed to educate farmers on this concept of “natural pest control” and the new Farmer Field School approach was then developed, with assistance of FAO’s Inter-Country Programme for Integrated Pest Control in Rice in South and Southeast Asia, to educate farmers on IPM. This new extension approach used four IPM principles as a guide to what farmers should be able to do because of participation in an FFS. They are:

- Grow a healthy crop
- Conserve natural enemies
- Conduct regular field observations
- Become IPM experts

The FFS training approach was based on active participation of farmers sharing knowledge with each other. Farmers learn new concept through the Experiential Learning Cycle in a process of learning by doing. Instead of providing farmers with “top-down recommendations” the FFS facilitators help farmers to learn from practical experience.

After the initial success of the Farmer Field Schools in Indonesia, this new extension approach rapidly spread to other Asian countries, including Bangladesh.²

Farmer Field Schools in Bangladesh

In Bangladesh, the first Farmer Field Schools were organized in the early 1990s, assisted by the FAO inter-country programme for IPM in rice. After initial pilot FFSs with positive experiences, several donors (UNDP, CARE-Bangladesh and DANIDA) started larger projects to spread IPM to thousands of farmers through IPM Farmer Field Schools. All these projects

² Further reading: John Pontius, Russell Dilts & Andrew Bartlett. “From Farmer Field Schools to Community IPM”.

included season-long Training of Trainers courses (ToT) to develop skilled FFS facilitators. The UNDP- and DANIDA-funded projects worked with the Department of Agricultural Extension (DAE) while CARE implemented its NOPEST project outside the government system.

DANIDA supported FFSs in Bangladesh through the first phase of the Strengthening Plant Protection Services (SPPS) project (1997-2002), based in the DAE. Initially, these FFSs followed the “original” IPM FFS curriculum, with a strong focus on managing pest problems in rice and with the aim of reducing pesticide related problems. Each FFS had 14 sessions throughout the rice cropping season. Very soon, also FFS in vegetables IPM were organized, with technical support from FAO’s inter-country programme for vegetable IPM. Most of these vegetable FFSs concentrated on brinjal (eggplant).

The second phase of the SPPS project (2002-2006), used experiences from the first phase to change some strategies of the FFS programme; for example this phase started the promotion of Farmers Clubs (FC) and the use of farmers as Farmer Trainers (FT).

In 2002, DANIDA had initiated a larger Agricultural Sector Support Programme (ASPS-1) of which SPPS-2 was one of the 13 components. Another component under this ASPS programme (SFFP-2) started also piloting with the FFS approach to educate farmers on soil health and Integrated Plant Nutrient System (IPNS). This development eventually resulted in piloting a new FFS curriculum during 2004-2005, which was called “Integrated Crop Management” (ICM) based on the combined experiences with IPM and IPNS.

In the second phase of the ASPS programme (2006-2012), the SPPS and SFFP components were merged into the Agricultural Extension Component (AEC), which is currently supporting DAE in a large FFS programme based on this broader ICM curriculum, with 20 weekly sessions.

The Integrated Crop Management FFS curriculum now differs in many aspects from the original IPM FFS curriculum. For example it includes a number of sessions related to

MILESTONES

1990

FAO introduces Integrated Pest Management FFSs in Bangladesh

1997

DANIDA (SPPS-1), CARE and UNDP start up-scaling of IPM FFS

2002

DANIDA’s SPPS-2 project starts using farmer trainers and promoting farmers clubs

2006

DANIDA’s AEC project organizes FFS in Integrated Crop Management and RFLDC organizes FFS in livestock and aquaculture

homestead activities and nutrition, which were specially designed for women farmers. Fine-tuning this curriculum and piloting new ideas is a continuing process.³

In Bangladesh the FFS approach is now also being used outside the crops sector. The Regional Fisheries and Livestock Development Component (another component under DANIDA's ASPS-2) has during the last few years developed Farmer Field Schools in aquaculture and livestock, where farmers can select from a number of modules such as "poultry rearing", "beef fattening" and "fish pond management".⁴

Objectives of FFS in AEC

The first FFSs that were organized in Bangladesh in the early 1990s had a strong focus on improving pest management (IPM) and reducing pesticide related problems. Gradually this has changed to a more holistic approach of crop production (ICM) with the following objectives:

- Improved livelihoods
 - Higher farm income
 - Improved family health
- Improved resilience and adaptability
 - Farmers' ability to test new farming methods
 - Farmers' ability to adapt to changes in the environment (climate, markets)
- Sustain the FFS as a group (Farmers Clubs/Associations)

In AEC the FFS is used as an extension approach because it helps to create changes in behavior that are beneficial for the participating farmers. The FFS helps in:

- Providing an environment in which farmers acquire the knowledge and skills to improve their production and income through application of informed crop management decisions.
- Improving farmers' problem solving abilities and their resilience and adaptability to changes in their environment.
- Allowing farmers to discover the benefits of working in groups and encourage group activities and group formation.
- Empowering farmers to become "experts" on their own farms.

³ See also: Bijlmakers, H. and Muhammad Ashraful Islam, 2007. Changing the strategies of Farmer Field Schools in Bangladesh. LEISA Magazine, vol. 23 no. 4.

⁴ See also: Regional Fisheries and Livestock Development Project. Feb 2010. Guideline on the Process of Development and Implementation of Farmer Field School (FFS) under RFLDC Noakhali.

What is agricultural extension?

There are many definitions of “extension” or “agricultural extension”. The following can be used as a very general definition of extension, which also applies to FFS in Bangladesh.⁵

Extension = A system of communication that is designed to affect the knowledge of rural people in a manner that supports the achievement of development policies

For a good background on agricultural extension see also Annex 1.

What is a Farmer Field School?

A Farmer Field Schools consist of a group of people with a common interest. They meet regularly to study the “how and why” of a particular topic. In AEC this topic is “Integrated Crop Management of Rice” and farmers meet once every week. The training methods used in the FFS are particularly adapted to field study, because Integrated Crop Management requires specific hands-on management skills and conceptual understanding.

The following elements of an FFS show how this approach differs from other extension methods, and how these elements are part of the FFS programme in AEC.⁶

The group

A group of people with a common interest form the core of the FFS. The group may be mixed with men and women together, or separated, depending on culture and topic (Gallagher, 2003). In AEC the group consists of 25 farm families who grow rice and who generally have between 0.2 and 1.0 hectare of land. From each family, one man and one woman are the participants in the FFS; often husband and wife or father and daughter. Some sessions of the FFS are attended by all 50 participants together, but most sessions are attended by either the men or the women, depending on the topic(s) in that session.

An FFS tends to strengthen existing groups or may lead to the formation of new groups. Originally the FFS model was not developed with the intention of creating a long-term

Farmer Field School (FFS) is a season-long training activity that takes place in the field. It is season-long so that it covers all the different developmental stages of the crop and their related management practices. The training process is always learner-centered, participatory and relying on an experiential learning approach.

⁵ For more definitions and an excellent description of the global evolution of extension, with emphasis on major trends during the past 25 years, please see: The Global Evolution of Extension. (Part 1 in: Consolidating Extension in the Lao PDR, January 2005. (pp. 1-29). See Annex 1.

⁶ See also: Gallagher, K., 2003. Fundamental elements of a Farmer Field School. LEISA Magazine, vol. 19 no.1.

organization. However, in AEC the current strategy is to encourage and help FFS participants forming a Farmers Club (FC) which continues activities as a group after completing the FFS season. But some of the FFS groups do not continue after the study period.

The field

FFSs are not about theoretical topics but about practical, field oriented, hands-on topics. Therefore, in the FFS, the field is the teacher; it provides most of the training materials like plants, pests and real problems. Within their own field, farmers feel much more comfortable than in a classroom. In AEC, farmers generally meet weekly in their own field so that the training is always based on their own field situation. After making observations in their crop fields the farmers then sit together in a shaded area near the field for follow-up discussions.



In a Farmer Field School the field is the classroom

The facilitator

Each ICM FFS needs two technically competent facilitators to lead members through the hands-on exercises. There is no lecturing involved, so the facilitator can be an extension officer or a Farmer Field School graduate. As in many other FFS programmes, AEC has moved towards using farmers as facilitators. These Farmer Trainers (FT) are often better facilitators than extension staff; they know the community, speak a similar language, are recognized by FFS participants as colleagues, and they are very familiar with the area. An added advantage is that working with FTs is cheaper than using extension workers of DAE.



An FFS facilitator works with the farmers during an FFS session

The training of facilitators

All facilitators need training. Extension facilitators need season-long training (see: Training of DAE facilitators, page 47) to (re)learn facilitation skills, learn to grow crops with their own hands, and develop management skills to organize FFSs. In AEC the season-long Training of Trainers (TOT), which is provided to staff of DAE, consists of 72 training days, spread out over an entire cropping season in 6 separate periods of 12 days (two weeks in, two weeks out). During this TOT they already run an FFS supervised by highly experienced Master Trainers (MT).

Once the facilitators have completed their training and are running FFSs, it is easy to identify capable farmers who are interested in becoming facilitators. In AEC, selected Farmer Field School graduates attend a special Farmer Training TOT (FT-TOT) of 21 days to improve their technical, facilitation and organizational skills. After that they work in an FFS for a full season as apprentice together with experience departmental trainers before they start organizing their own FFS.

The curriculum

The FFS curriculum follows the natural cycle of its subject, be it crop, chicken, or fish. In the rice ICM FFS of AEC the cycle is a rice crop from “seed to seed”. This season-long approach allows all aspects of the rice crop to be covered, in parallel with what is happening in the FFS member’s field. For example, rice transplanting in the FFS takes place at the same time as farmers are transplanting their own crops - the lessons learned can be applied directly.

One key factor in the success of the FFSs has been that there are no “lectures”. All activities are based on experiential learning (learning by doing), and participatory, hands-on work. Each activity in the FFS has a procedure for observation, analysis, decision making, and action. The emphasis is not only on “how” but also on “why”.

Activities in the FFS curriculum are sometimes season-long experiments, for example fertilizer trials, variety trials, or plant compensation trials. Other activities in the curriculum include 30-120 minutes for specific topics. Icebreakers, energizers, and team building exercises are also included in each session.

No lectures in the FFS

FFS activities are based on experiential learning.

FFS modules

The original IPM FFS could be considered to consist of one module: “Rice IPM”. The ICM FFS that are currently organized by AEC consist of four rather distinct modules:

The “**Rice ICM**” module is mainly attended by male rice growers and deals with a number of topics such as “seedbed preparation”, “soil health”, “pest management”, etc. Several season-long field trials are conducted within this module which is spread out over 15 separate sessions.

The “**Homestead activities**” module is usually attended by female farmers and includes topics such as “preparation of farm yard manure”, “homestead vegetable”, “fruit trees” and “improved stove”.

The “**Health and nutrition**” module is also mostly attended by female farmers and includes topics on “balanced nutrition”, “symptoms of malnutrition” and “hygiene”.

The “**Club formation**” module is attended by all farmers (male and female together) and prepares farmers to continue working together after completing the FFS. This module includes topics such as “selecting an executive committee”, “club by-laws”, “preparing an annual work plan”, etc.

An FFS in AEC includes all these four modules, which requires a total of 20 weekly sessions. For more details see the ICM FFS curriculum (version 1-1-2010) which is included as Annex 2.

Note that the RFLDC also has a curriculum consisting of several modules (e.g. poultry rearing, small ruminants, beef fattening, aquaculture), but an individual FFS in RFLDC does not necessarily include all these modules; farmers select modules that are most relevant.⁷

What is Integrated Crop Management?

The current FFS on Integrated Crop Management (ICM) differs from the original IPM FFS in being much broader and holistic. It deals with several major aspects of farming, including the importance of quality seeds, soil health and soil fertility management, and integrated pest management.

Some basic concepts and assumptions of the ICM FFS are:

- ICM is a process of decision making and farming which is gradually improved with greater ecological knowledge, and observation skills. It is not a "packaged technology" that is "adopted" by farmers.
- ICM skills and concepts are best learned, practiced, and discussed in the field. The field is the classroom; plants, pests and soil are the training materials. ICM cannot be taught in air-conditioned classrooms with PowerPoint presentations but requires a real crop field.
- Season-long training allows all plant, insect, disease, and weed development processes and crop management practices to be observed and validated over time. ICM training must be carried out over all crop stages.
- Local or indigenous knowledge of the environment, varieties, pests, soils, etc. must play a major role during decision making. Farmers must actively participate and share their experiences during training to achieve maximum interest and effectiveness.
- ICM trainers must not lecture, but should facilitate a learning process. Trainers do not convince farmers or give recommendations, but rather provide structured experiences so that farmers can test ICM methods and convince themselves about which are useful and which are not.
- Facilitators use methods of working in a respectful manner in groups that often include persons older and more experienced than themselves.

Of course, most of these concepts and assumptions are not only found in ICM FFS but apply to other FFSs as well.

The technical content of ICM training programmes (for extension staff and farmers) covers a wide range of topics including:

⁷ For more information on the aquaculture and livestock FFSs in RFLDC please see: Guideline on the Process of Development and Implementation of Farmer Field School (FFS) under RFLDC Noakhali. Regional Fisheries and Livestock Development Project, February 2010.

- Crop development and physiology
- Agronomic methods for a healthy and profitable crop
- Plant protection and pest management methods (e.g. mechanical, biological, cultural, chemical)
- Varietal impact on crop development and pest management
- Soil health and soil fertility management
- Biology of pest insects, diseases, and weeds
- Natural enemies of insects and diseases
- Field observation skills
- Pesticides, including environmental, health and handling issues
- Economic management skills

FFS implementation process in AEC

A large scale FFS programme needs a specialized organizational structure to do the planning, implementation and monitoring. This chapter gives an overview how the FFS programme in AEC is organized.

The Agricultural Extension Component is based in the Department of Agricultural Extension (DAE) under the Ministry of Agriculture (MOA). DAE has been involved in running Farmer Field Schools for the last 20 years. It has its headquarters in Dhaka (at Khamarbari, Farmgate), but has several thousands of extension officers at field level.

AEC staff (of DAE)

DAE has several organizational levels and at each level there are DAE staffs who may be involved in the FFS programme of AEC. The following gives an overview of persons involved and responsibilities at each level.

- National level
 - At DAE Headquarters in Dhaka, DAE has a Project Director (PD), two Deputy Project Directors (DPD) and eight Subject Matter Specialists (SMS) and equivalent officers, who are full-time assigned to work with AEC. Their responsibilities are mainly in planning and monitoring the FFS program. In addition, there are several support staffs seconded by GOB to the project.
- Regional level
 - Each Region has an Additional Directors (AD) who may be involved in some FFS monitoring but his/her involvement is rather limited
- District level
 - Each District has a Deputy Director of Agricultural Extension (DDAE) who has some responsibility for FFS monitoring, assisted by a District Training Officer (DTO), Crop Production Specialist (CPS) or Plant Protection Specialist (PPS).

- Upazila level
 - At the Upazila it is the Upazila Agricultural Officer (UAO) who is responsible for all FFSs that take place in the Upazila. The UAO receives the funds for the FFSs directly from AEC. He/she is assisted by an Agricultural Extension Officer (AEO) and Sub Assistant Plant Protection Officer (SAPPO) who in most cases have been trained as FFS facilitators. Trained AEOs and SAPPOs organize their own FFSs and also monitor FFSs that are conducted by Farmer Trainers and also provide back-stopping services.
- Union level
 - No DAE staff at Union level. Each Union is divided in several Blocks.
- Block level
 - Each Block has a Sub Assistant Agricultural Officer (SAAO). In most Upazilas, two or three of these SAAOs have been trained as FFS facilitators. Trained SAAOs run FFS and monitor FFSs by Farmer Trainers. Untrained SAAOs (tag SAAO) help in organizing FFSs within their Block.

AEC staff (Danida funded)

AEC has a Senior Adviser (SA), two Assistant Senior Advisers (ASA), one Training and Extension Adviser (TEA) who is part-time connected with other FFS programmes, eight Master Trainers (MTs). This team is responsible for the overall planning, monitoring and reporting of the FFS program. In addition the project employs several administrative support staff and drivers.

FFS facilitators

AEC works with two types of FFS facilitators:

- Departmental Trainers (DT)
- Farmer Trainers (FT)

DTs are Upazila level staff of DAE who attended and graduated from a season-long TOT. In most Upazilas AEC develops four DTs (2 pairs), usually including the Agricultural Extension Officer (AEO) and three others who are either Sub Assistant Plant Protection Officers (SAPPO) or Sub Assistant Agricultural Officers (SAAO). AEOs and SAPPOs are based at the Upazila office. SAAOs are responsible for a Block.

Farmer Trainers are farmers who graduated from an FFS and then received additional training (including one season as apprentice FT) to become FFS facilitators. They always work in pairs. The number of FTs per Upazila varies from 1 to 4 pairs. FTs are members of a Farmers Club.

During SPPS-1 (1997-2002) all FFSs were organized by DTs. SPPS-2 (2002-2006) started the development of farmer trainers. AEC (2006-2012) has now more FTs than DTs and more than 50% of all FFS at this moment are organized by FTs, with backstopping from the DTs.

FFS facilitators work always in pairs, and a pair of facilitators runs 1 or 2 FFS per season. Assigning FFSs to Upazilas is done during review and planning workshops that take place twice a year, before the start of the cropping season. These workshops are attended by one DT of each Upazila and by one FT of each pair of FTs.

The duration of an FFS session is usually 2½-3 hours (½ day). FFS facilitators will thus work 1 or 2 half days per week for running FFS but will also spend some extra time for preparing and organizing the FFS (e.g. preparing materials, mobilizing farmers, reporting).

Farmer selection for FFS

AEC organizes FFSs in 328 Upazilas of 64 Districts of Bangladesh. For each FFS, 50 participants belonging to 25 farm families are selected under responsibility of Upazila Agricultural Officer (UAO). The selection is done by Departmental Trainers (DTs) assisted by tag SAAO. Several criteria are used to select farmers for an ICM FFS:

- They must be “real farmers” (i.e. they spend money for farm inputs from their own pocket)
- They grow rice (or another field crop that forms the main module of the FFS)
- Their cropping area is 0.2-1.0 hectare (50-250 decimal)
- They may be literate or illiterate
- They are preferably 20-50 years old
- All participants are selected from the same area
- Two persons are participating from same family (usually 1 man and 1 woman)

These criteria guarantee some uniformity within the group. Most participants within the same FFS know each other, which makes it easier to exchange experiences between farmers and which facilitates the formation of farmers clubs.

Role of an FFS facilitator

To run an FFS you need good facilitators. But what makes somebody a good facilitator? FFS facilitators require good facilitation skills, need to be good organizers and need creativity to adjust the FFS to the needs of the farmers. Here is an overview of what is expected from an FFS facilitator:

- Prepare for the FFS sessions
- Prepare materials, visual supports, etc.

- See and use learning opportunities
- Stimulate thinking
- Stimulate interaction between farmers
- Stimulate experimentation
- Guide the learning process
- Create a good learning environment
- Manage effective discussions
- Think logically
- Be flexible and creative to adjust the FFS curriculum when needed

An FFS facilitator role is to facilitate learning and stimulate interactions between farmers. He/she is not a teacher or trainer who lectures farmers. For this facilitating role the following are some good habits:

- Smile
- Eye contact
- Clear speaking
- Use local language
- Be polite
- Respect moments of silence
- Respect differences
- Listen carefully
- Use open questions
- Support participation

Training materials in an ICM FFS

The most important training materials in an FFS are the field, the plant, the soil, insects, weeds, etc. All these are readily available at the FFS location. Some other materials need to be supplied to facilitate drawing of an Agro Ecosystem Analysis (AESA) and to set up small field trials. Here is a list of materials that are often needed in an FFS:

- Paper (manila paper for AESA drawing)
- Notebooks and pens (for each participant)
- Pencils, crayons, markers (need extra green colors)
- Rulers
- Paper tape
- Glue
- Hand lenses
- Sticks, ropes, signboards
- Materials to prepare insect zoo

- Boxes
- Bottles
- Mosquito netting
- Cotton
- Pots



Training materials include living plants and insects

- Plastic bags
- Rubber bands
- Stand for flip chart and clips
- Sweep nets (not only in rice FFS, but also in other crops. Used to catch flying insects, adult butterflies, dragonflies, hoverflies, etc.)
- Aspirator (make one yourself to catch small insects)
- Knife, scissors
- Plastic sheet or straw mat (for sitting)
- Some inputs and materials for field experiments, for example:
 - Fertilizer
 - Seed / seedlings
 - Bio-control agents
 - Nimbecidine / Baicao
 - Sticky traps
 - Signboards
 - Sometimes special designed forms to take data

A detailed list of training materials is included in Annex 3.

FFS session

In an ICM FFS a typical weekly session will take about 3 to 4 hours and will generally have the following schedule:

- Introduction
 - Summarize what was done last week (recapitulation)
 - Present today's program
- Field visit / Field observations
 - IPM/ICM plot
 - FP plot
 - Field experiments
 - Collect data
 - Collect samples
 - Start analyzing the field situation. The facilitators observe the field together with the farmers and ask questions to start discussions.
- AESA drawing / discussions within small group
 - Detailed analysis of the field situation.
 - The facilitator asks questions to stimulate critical thinking.
- AESA presentation
 - Decision making for the management of the ICM plot
 - Agree on work to be done
 - Who is responsible?
 - When will it be done?
- Insect zoos
 - Set up insect zoos
 - Observe and record insect zoo activities
- Short break
 - Snacks
- Group dynamics exercise
 - If possible as an introduction to a special topic
- Special topic(s)
 - Could be related to the field situation (e.g. a pest which was discovered in the field) or a topics selected by farmers
- Summarize and plan for next week
 - Discuss special topic requests for next week

What is an Agro-Ecosystem Analysis?

The health of a plant is determined by its environment. This environment includes physical factors (i.e. sun, rain, wind and soil nutrients) and biological factors (i.e. pests, diseases and

weeds). All these factors can play a role in the health and development of the plant and the balance which exists between herbivore insects and their natural enemies. If we understand the importance of all these factors and the whole system of interactions, we can use this knowledge to grow a healthier crop and reduce the negative impact of pests and diseases.

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

When participants of ICM training learn to do an agro-ecosystem analysis (AESAs) they will make a drawing on a large piece of paper, in which they include all their observations. The advantage of using a drawing is that it forces the participants to observe closely and intensively. It is a focal point for the analysis and for the discussions that follow, and the drawing can be kept as a record.

AESA methodology

The following methodology is used in IPM or ICM training where the participants learn to do an AESA in rice. For other crops, the approach could be slightly different, but the basics are the same.

Go to the field in groups (about 5 farmers per group). Walk across the field and choose 10 plants randomly. Observe keenly each of these plants from top to bottom and record your observations:

- Plant: observe the plant height, number of tillers, crop stage, deficiency symptoms, color of the leaves, etc.
- Pests: observe and count pests at different places on the plant.
- Defenders (natural enemies): observe and count parasitoids and predators.
- Diseases: observe leaves and stems and identify any visible disease symptoms.
- Rats: count numbers of plants affected by rats.
- Weeds: observe weeds in the field and their intensity.
- Water: observe the water situation of the field.
- Weather: observe the weather condition.

While walking in the field, manually collect insects in plastic bags. Use a sweep net to collect additional insects. Collect plant parts with disease symptoms or plants with deficiency symptoms.

During the walk, the group talks about the crop situation. The facilitators will ask questions to initiate the discussion and to stimulate critical thinking.

Find a shady place to sit as a group in a small circle for drawing and discussion.

If needed, kill the insects with some chloroform on a piece of cotton.

Each group will first identify the pests, defenders and disease affected plants that were collected.

Each group will then analyze the field situation in detail and present their observations and analysis in a drawing (the AESA drawing).



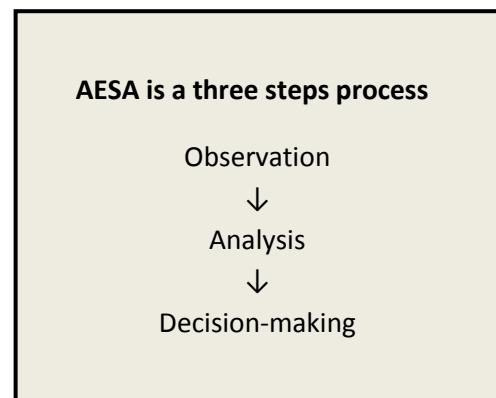
FFS farmers are drawing and Agro-Ecosystem Analysis (AESA)

Each drawing will show a plant/hill representing the field situation showing the plant size and growth stage. The weather condition, water level, disease symptoms, etc. will be shown in the drawing. Pest insects will be drawn on the left. Defenders (beneficial insects such as predators and parasitoids) will be drawn on the right. Write the number next to each insect. Indicate the plant part where the pests and defenders were found. Try to show the interaction between pests and defenders.

Each group will discuss the situation and make a crop management recommendation.

The small groups then join each other and a member of each group will now present their analysis in front of all participants. A different person will present each week.

The facilitators will facilitate the discussion by asking guiding questions and make sure that all participants (also shy or illiterate persons) are actively involved in this process.



Together the farmers formulate a common conclusion. The whole group should support the decision on what field management is required in the ICM plot.

Make sure that the required activities (based on the decision) will be carried out.

Keep the AESA drawing as a reference and use it for discussions in the following weeks.

Some questions that can be used by facilitators during the AESA discussion:

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

At the end the facilitators will summarize the actions to be taken.

Ballot box test

To test farmers at the beginning of an FFS we use a “ballot box test”. It is not really about testing the farmers' knowledge, but rather a way of showing them the gaps in their knowledge as a way of preparing them for what they can expect to learn during the coming FFS sessions.

Usually a test consists of about 20 questions. Farmers answer each question by choosing between 3 answers. They select their answer by putting a piece of paper in the ballot box. The paper could have the name of the farmer on it, but this is not really necessary because we are not testing the individual but rather we want to find out how many farmers knew the correct answer and how many did not. The results of the test can then immediately be used to start discussions about these topics.



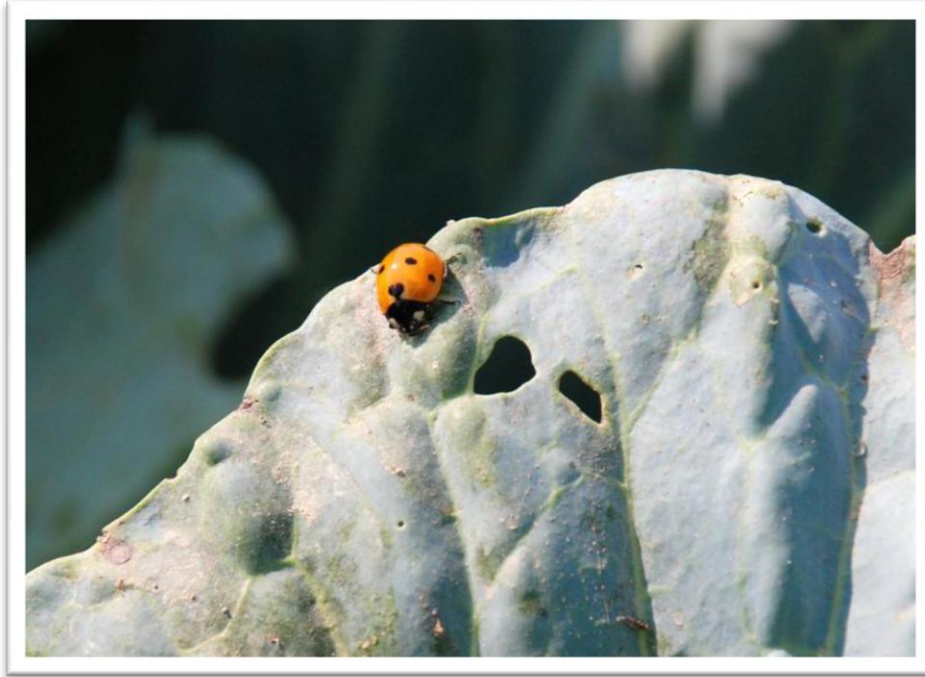
A ballot box test is a practical way to test knowledge

The questions in a ballot box test are presented by using actual organisms and symptoms which can be examined by the farmers (not by using pictures). Men and women get separate sets of questions which aim to measure:

- Understanding of ecology and natural control mechanisms
- Ability to identification pests, natural enemies, diseases, and damage symptoms
- Knowledge of crop management methods
- Knowledge about human nutrition
- Etc.

Examples of how questions are presented:

- A display shows one pest insect and three different natural enemies. The farmers have to indicate which natural enemy can help control that pest.
- A display shows three types of food. The farmers have to indicate which one contains most vitamins.



Understanding the role of natural enemies, such as this ladybird beetle, helps farmers avoid toxic pesticides

Field trials in the FFS

In each FFS the farmers conduct a number of field experiments/studies. These are field studies designed to learn new concepts. By conducting their own experiments, farmers discover and learn from experience.

ICM versus FP

The main experiment in each ICM FFS is where the farmers compare an ICM plot with a Farmer's Practice (FP) plot. In the ICM plot they practice everything they learn in the FFS. Crop management decisions for this plot are made weekly through an Agro-Ecosystem Analysis (AESA). The management of the FP plot follows the practices of the farmers in the village. Weekly observations in the ICM and FP plot help farmers understand the differences, and at the end of the season, after harvesting, they can make an economic analysis.

Variety trial

Another experiment in each FFS is the Variety Trial. Farmers set a small experiment where they compare several (usually five) different varieties including the locally grown variety. Weekly or fortnightly they observe the plots and record data such as plant height, number of tillers or leaves, pest and disease incidence, etc. At the end of the season they compare the yield of the varieties. Selection of the varieties that are tested depends on the location.

For example in an area with salinity problems, it is important to include saline tolerant crop varieties in the experiment.

This variety experiment helps the farmers to select the good variety for that locality. However, it is not only useful to learn more about the varieties, but it also develops the experimental skills of the farmers enabling them to conduct similar experiments in other seasons or with different crops.

Crop compensation studies

Most untrained farmers will spray their crop as soon as they see insects in their field. If farmers understand that crops can compensate for small amount of damage they will be confident to tolerate low levels of pests in their field.

In a rice FFS, usually two crop compensation studies are conducted by farmers. In the “defoliation experiment” the farmers simulate leaf damage by cutting small parts of the leaves (just like a leaf eating insect would do). In the “de-tillering experiment” they cut off a few tillers to simulate damage caused by stem borers. Through regular observations and measuring the yield, both experiments help them to discover how crops compensate for damage. The farmers experience by themselves that they can tolerate certain levels of damage at early growth stage of crop without yield loss. These two studies help to develop their confidence.

Field trials by farmers

FFS farmers learn from their own experience by setting small field trials, for example to test new varieties.

They learn new concepts and discover which technologies work in their own fields

Fertilizer management experiments

Several trials in an FFS are designed to learn more about soil health, soil fertility management and fertilizer application methods. For example in one study the farmers will compare three plots where one plot is receiving only synthetic fertilizers, another plot is managed according to IPNS with a combination of synthetic fertilizers and organic manure, and the third plot is Farmer’s Practice. In another trial they will compare the use of prilled urea with Urea Super Granules (USG). All these experiments are designed in such a way that farmers learn from their own observations and make their own discoveries about best practices.

Other field studies

While many of the field studies in an FFS are pre-designed and set up in every FFS, there is also room for flexibility and adding new experiments based on what is happening in the field. For example if during the season there is suddenly an outbreak of a disease, this can

be used as an opportunity to quickly design a new experiment for example to test the use of a fungicide.

This flexibility requires good facilitators who can see new learning opportunities and who are confident enough to make the necessary adjustments to the FFS.

Inputs for field studies

All field studies in the FFS are carried out in fields of the participating farmers. For example the ICM plot belongs to one of the farmers in the FFS, and the FP plot usually belongs to another farmer. Fields of other farmers are used for some of the other trials.

The FFS budget includes some inputs for the field trials; seed and fertilizers are supplied for an ICM plot of 400 m² and also for 2 plots of 200 m² in the fertilizer trial. Organic fertilizer is contributed by the FFS farmers, and the farmers are also responsible for maintaining the plot and carrying out the crop management decisions that were discussed during the AESA.



A small field study in a farmer's rice field

Group Dynamics and Role Plays in FFS

Learning can be more fun by introducing group dynamics (GD) exercises and role plays. There is a wide variety of GD exercises that can be used in an FFS. In some cases they are only used as an ice breaker or to create an enjoyable atmosphere. But many of these exercises carry messages and are then often used as an introduction to a specific session or topic. For example, exercises that show the advantages of working as a group can be used as an introduction to sessions on club formation.

Role plays serve similar purpose. For example there is a role play where one person plays the role of a pest insect that destroys a plant. Another person plays to be a spider and jumps on top of the pest insect. These few minutes of show will be remembered by all participants and enforce the message of how spiders help in controlling pest insects.



A role play illustrates how spiders can control pest insects

Insect zoo

In an ICM or IPM FFS farmers learn a lot about pest insects and beneficial insects. Many questions about these insects can be answered by setting small experiments in an insect zoo. Insect zoos can be transparent boxes with fresh leaves or potted plants inside a small cage. The zoo is kept in a shaded place to avoid high temperature.

An insect zoo needs daily attention because the insects need fresh food and the environment inside the zoo should not be too dry or too humid. Some of the FFS farmers will be assigned to take care of the zoo during the week and to make daily observations which they can report to the other farmers during the next FFS session.

Insect zoos can be used to:

- Study the life cycles of insects (keep caterpillars and see how they feed and how they pupate and develop to adult butterflies)
- Study feeding behavior of insects (see what they eat, how they eat, how much they eat)

- Study predators (see how they feed, find out how many insects can they eat in one day)
- Study parasitoids (keep larvae and pupae of insects and see if they are parasitized)
- Other experiments (for example study the effect of Bt and see that the insect don't die quickly but they stop feeding)

In a vegetable FFS, a similar “disease zoo” can be used to study the development of fungal or other diseases.



FFS farmers have prepared a number of "insect zoos" to study the behavior of pests and natural enemies

Special topics in the FFS

Each FFS session includes one (sometimes two) special learning topics. Usually these topics are a response to what happened in the previous FFS session. For example, if during field observations a certain pest observed to create problems, then the next week's special topic could be to learn more about this specific pest. It can also be that farmers have come up with a question, and the facilitator decided to prepare a special topic related to that question. In other cases the facilitators may suggest special topics, but it is always a good idea to let the farmers decide what special topic will be included in the next session.

It is then the role of the FFS facilitators to prepare well for the special topic that was selected by the farmers. They need to:

- Collect background information
- Prepare materials (pest specimens, flip charts, etc.)
- If needed, invite a specialist to help with the special topic
- Design exercises about the special topic to carry out with the farmers
- Prepare guiding questions that help you to facilitate the discussion

The selection of special topics in an FFS thus depends on the actual field problems and on the needs and interests of the farmers. Some examples of special topics are:

- Components of the ecosystem
- Energy flow in the ecosystem, food chains, food web, etc.
- Soil health, micro-organisms, nutrients, etc.
- Fertilizer management, soil testing
- Composting and mulching
- Weed management
- Quality seeds (cleaning seeds, germination test, selection of varieties, etc.)
- Life cycle and management of an important pest (use insect zoo)
- Life cycle and behavior of an important natural enemy (use insect zoo)
- Management of a specific pest (pest present in the field)
- Management of a specific disease (disease present in the field)
- Bio-extracts (farmers prepare and set up experiments to test them)
- Hazards of pesticides and risk reduction
- Disease management of an important disease
- Use of *Bacillus thuringiensis* (set up experiments to learn how it works in the field and/or in insect zoo)
- Use of Neem, Nimbecidine or Baicao
- Soil-borne diseases in vegetables, including use of *Trichoderma*
- Green manure
- Etc.

The ICM FFS curriculum

The original rice IPM FFS, which was used during the SPPS project worked with 25 participants (usually male rice farmers) and had duration of 14 (mainly weekly) sessions during the rice season. In the later part of SPPS-2 a new FFS curriculum was developed and piloted: the Integrated Crop Management FFS. These new ICM FFS worked with 50 participants; 25 male farmers (rice growers) and 25 women from the same household. The duration of these ICM FFS was expanded from 14 to 20 sessions as follows:

- One inaugural session, for men and women together;
- Eleven sessions (usually for men only) on rice, rather similar to the earlier IPM FFS but now ICM, including more topics on seed, soil and fertilizer management;
- Four sessions (usually for women only), with topics that were specifically developed to address the needs of women and with the objective to improve the nutritional status of the household.
- Four sessions, for men and women together, which are used to help FFS participants forming a farmers club; and
- A field day organized by all male and female participants of the FFS together.

Note that on the days of the four “club sessions” there are also some rice ICM activities included, which are generally attended by the male farmers.

If the completed FFS has formed a club, there is more training support in the season after the FFS through a number of “follow-up sessions”. Topics for these sessions are selected by the farmers, while the FFS facilitators help in identifying resource persons to conduct them.

An overview of the current ICM curriculum is included in Annex 2.

Modules in the ICM FFS

Considering the topics in the ICM FFS and the persons who attend these topics it is possible to distinguish within the ICM curriculum 4 distinct “modules”, which take place after the introductory and preparatory meetings and inaugural session:

- Rice ICM
- Homestead activities
- Health and nutrition
- Club formation

Of these four modules, the rice ICM module is the most comprehensive and is spread out over 15 sessions (11 full sessions and 4 shorter observations before start of the club sessions). This module is strictly synchronized with the rice growing season; it has to start before seedbed preparation and ends after harvest. The timing of the other three modules is less critical.

Module: Rice ICM

The curriculum of the “module” on rice ICM is very comprehensive. It has been developed over the years from experiences with Integrated Pest Management (SPPS-1 and SPPS-2 projects) and Integrated Plant Nutrient System (SFFP project). A range of technical topics dealing with seed health, pest management, soils and fertilizer management are included. Several field experiments are conducted by farmers during the FFS to form the basis of the Experiential Learning Cycle (ELC).

The following is a list of “topics” that are included in the rice ICM FFS. FFSs in other crops (e.g. wheat, potato, beans, cabbage, and eggplant) will have a similar content, but may differ in the way field experiments are designed. Note that many of these topics are spread out over a number of sessions throughout the cropping season.

Topic or Activity	Comment
<ul style="list-style-type: none"> • Introduction to field experiments in FFS 	<i>At the beginning of the FFS</i>
<ul style="list-style-type: none"> • Variety selection for FFS 	<p><i>A variety is selected for the main experiment where an ICM plot is compared with a Farmer Practice (FP) plot.</i></p> <p><i>Some potential varieties, relevant for the location of the FFS, are selected for a variety experiment.</i></p>
<ul style="list-style-type: none"> • Seedbed preparation and management 	
<ul style="list-style-type: none"> • Seedbed observations <ul style="list-style-type: none"> ○ Pests and defenders in seedbed 	
<ul style="list-style-type: none"> • Uprooting and transplanting 	
<ul style="list-style-type: none"> • Growth stages of rice 	<i>Throughout the season</i>
<ul style="list-style-type: none"> • Activities related to growth stages <ul style="list-style-type: none"> ○ Fertilizer management ○ Pest management <ul style="list-style-type: none"> ▪ Insects ▪ Diseases ▪ Weeds ▪ Rats ○ Water management 	<i>Deals with the actual condition of the soil and with pest problems that occur during the FFS season</i>
<ul style="list-style-type: none"> • ICM versus FP 	<i>The main field experiment in the FFS, conducted by the FFS participants. Management decisions for the ICM plot are based on the Agro-Ecosystem Analysis (AESA)</i>
<ul style="list-style-type: none"> • Techniques of field sampling insects and diseases 	<i>Skills needed to conduct an AESA</i>
<ul style="list-style-type: none"> • Pests and defenders <ul style="list-style-type: none"> ○ Collecting, sorting, identifying 	<i>Regular (weekly) observations throughout the season</i>
<ul style="list-style-type: none"> • Agro-Ecosystem Analysis <ul style="list-style-type: none"> ○ Introduction AESA ○ Weekly AESA for decisions in ICM plot 	<i>Learn to make informed crop management decisions. AESA decisions are applied and tested in the ICM plot</i>
<ul style="list-style-type: none"> • Conservation and augmentation of natural enemies 	
<ul style="list-style-type: none"> • Ail crops 	

<ul style="list-style-type: none"> • Plant compensation studies <ul style="list-style-type: none"> ○ Detillering ○ Defoliation 	<i>A field experiment by farmers to understand how plants compensate for damage to leave and tillers.</i>
<ul style="list-style-type: none"> • Insect zoo <ul style="list-style-type: none"> ○ Study food habits of crop defenders ○ Life cycles of insects 	<i>Contributes to understanding natural control</i>
<ul style="list-style-type: none"> • Introduction AEZ and concept of IPNS <ul style="list-style-type: none"> ○ AEZ recommendation for the FFS location (make fertilizer chart) ○ Calculate nutrient content of organic manure 	<i>Includes making a fertilizer chart with general AEZ recommendations for the FFS location</i>
<ul style="list-style-type: none"> • Variety experiment 	<i>Farmers conduct this experiment to compare relevant varieties (e.g. saline tolerance in saline areas). At the same time they acquire the skills to compare other varieties in different seasons or crops..</i>
<ul style="list-style-type: none"> • Soil characteristics <ul style="list-style-type: none"> ○ Soil texture ○ Soil composition ○ Water holding capacity 	
<ul style="list-style-type: none"> • Soil fertility grade mapping 	<i>Farmers make a soil fertility map of village</i>
<ul style="list-style-type: none"> • Soil test <ul style="list-style-type: none"> ○ Sample collection for soil test ○ Soil test results 	<i>Only done if soil testing facilities available near FFS</i>
<ul style="list-style-type: none"> • Nutrient mining exercise (nutrient flow) 	
<ul style="list-style-type: none"> • Plant Nutrition System (N, P, K, S, Zn) 	
<ul style="list-style-type: none"> • Fertilizer application methods 	<i>Field experiment by farmers comparing for example prilled urea with USG</i>
<ul style="list-style-type: none"> • Organic sources of plant nutrients <ul style="list-style-type: none"> ○ Green manure ○ Brown manure ○ Farmyard manure 	
<ul style="list-style-type: none"> • Nutrient deficiencies in pots <ul style="list-style-type: none"> ○ Recognize deficiency symptoms 	<i>Experiment set up by farmers using plants in pots where certain nutrients are missing. The results of this experiment are not always clear, so it is being considered to drop this topic from the FFS or modify it.</i>
<ul style="list-style-type: none"> • Rice-fish culture 	<i>Only when possible and relevant for the FFS farmers</i>

<ul style="list-style-type: none"> • Seed production techniques <ul style="list-style-type: none"> ○ Roughing ○ Seed collection (processing and storage) 	
<ul style="list-style-type: none"> • Seed health and quality <ul style="list-style-type: none"> ○ Seed selection and cleaning ○ Germination test 	
<ul style="list-style-type: none"> • Adverse effects of pesticides 	<i>To understand the dangers of pesticides</i>
<ul style="list-style-type: none"> • Risk reduction 	<i>To learn skills that help reduce the risks involved in using pesticides</i>
<ul style="list-style-type: none"> • Granular pesticides <ul style="list-style-type: none"> ○ Effects on natural enemies 	
<ul style="list-style-type: none"> • Adverse effects chemicals used for fruit ripening, fish and vegetable processing 	
<ul style="list-style-type: none"> • Rice pest management <ul style="list-style-type: none"> ○ Summary of management practices for most common insects and diseases in rice, related to growth stages 	
<ul style="list-style-type: none"> • Harvesting, recording yields, economic calculations <ul style="list-style-type: none"> ○ Benefit calculation for improved practices comparing the ICM with FP 	
<ul style="list-style-type: none"> • Wrapping up <ul style="list-style-type: none"> ○ Making conclusions on all studies 	<i>At the end of the FFS</i>



Farmers observe their ICM study plot during an FFS session

The above list includes topics that are currently (2010) dealt with in an ICM FFS. These topics are regularly revised and adapted where needed. The ICM FFS curriculum is just a guideline. It can be revised based on the local needs. Possible new topics that will soon be included are:

- Alternate wetting and drying
- Number of seedling experiment
- Age of seedling experiment

Module: Health and nutrition

The curriculum of the module on health and nutrition includes topics that generally are of interest to farm women who prepare the food in the family. These topics were designed to help farmers understand nutrient requirements in a balanced diet and include introductions on basic hygiene in food preparation. The knowledge gained in this module is expected to motivate farmers to grow more homestead vegetables and fruits for their family.

Topic or Activity	Comment
<ul style="list-style-type: none"> • Introduction classification of food items 	
<ul style="list-style-type: none"> • Introduction human nutrition <ul style="list-style-type: none"> ○ Nutrient deficiencies 	
<ul style="list-style-type: none"> • Balanced diet <ul style="list-style-type: none"> ○ Requirements for different vulnerable groups 	
<ul style="list-style-type: none"> • Safe food and hygiene <ul style="list-style-type: none"> ○ Good cooking practices to prevent nutrient loss 	<i>Includes practical session on preparation of balanced food recipe</i>

Together with the homestead module, the topics on health and nutrition are spread out over four separate sessions.

Module: Homestead activities

The curriculum of the “module” on homestead activities contains activities that are generally of interest to women who traditionally work in and around the home. This module will motivate FFS members to make optimal use of homestead area and grow more vegetables and fruits throughout the year to improve the family’s diet. The following list of topics gives an impression of what is currently included in this module:

Topic or Activity	Comment
<ul style="list-style-type: none"> • Homestead vegetables garden <ul style="list-style-type: none"> ○ Introduction pest and defenders in vegetables ○ Pest management in vegetables 	<i>During the FFS several vegetable gardens are started in homesteads of FFS members</i>
<ul style="list-style-type: none"> • Importance of organic manure <ul style="list-style-type: none"> ○ Sources of organic manure ○ Farm Yard Manure (FYM) 	<i>Includes practical session on FYM preparation</i>
<ul style="list-style-type: none"> • Hand pollination in vegetables 	<i>Includes practical practice</i>
<ul style="list-style-type: none"> • Improved stove 	<i>A few improved stoves are prepared during FFS at homestead of FFS members</i>
<ul style="list-style-type: none"> • Adverse effect of pesticides <ul style="list-style-type: none"> ○ Risk reduction 	<i>Discourage use of pesticides in the homestead and reduce risks related to storage of pesticides in the homestead, washing of contaminated clothes, etc.</i>
<ul style="list-style-type: none"> • Planting fruit trees and fruit tree management <ul style="list-style-type: none"> ○ Common pests in fruit trees ○ Pest management in fruit trees 	<i>Several saplings are planted during FFS at homestead of FFS members</i>
<ul style="list-style-type: none"> • Post harvest management of rice and vegetable seeds 	

Together with the module on health and nutrition, the topics on homestead activities are spread out over four separate sessions.



Homestead vegetable gardens are part of the ICM FFS curriculum

Module: Club formation

Because of good experiences with Farmer Clubs (FC) during SPPS-1 and ASPS-1, it was decided to give more attention to club formation. Eventually four sessions on club formation were included in the ICM FFS curriculum. The following list gives an idea on how this module is implemented:

Topic or Activity	Comment
<ul style="list-style-type: none"> • Advantages of working as a group 	<i>Introduced with appropriate group dynamics exercises</i>
<ul style="list-style-type: none"> • Club registration <ul style="list-style-type: none"> ○ Club financial system 	<i>Compare different systems under Department of Social Services and Cooperatives and the requirements associated with this</i>
<ul style="list-style-type: none"> • Bylaws of a club 	<i>Sample bylaws are provided. A committee is formed to draft bylaws for the club.</i>
<ul style="list-style-type: none"> • Club committee 	<i>Form a club committee with at least one third being women</i>
<ul style="list-style-type: none"> • Club savings 	<i>Decide on contributions by members</i>
<ul style="list-style-type: none"> • Bank account for club 	<i>Needed to receive financial support</i>
<ul style="list-style-type: none"> • Club house 	<i>Select a meeting place for the club</i>
<ul style="list-style-type: none"> • Identifying local resources 	<i>Resource mapping to understand the context in which the club will be working</i>
<ul style="list-style-type: none"> • Prepare a training plan for “follow-up sessions” 	<i>If farmers form a club the AEC will provide 4000 Taka to finance 5 follow-up training sessions with topics selected by the farmers.</i>
<ul style="list-style-type: none"> • Prepare an annual work plan 	<i>If a farmers club is formed with certain conditions (bank account, bylaws, work plan) the AEC will provide a 10,000 Taka grant to initiate club activities. An initial work plan is prepared, assisted by the facilitators, including ICM activities, income-generating activities, etc.</i>

Note that formation of a club is not mandatory for an FFS; it is entirely the choice of the farmers if they want to form a club. However, the sessions are designed to show the advantages of working as a group and to provide initial assistance in starting up a farmers club.



Members of this Farmers Club have a club house where they regularly meet

Field day

Towards the end of the season each FFS organizes a field day. During the field day the FFS farmers get the opportunity to show what they have learned to other farmers in their community. Often they also invite some key persons (e.g. local politicians, school teachers, etc.) who can help promote IPM/ICM and who can play a role in assisting the Farmers Club.

Probably the best moment to organize a field day is towards the end of the growing season, just before harvest with the crop still in the field. Visitors can then observe the ICM plot and the FP plot and other field experiments that were carried out by the farmers. However, it also happens that the field day is organized at the very end of the FFS. That is a more convenient moment to officially close the FFS, give certificates to the FFS participants, and announce the formation of a Farmers Club.

Both moments of organizing an FFS have their advantages and disadvantages. It is up to the facilitators together with the farmers to decide when to hold the field day. In all cases the farmers prepare nice displays about what they learned in the FFS, including some insect zoos with pests and natural enemies, so that the guests can see life examples.



Field day of an ICM Farmers Field School

Sustainability

With the scaling up of the FFS programme in Bangladesh, a lot of attention was given to studying the impact of the training and to evaluating how farmers' behavior changed over the years. Results were quite positive and showed that several years after attending an FFS, farmers still remembered what they had learned and their practices remained better than those of untrained farmers. During these evaluations and impact studies it was also found that in some cases FFS farmers had continued working as a group and had formed a kind of farmers club. They continued meeting with each other, discussing their crop management problems, and trying to develop solutions together.

This was then seen as an opportunity for increased sustainability. Pilot activities were started to give support to these "IPM clubs". Within a few years it became clear that these clubs can be much more than an extension of the FFS. Often these clubs grow and help spread the IPM message to neighboring farmers. Some clubs even developed various income generating activities (not necessarily IPM or ICM related), or social activities that contribute positively to community development.

These positive experiences with clubs during the SPPS projects have led to an important shift in strategy. Forming long-term farmers clubs has now become one of the objectives of the ICM FFSs in Bangladesh. The FFS curriculum is now designed to work towards club formation, right from the start. When clubs are active and properly organized they can develop into community based organizations (CBO) acting as community service providers.

Farmers Clubs

The very first farmers clubs in Bangladesh were entirely the initiative of farmers who attended IPM Farmer Field Schools. During the SPPS-1 project (1997-2002) the IPM FFS were organized without the intention of forming permanent farmer groups. However, it was observed that in a few FFS the farmers themselves decided to continue as a group; they called themselves an IPM club. These first farmers clubs were often formed with the intention to continue “IPM activities” as a group, for example they organized rat control campaigns, promoted IPM methodologies (e.g. perching in rice fields) to neighboring farmers, or campaigned against the misuse of pesticides.

Promoting farmers clubs to sustain FFS activities then became part of the overall strategy of the FFS programme during the SPPS-2 project (2002-2006) and currently in the AEC component. In each FFS a module on “club formation” is included to motivate farmers to form a club.

Note that many clubs call themselves “IPM club” or “ICM club”, but the preferred name is now “Farmers club” (FC) because club activities are often not limited to IPM or ICM.



Signboard of a Farmers Club

Club activities

The clubs which form during or after the FFS are entirely by and for the farmers. DAE and the AEC component give some initial small support to the clubs to help them get started, but it is the energy and motivation of the farmers themselves which can make the club a success.

The farmers themselves develop a work plan of club activities and depending on the leadership in the club and motivation of the members there can be a wide range of activities within this plan. Many clubs begin their life with a plan that includes activities suggested by the facilitators, but as the club matures this plan is changed and fitted to the needs of the members.

Currently, many thousands of Farmers clubs have been formed and there are big differences to be observed between these clubs. Some clubs, which started full of enthusiasm, have stopped to function after some months or years, often because of a lack of leadership within the group. Other clubs have blossomed and have managed to organize a wide range of activities, increased their assets, and in some cases increased their membership over the years.

Most clubs have separate activities for men and women. These activities organized by clubs vary a lot but can roughly be grouped in the following 5 categories:

- Savings
- Income generating activities
- IPM/ICM activities
- Social activities
- Innovating activities



Fish farming; an income generating activity of a farmers club

Savings

Almost all clubs have a savings plan, with members contributing a small savings amount per month or per week. A treasurer takes care of the book keeping and records the payments in a register. Each club member also maintains their passbook to know their deposited amount as their personal savings record. In this way the club builds up a small capital which can be

used to organize activities. If sufficient funds are available, the money is often used as a micro-credit for individual members within the club, to initiate income generating activities.

For example: An amount of money is used to buy a young cow for beef fattening. One club member takes care of this cow. When the cow is sold (at a profit), the initial amount is repaid to the club; the profit is shared between the club member (who took care of the cow) and the club. Both the member and the club as a whole benefit from this arrangement. Farmers like this form of “micro-credit” because the “interest” they pay does not go to an outsider (NGO or bank) but remains within the group.

Other examples of micro-credit include loans to members to buy a rickshaw or a sewing machine.

If clubs get richer they can use their savings for other more ambitious investments. For example the club can buy a power tiller or other farm equipment for use by the members or which can be rented for a fee to non-members.

Income generating activities

Almost all clubs organize income generating activities (IGA) to increase their assets. This is sometimes done in the form of micro-credit for individual members, but some clubs have a wider range of IGA, for example they lease a piece of land where they collectively grow a crop, or they rent a pond to grow fish. Some clubs, with technical support from AEC through the Seed Wing (MOA) and the Bangladesh Agricultural Development Corporation (BADC), have started seed production as an IGA.

Examples of income generating activities often found in farmers clubs are:

- Beef fattening
- Goat rearing
- Poultry rearing
- Rice (or other crop) cultivations
- Seed production rice
- Seed production vegetables
- Nursery for fruit trees
- Bee keeping
- Mushroom cultivation
- Rickshaw van
- Sewing machine
- Power tiller (renting to other farmers)

IPM or ICM activities

Many clubs include in their work plan also the intention to continue with improved farm practices which they learned in the FFS, for example the use of High Yielding Varieties (HYV), Urea Super Granule (USG), perching their rice field, use of organic manure, growing vegetables and fruits in the homestead, promoting improved use of stoves, etc. In some cases the club members train other farmers (their neighbors) on IPM or ICM.

Social activities

Some Farmers clubs function as small Community Based Organization (CBO) providing services to their community and organizing social activities such as:

- Anti dowry movement
- Campaigning against child labor
- Campaigning against child marriages
- Campaigning against domestic violence
- Support to poor people in the community
- Planting road side trees
- Organizing sports or cultural festival
- Organizing study tour to places of interest
- Building a school
- Teaching illiterate people to read and write

Innovating activities

Some clubs have currently activities which could be classified as innovating activities.

Environmental conditions in rural Bangladesh are frequently changing (for example because of climate change). It is necessary for farmers to be able to adapt quickly to a new situation. Testing out new varieties or new types of crops or cropping patterns is difficult for individual farmers, but as a club it is possible to lease a small plot of land and experiment as a group with new technologies. As an additional advantage the club may earn some extra income from this experimental plot.

Few clubs have done this so far, but AEC considers it important to promote this type of activities in farmers clubs as it helps increase resilience and adaptability of the farming community.

AEC supported research activities and demonstrations which are carried out in collaboration with BARI's on-farm research division (OFRD) are now in almost all cases conducted together with farmer club members in the fields of these farmers.

Support to clubs by AEC

Support to the formation of farmers clubs is limited to some starting-up activities which help the farmers get started, after which it is their own responsibility to continue if they consider it useful.

Club formation sessions in FFS

During the FFS the support consists of four sessions to highlight the benefits of working as a group and to motivate them to form a club. If farmers respond positive to this and initiate a club (with work plan, bank account, bylaws, etc.) the AEC gives some financial support to facilitate club formation.

Follow-up training sessions

An amount of 4,000 Taka (\pm 60 US\$) is available for “follow-up sessions”. These are (preferably FFS style) training sessions that take place in the season after the FFS on topics selected by the farmers. With the 4,000 Taka, usually 5 follow-up sessions with 2 training topics each can be organized. The FFS facilitators and tag SAAO help the farmers in indentifying resource persons for these training sessions. Topics are not limited to crops agriculture but may be selected without restrictions by the club farmers, for example beekeeping, quality seed production, family planning, or grafting of fruit trees. Favorite topics that are selected in most of the clubs are beef fattening, poultry rearing, and aquaculture.

Note that these follow-up sessions are only of limited duration and are often conducted by persons who are not familiar with the FFS approach. Therefore these training sessions have usually not the required quality and cannot be compared with the aquaculture and livestock modules of the RFLDC project. The interest of farmers in these topics is however unmistakable. In collaboration with RFLDC, AEC has therefore already started to train some Farmer Trainers on fish and livestock modules, which will enable them to organize better follow-up sessions. A better strategy may be to combine the FFS curricula of RFLDC and AEC into a very broad Integrated Farm Management FFS. Currently both components are developing ideas for a new Integrated Farm Management (IFM) FFS model in collaboration with FAO (ECP project in Barisal region) and UNDP (AFSP project in Chittagong Hill Tracts).

Grant for initiating activities

An amount of 10,000 Taka (\pm 145 US\$) is available as a grant for clubs who have developed a work plan and have opened a bank account in name of the club. The club can use this money to initiate income generating activities. In some cases the clubs decide to use this money to build or rent a club house where they can hold their club meetings.

Organizational and business management training

When AEC realized that success or failure of clubs depends to a large extent on the quality of leadership, a special training programme was developed for capacity building of the clubs' executive committee members. This "organizational and business management training" (OBM) is a 4 day training programme which has been offered to three selected members (2 males and 1 female) of all existing farmers clubs. The objective of this training is to increase their capacity to make a business plan to stimulate more income generating activities for the club and to improve club management skills.

Motivational tours

To stimulate interaction and promote networking between clubs, AEC has set aside a small budget to organize "motivational tours". These are a kind of study tours for three executive members of each club (2 males and 1 female) to visit other high quality clubs, observe their activities and exchange ideas with their members. Yearly about 50 such tours are organized.

Registration of clubs

Not all, but many of the farmers clubs decide to register themselves as an official club. There are two ways of doing this; they can register with the Social Welfare Department (SWD) or with the Ministry of Cooperatives (MoC). Each method has its advantages and disadvantages. It is entirely the choice of the farmers to decide where they want to register. It has been noted that in the past many clubs selected SWD but recently more clubs opt for registration with MoC.

Union Farmers Associations (UNFA)

A recent development is that AEC has started to form Union Farmers Associations (UNFA). In unions where several farmers clubs are present, they can together form an UNFA which is supposed to work as an umbrella organization in the interest of its member clubs. One of the reasons to form UNFAs is to stimulate interactions between clubs; through contacts with other clubs the weaker clubs may develop new ideas and get stronger. Another role of UNFAs can be in providing services to its members, which means an UNFA could function rather as a CBO, similar to the CBOs formed under the RFLDC component.

UNFAs are a rather new development and unfortunately UNFA formation has been a rather top-down process, while the role of UNFAs is not yet well defined. Advantages and disadvantages are not fully known yet. It is important to closely monitor the ongoing development and concentrate on improving the quality of existing UNFAs before further up scaling.

Note that the technical review mission (March 2010) also commented on the UNFA formation process and recommended that it is important to sufficiently assist existing UNFAs rather than fulfilling the target in terms of number of UNFAs formed.

The FFS cycle

FFSs or FFS modules that deal with a crop, such as the ICM in rice FFS are strict seasonal because the FFS starts before planting and ends after harvest.

In Bangladesh the IPM and ICM FFS are organized in two cycles corresponding with two distinct rice growing seasons. FFSs during the Boro season are organized from December to May and deal with irrigated rice. FFSs during the T.Aman season are organized between June and November, which is rain fed rice (although some supplementary irrigation is sometimes needed).

FFSs in other crops (potato, wheat, cabbage/cauliflower and bean) have only one cycle per year. For example an FFS in potato would be organized from October to March.



Signboard in a study plot of a wheat ICM FFS

It is one of the biggest challenges of a large scale FFS programme to synchronize the organization of FFSs effectively with the growing season. Planning, funding and distribution of training materials has to be organized well in time.

FFS review and planning workshops

Twice a year AEC organizes a series of review and planning workshops corresponding to the FFS cycles of the Boro and T.Aman seasons. These workshops have a double purpose: reviewing the completed FFSs and planning for the next FFS season.

Reviewing the FFSs of the previous season should ideally be done after completing the FFSs. That allows for a complete review, where facilitators can provide feedback on all FFS sessions and can provide crop production data (e.g. yield and pesticide use) of trained and untrained farmers to document the impact of the FFS.

However, the planning for the next season has to be done very early, as it is very important that the new FFSs can start in time. Funding for these new FFS and distribution of materials should be completed before farmers start preparing the seedbed for their next crop.

It is not possible to find an ideal moment for organizing the workshops, as the timing will either be too early (for a complete review) or too late (for a timely start of the next season).

In the early years of FFSs in Bangladesh the workshops were organized rather late (in December and June), which facilitated data collection of the completed FFS but created many problems to timely start new FFSs. Currently, AEC organizes these review and planning workshops in November (review T.Aman and plan for Boro season) and May (review the Boro and plan for T.Aman season).

This means that reviewing of FFSs is now done on a moment that many of the FFSs are not yet entirely completed. Discussions during the workshops emphasize on the organizational aspects of the FFS (e.g. logistic problems) and less on the crop data. The advantage is that new FFSs can be started without delays.

The review and planning workshops are organized simultaneously in several locations and are facilitated by AEC master trainers and GOB officers of DAE headquarters. The workshops are attended by one DT of each Upazila, and by one FT of each pair of FTs.

The main topics during each of these workshops are:

- Review experiences of last FFS season, especially with a view to solve problems that occurred.
- Discuss any changes for next season, such as adjustments in the FFS curriculum or in design of field trials or changes in budget or allowances.
- Planning of FFS for the coming season, especially assigning the number of FFS to be organized by each pair of facilitators and distributing forms and advance money for the new FFSs. An advance of 10,000 Taka per FFS is provided during the workshops.

The workshops are usually completed in one day, except for apprentice FTs who are going to organize their first FFS in the next season. These apprentice FTs attend the workshop for two days, where one day is used to make a detailed plan for the work they are going to do.

In some cases the workshops have been expanded with an extra day to provide additional training to facilitators. For example this has been done in the past to train facilitators on

topics related to health and nutrition. The next cycle of workshops will probably include a short training on climate change issues.

Annex 4 shows a sample programme for the review and planning workshops.

Allowances in FFS

For each ICM FFS there is a budget for allowances paid to persons involved in organizing and monitoring the FFS.

FFS facilitators

FFS facilitators receive a small allowance per session as compensation for the extra time and travel involved with running the session. In each FFS there is budget for two facilitators, which are either two Departmental Trainers (AEO, AAO, SAAO or SAPPO) or two Farmer Trainers.

In addition, there is an allowance for the “Tag SAAO”. This is an untrained SAAO who is responsible for the area (block) where the FFS is being organized. He/she is not considered an FFS facilitator but assists the facilitators in organizing the FFS (e.g. mobilize farmers). The tag SAAO attends the first 6 sessions and also the four club session. Later he/she helps the Farmers clubs in organizing follow-up sessions and if needed assists with the registration of the club.

In some FFSs there will be a pair of “Apprentice FT”. These are farmer who have just completed a 3-weeks FT-TOT course and for one season work together with experienced DTs to familiarize themselves with the process of running an FFS.

The amount of allowance for a facilitator depends on his/her position and role. In the current curriculum with 20 sessions the allowances are:

- AEO/AAO 175 Taka per session
- SAAO/SAPPO 150 Taka per session
- Farmer Trainer 150 Taka per session
- Apprentice FT 100 Taka per session
- Tag SAAO 150 Taka per session

Monitoring visits to FFS

AEC has a monitoring system where GOB officers from the Upazila, District or Region are involved in monitoring all ongoing FFSs. A monitoring format is available to record observations during the monitoring visits.

Each FFS has a budget for three monitoring visits. For each of these visits there is an allowance of 200 Taka. This allowance compensates for the extra time and travel involved with monitoring an FFS session.

The three monitoring visits are conducted by senior officers of the Upazila, District and/or Region, as follows:

- Upazila Agricultural officer, one visit
- Additional Director (AD) or Deputy Director (DD) or District Training Officer (DTO), one visit
- Crop Production Specialist (CPS) or Plant Protection Specialist (PPS), one visit

Monitoring visits to FT FFS

An FT FFS receives six monitoring visits during the FFS season. In addition to the three monitoring visits by senior officers from the Upazila, District or Region, each FFS that is organized by Farmer Trainers received three extra monitoring visits by trained facilitators from the Upazila. During these visits these Departmental Trainers (DTs) will not only monitor but also provide backstopping and guidance to the FTs. Allowance paid for the three extra visits is as follows:

- | | | |
|-----------------------------|------------|---------------|
| • Trained AEO | One visit | 150 Taka |
| • Trained SAPPO and/or SAAO | Two visits | 125 Taka each |

The FFS budget

Each ICM FFS receives roughly the same budget, but this budget may be slightly different depending on the facilitators who organize the FFS (different allowances) or if FFS is in another crop (different materials needed).

The budget for each FFS goes directly from AEC to the UAO in each Upazila, who operates a separate AEC bank account for this purpose.

During the review and planning workshops, which are organized twice each year, a plan is made for the number of FFSs that will be organized in the coming season. At that moment an advance of 10,000 Taka per FFS is provided to the Upazila, which makes it possible to immediately start the FFS preparations. Within a few weeks (usually within a month) the remaining budget is provided, at the same time when some FFS materials are being distributed from the AEC headquarters.

The UAO is responsible for the FFS budget and will provide money to DTs and FTs for buying materials, to pay allowances, for snacks, etc. The UAO is responsible to report back to AEC. Original vouchers for all FFS expenses remain at the Upazila office and are subject to government/donor audit.

Budget details

The total budget of an FFS is currently about 36,500, which is about 525 US\$. This budget includes:

- Training materials
- Allowances for facilitators
- Allowances for monitoring (Upazila, District/Region)
- Snacks or savings
- Other FFS expenses

If the FFS forms a club there is an additional budget of 4,000 Taka for 5 follow-up training sessions and 10,000 Taka as a grant to initiate club activities. These additional budgets for clubs go (via the Upazila office) into the bank account of the club.

Training materials

An FFS needs a budget of 6,500 to 7,500 Taka for training materials. This budget is used for:

- Paper, markers, notebooks, pencils, crayons, plastic sheet, pots, etc.
- Inputs for small field trials (e.g. fertilizers, seed, signboards)
- Some “permanent” materials are only supplied once to each facilitator (e.g. calculator)
- Materials for women activities 3,750 Taka (improved stove, vegetable seeds, saplings, etc.)

A complete list of materials is included in Annex 3.

Some of the FFS materials are supplied from AEC headquarters in Dhaka (e.g. notebook for farmers, FFS register) but most materials are bought at Upazila level under responsibility of the UAO.

Allowances for facilitators

The total FFS budget spent on allowances depends on the rank of the persons who facilitate the FFS and on whether the FFS includes apprentice FSs.

DT FFS

An FFS organized by an AEO/AAO together with a SAAO/SAPPO needs a budget of 8,500 Taka for allowances. If the FFS is organized by two SAAO/SAPPO, the budget needed is 8,000 Taka. If the FFS includes a pair of apprentice FTs, an additional budget of 4,000 Taka is needed.

FT FFS

An FFS organized by a pair of FTs needs a budget of 8,000 Taka for allowances. In addition to this, each FT FFS gets an additional budget of 500 Taka to cover cost of the FTs traveling to the Upazila office and transport cost of FFS materials.

Allowances for monitoring

The monitoring budget for an FFS organized by DTs is 600 Taka (3 monitoring visits), while in an FT FFS the required budget for monitoring is 1000 Taka (6 monitoring visits).

Snacks or savings

In each FFS there is a budget of 11,050 Taka for snacks and/or savings. This amount is calculated on the basis of 15 Taka per person per session as follow:

- 1,000 Taka for the inaugural session with 50 participants, facilitators and some guests
- 6,750 Taka for 15 sessions with max 30 persons (25 participants, facilitators and guests)
 - 15 sessions x 15 Taka x 30 persons
- 3,300 Taka for 4 sessions with max 55 persons (50 participants, facilitators and guests)
 - 4 sessions x 15 Taka x 55 persons

Note that this budget can be used to purchase snacks, but the farmers may also decide to not have snacks during the FFS and keep this budget as savings for starting their Farmers Club. This is a decision to be taken by the farmers at the beginning of the FFS.

Other FFS expenses

Each FFS gets an additional budget 5,300 Taka per FFS for organizing a field day (4,500) and rewards for participants (800).

What is the cost of an FFS programme?

The cost of training is an important issue and FFS have often been said to be too expensive. Let's try to calculate the cost of training one farmer in the current ICM FFS.

The total budget of running an FFS is 36,500 Taka and an additional 14,000 Taka is provided to FFSs that form a club. The total cost of 50,500 Taka involves 50 farmers (25 men, 25 women) which means that the cost per farmer is just over 1,000 Taka, which is less than 15 US\$.

This is a low estimate; the actual cost of running an FFS and supporting farmers clubs is higher, because the mentioned budget does not include the cost of government officers

(salaries, etc.) and it does not include the cost of additional monitoring visits by AEC master trainers and GOB officers from DAE headquarters. It also does not include the cost of capacity building (training of trainers), costs of review and planning workshops and the costs of additional support to clubs (e.g. OBM training, UNFA formation).

Another way of calculating the cost is looking at the entire AEC budget. The total budget of AEC (2006-2012) is 1,200 million Takas. This is the combined DANIDA and GOB contribution, which is used to organize 10,800 FFS involving 540,000 farmers. This gives a cost per farmer of 2,222 Taka, which is equivalent to 32 US\$ per farmer.

This however is a too high estimate as it includes many costs that are not related to the training of these 540,000 farmers (e.g. training of input providers, on-farm research, seed wing training, TV and radio programmes).

We can therefore conclude that currently in Bangladesh the cost of training a farmer in a season-long ICM FFS and supporting the formation of farmers clubs is currently somewhere between 15 and 32 US\$ per farmer.

These costs are low in relation to the benefits, which include reduced pesticide use, increased yields, use of improved (high yielding) varieties, increased production of homestead vegetables and fruits, and formation of clubs which generate additional income and organize social activities for the community. Nevertheless it could be interesting to explore opportunities for cost reduction while maintaining quality. The easiest way to saving costs, without effect on the quality of the training program, is probably to reduce the budget for snacks/savings and to stop providing a cap/scarf for each farmer. But this way of making an FFS more sober would not be appreciated by farmers and facilitators as it takes away part of the fun of being in an FFS.

Impact of FFS

Impact studies in the past have shown repeatedly that trained FFS farmers have much lower pesticide use (80-90% reduction) and slightly higher yields (2-6% increase) compared to untrained farmers.

Yield increase is however much higher for farmers who because of the FFS training switch from Local Varieties (LV) to High Yielding Varieties (HYV) in the Boro season. Recent monitoring data (see Progress Report 7) showed that before their training 37% of the FFS farmers used to grow HYV. This increased to 97% farmers growing HYV after the training. A local variety yields 12-16 kg per decimel while HYV yields 25-32 kg per decimel.

Several studies have shown that knowledge and skills obtained by the FFS participants is lasting and sustainable. The positive effect of the training is still measurable several years

after the training took place, with trained farmers performing better than their untrained neighbors.

For more information on the impact of FFS in Bangladesh please refer to various existing reports (see References, page 63).

Training of DAE facilitators

AEC organizes season-long Training of Trainers (TOT) courses for field staff of DAE. This training to develop FFS facilitators has to be season-long because they are learning to facilitate season-long Farmer Field Schools.

ICM FFSs and ICM TOTs have to be season-long for a number of reasons:

- Each stage of the crop has different pest problems. This makes it necessary to spread the training over at least one entire season, covering all stages of the crop.
- Each stage of the crop has different requirements (water, fertilizer, mulching, weeding, thinning, pruning, etc.). Crop management therefore depends on the development of the crop.
- Some processes that need to be observed (population dynamics of an insect, disease epidemics, possible plant compensation, etc.) develop gradually over the course of the entire cropping season.
- The results of crop management decisions made during one crop stage can only be observed at a later stage of the crop. It is especially important to be able to observe how each action has an effect at the time of harvest (e.g. yield and quality, economic factors).



Participants in a season-long Training of Trainers course

In a season-long TOT the participants' learning is exactly synchronized with all the crop stages, which allows practical hands-on learning. But it is not only this sequence of technical topics that is important in the TOT. Perhaps even more important is the gradual development of good facilitation skills, which is also a lengthy and time consuming process.

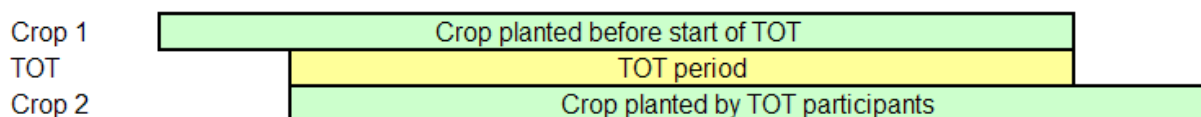
In the season-long TOT the participants organize their first FFS, supervised and guided by very experienced master trainers. This allows them to practice their new skills and develop experience with real farmers. Generally a group of 25 TOT participants will split up in 4 smaller groups, and each of these smaller groups together with one master trainer conducts an FFS. In this way, by the end of the TOT each participant has already experienced all the 20 FFS sessions. Each week during the TOT about one and a half day are spent for the FFS (½ day preparing, ½ day running FFS, and ½ day evaluation and backstopping with the MTs).

Season-long Training of Trainers courses to develop FFS facilitators are expensive, lengthy and time consuming. For DAE it is difficult to release their field staff for a period of three to four months to participate in these season-long courses. It is however possible to slightly reduce the duration of the training while still experiencing an entire cropping season.

ToT with staggered planting

The earlier IPM TOTs (SPPS-1 and 2) were preparing the participants to run IPM FFS with 14 sessions. The TOT had duration of 16 weeks (with 2 free weeks half way) and thus included 84 training days. Every week the participants would practice one of the 14 FFS sessions. The duration of 16 weeks was however a bit too short to cover an entire rice cropping season (from seedbed preparation until after harvest). This was solved with staggered planting of the TOT field plots.

One crop would be prepared and transplanted before the start of the TOT. The TOT participants would find this crop already growing in the field at the start of their training and would follow it until after harvest. But they themselves would start another crop (to learn about seedbed, transplanting, etc.), where they would set up their own field experiments (variety trial, defoliation trial, etc.).



This TOT with two staggered crops allowed the participants experiment and gain experience with all crop stages, even though the length of the TOT was slightly shorter than the crop cycle. A disadvantage of this system was that the TOT participants are practicing running an FFS with real farmers but the TOT period is a bit too short to complete this FFS.

ToT with two rotating groups of participants

When the ICM FFS curriculum was developed (with 20 weekly sessions) it was clearly not possible to organize TOTs of 5 months duration that could cover all 20 FFS sessions. However, it was still considered very important that the training should cover an entire cropping season and that the participants could run their own FFS. Therefore, AEC developed a new Training of Trainers system where two groups of 25 TOT participants rotate in spells of two weeks.

During a TOT of 24 weeks, each participant attends six blocks of two weeks, which is equivalent to 72 training days. And during each week there are two FFS days (for example each Monday and each Thursday). On these two days the participants work in a two different FFS, which were started two weeks apart. In this way it is possible for all the participants to practice all 20 sessions during their TOT.

TOT batch 1	[Yellow blocks]																							
TOT batch 2	[Orange blocks]																							
FFS-A	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	FD		
FFS-B			0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	FD

Note that "session 0" is not an FFS session but it is the preparation for the FFS (farmer selection, benchmark survey, etc.). FD is the field day at the end of the FFS.

With this system 29% of the training days the TOT participants are in contact with real farmers, which is excellent for developing and practicing their facilitation skills. A slight disadvantage is that the FFS farmers every 2 weeks get different facilitators.



Learning by doing during a Training of Trainers course

Training of Farmers as Facilitators

A development which has taken place in Bangladesh since 2000 is the involvement of farmers as facilitators. These Farmer Facilitators, often referred to as Farmer Trainers (FT), are farmers who proved themselves as capable to lead other farmers during an FFS.

While it is difficult to organize season-long TOTs for DAE staff, it is even more difficult to organize such long training for farmers, who cannot be taken away from their family and crop fields for such a long period. It is however important that they get trained during all crop stages and that during the training they can practice facilitation skills in a real FFS. AEC therefore has another process to develop Farmer Trainers, which has several steps:

- Farmers attend a season-long FFS
- Selection criteria are used to identify farmers who can become FTs
- They receive a FT-TOT of 3 weeks duration
- For an entire season they are apprentice facilitator in an FFS organized by experienced DTs

The process starts with farmers who have already participated in an FFS and have thus a good idea what an FFS is.



Farmers in a FT-TOT course learn how to set up field studies

The selection of potential FTs is an important step and is found to be critical for success. This selection is therefore done by AEC project personnel (mainly by Master Trainers) in close consultation with the UAO of the Upazila and the DTs who have trained them and who know them personally. Potential candidates are interviewed by these DTs together with experienced master trainers of AEC based on a number of criteria that should ensure their

quality and long-term commitment. A first criterion is that they have to be full-time farmers who live in the locality and graduated from an FFS and who are members of a Farmers Club in their village. They should also have a very good understanding of ICM concepts, they should be literate (at least class 8, but not highly educated), have a good organizing capability and leadership skills, and should show a strong interest in the social welfare of their community. They should be healthy and at least 25 years old. FTs will always work in pairs, but husband and wife are not selected together as an FT pair.

Farmers who are selected to become FTs then sign a “contract” in which they commit themselves to be available for a Training of Trainers course and to become active facilitators for organizing new Farmer Field Schools.

The next step is that the selected farmers receive an additional training of three weeks. During this FT-TOT a lot of attention is given to learning facilitation skills and organizational skills to manage an FFS. The training duration is 3 weeks which enables to spend an entire day learning and practicing each of the 20 FFS sessions. Crop fields are available during this training so they can practice facilitating AESA and familiarize with the different field experiments that form part of an FFS.

Then, for an entire season, they work with DAE facilitators as apprentices in an FFS in their locality. This again takes them through all 20 FFS sessions, but now synchronized with all the crop stages. They can practice facilitation skills with real farmers guided by the DTs.

Finally, after this season-long practical experience and attending a two-day planning workshop they become FTs and are ready to organize their own FFS as a facilitator. Normally they will establish FFS in their locality.

The FFS organized by farmer facilitators follows the same curriculum and operates with the same budget as an FFS organized by government extension facilitators. Although there was initially some concern about quality, it was soon found that in many cases the farmer facilitators even perform better than the government extension facilitators, provided that the selection of farmer facilitators is good. Farmer facilitators communicate easily with FFS participants because they often know each other personally. Another advantage of farmer facilitators is that they are attached to the farmers clubs, which means that apart from being involved in starting new FFS they also play important roles in supporting their own club activities.

Many skilled and motivated farmers are now working as FFS facilitators side by side with government extension facilitators of the DAE. Many of these farmer facilitators are women.

Monitoring of FFS

Intensive monitoring is required to maintain FFS quality. AEC has a monitoring system that involves GOB officers in the Upazilas and Districts, and also Master Trainers and GOB officers from AEC headquarters.

Each FFS (by DT or FT) has 3 monitoring visits:

- One by UAO
- One by AD or DD or DTO
- One by CPS or PPS

Each FT FFS has 3 additional monitoring visits by trained DTs of the same Upazila

- One by AEO
- Two by SAPPO or SAAO

For these monitoring visits a form is available which collects information about the status of the FFS and if needed includes recommendations for improvement. An example of the monitoring form is included in Annex 5.

Additional monitoring is carried out by AEC master trainers and officers from DAE Dhaka. There are two systems that complement each other:

- Mobile monitoring
- Field visits to FFSs (and clubs)

Master Trainers monitor all FFS teams (DTs and FTs) by mobile phone two or three times per season. Status and progress of the FFS is discussed and if needed these phone calls are followed up with another phone call to the responsible UAO. If mobile monitoring detects possible problems in the FFS, the concerned Upazila will be selected for a field visit.

Field visits to monitor FFS cannot cover all FFS. It is the target that AEC Master Trainers and DAE officers who are attached to AEC visit at least 20% of all FFS each season, while concentrating on the weaker Upazilas teams (as detected by mobile monitoring or from earlier experience). A format is available for monitoring during these visits.

Field monitoring by MTs is not just a monitoring exercise but is also used to provide backstopping and guidance to FFS facilitators. While visiting FFSs the MTs and DAE officers will also include visits to Farmers clubs in the same Upazilas.

Other crops FFSs

The ICM FFS programme of AEC was designed to work exclusively with rice farmers. This however, limits the component's activities to only rice and homestead vegetables. It is clear

that many farmers who grow other field crops could also benefit from participating in an FFS. A next phase should not be limited to only rice producers.

To pave the way for an FFS programme that includes a wider variety of field crops, AEC has already started a number of pilot FFS in potato, wheat, cabbage/cauliflower, beans and brinjal (eggplant). Curriculum design workshops were organized with AEC master trainers, experienced FFS facilitators of DAE, and technical specialists in the respective crops. FAO's regional vegetable IPM programme assisted with the potato FFS curriculum, the Wheat research institute assisted in the development of the wheat FFS curriculum, and BARI (Gazipur) assisted with the bean FFS and cabbage/cauliflower FFS curriculums.



Field observations by farmers in a potato ICM FFS

The various pilot curricula have a similar design to the ICM FFS curriculum and include modules on club formation, homestead activities, and health and nutrition. The various crop related sessions are adapted to deal with the specific characteristics and problems of the concerned crop. Also new field experiments were developed (or redesigned) to address special crop related problems. For example, in a wheat FFS, a field experiment is set up to observe the effect of planting date. Especially in wheat, the planting date is important as the short winter in Bangladesh provides only a very short ideal growing season.

Women as FFS participants

Growing rice in Bangladesh is usually done by men, while women are involved in various post-harvest activities (threshing, drying, winnowing and storage). The original IPM FFSs, with a focus on pest management and a goal to reduce pesticide problems, therefore

addressed almost only male farmers. It was indicated, especially by the donors, that more efforts should be made to involve more women in the FFS training programme.

Initially, during SPPS-1, this was done by starting vegetable IPM FFSs, since it was expected that more women participants would then be included. This was true – more women participated in the vegetable FFSs. However, it then became clear that the vegetable IPM curriculum, which was very similar to the rice IPM curriculum, was not addressing the real needs of these women. Actually, these women were involved in homestead growing of vegetables, a low input situation with very little pesticide use. The commercial vegetable plots, with higher inputs of fertilizers and serious pesticide misuse, are usually grown by male farmers.



Women participate in farmer field schools but usually they are interested in different topics than the men.

It was clear that a move from rice to vegetables alone was not sufficient, and that the FFS curriculum would need more changes to address the actual needs of women. At the same time, there were a number of social barriers preventing more women being in the FFSs. This was particularly an issue in the more conservative communities, and it led to the idea to invite both a man and a woman from the same household to the FFS training.

Climate change and FFS

Climate change is a hot ☺ issue and therefore it is a relevant question whether FFS should include special sessions or topics on climate change. A paper on this is included in Annex 6.

FFSs are designed to deal with actual field problems. It could therefore be argued that if the field situation changes (because of climate change or because of other reasons) the FFS will

automatically adjust to deal with this new situation. This flexibility in the FFS is of course highly depended on the quality of the facilitators who should be able to make instant relevant adjustments in each individual FFS. For example, an FFS in an area with drought problems should adjust its curriculum to include a variety experiment with drought tolerant varieties and should look into methods of water saving (e.g. alternate wetting and drying). This type of fine tuning an FFS curriculum is a logical procedure and should take place always (with or without climate change).⁸

The question remains whether it is useful to include special sessions or topics on climate change in the FFS curriculum. To answer this question it is necessary to ask ourselves another question: what benefit do we expect from such climate change sessions? If we include special climate change sessions in an FFS there should be more to it than just “awareness building”. Awareness building that does not lead to a desired change is rather a waste of time and can be excluded from the FFS; it can be more efficiently done by mass media (radio, TV, newspapers).

When AEC (in 2009) started piloting with a climate change session in the FFS, the idea was therefore that it should be more than “awareness creation”. A climate change session should have a measurable effect to the benefit of the farmers. The expectation was that a session on climate change may help the farmers to start thinking on how to adjust their farming methods if in the coming years their environment changes. This preparedness for future changes could be reflected in the work plan of their Farm Club, for example including more “innovation activities”, such as testing new varieties or new cropping patterns.

With a team of master trainers a special session on climate change was developed, including several role plays and exercises. This session was tested in a few FFSs. When the sessions took place, care was taken to invite a few old farmers, who could provide information on how weather patterns had changed in the last decades, and who could relate that to changes in farm practices.

The sessions were received with interest by the farmers who actively participated in discussions. Then, several months later, the same FFS (which by then had started a club) was revisited to find out if the climate change session had resulted in a clear effect. This was not the case. The farmers presented their club’s work plans but there were no indications that any considerations for an uncertain future were included in the plans. Most of these work plans were very generic work plans, probably with activities suggested by the FFS facilitators, which is often the case in younger clubs.

⁸ See also: Farmer Field Schools or Climate Field Schools? Bijlmakers (2008) which is included in Annex 6.

The climate change sessions were then tested again, but now in some farmers clubs who had already been started a year ago. But again, even though the sessions were received with enthusiasm, there was no clear effect reflected in a better work plan.

With this experience it seems not to be very useful to spend extra resources (time, money) on a separate climate change session in the FFS. Of course FFS facilitators could have some shorter discussions with the farmers about the climate, especially if the farmers have questions about it, but without spending an entire session on it.

It remains however important that farmers clubs include “innovation activities” in their work plans. The agricultural environment is always changing (e.g. fluctuations in the price of commodities, new pests or diseases, weather conditions) and farmers need to be adaptable and resilient to face an uncertain future.

If it is necessary to raise awareness of farmers on climate change (because donors want it) this should be done via the mass media.

Indicators for quality of the FFS

It is a good habit for facilitators to look back after each FFS session and reflect upon the quality of the training. Here are some questions that facilitators can use for self-evaluating a training session, and which give an indication on the quality of an FFS.

Participation

- Did at least 80% of the farmers participate in today’s session?
- Why did some farmers not attend?
- How can you get better attendance?

Training materials

- Were paper, colored crayons, plastic bags, sweep net, hand lens, materials for insect zoo available?
- What was missing?

Memory refreshing

- Did you start the FFS with a summary of last week’s session and a presentation of today’s program?
- Did you involve farmers in refreshing their memory about last week’s session?
- Were all AESA drawings of previous sessions available?
- Did farmers use these older AESA drawings to compare changes in the crop situation?

AESA and field experiments

- Did all farmers spend time in the field observing the IPM/ICM plot, the FP plot and field experiments?
- During the field observations did you ask questions about what they observe?
- Had the IPM/ICM plot been managed according to the decisions of last week's AESA?
- If not, then what went wrong?
- How can this be avoided next time?
- Did farmers collect life specimens (insects, disease symptoms, weeds) from the field for use in the AESA?
- Did 100% of the farmers participate in the AESA and analyzing the field situation?
- Did you make sure that even shy or quiet farmers participate?
- How did you do that?



A farmer leads the AESA discussion

Decision making

- Did at least 3 farmers lead discussions during the AESA presentation?
- How did you stimulate them to take the lead?
- Were 100% of the farmers involved in decision making for the IPM/ICM plot?
- Did you ask questions to keep the discussion going?
- Did you agree who is responsible for carrying out decisions?

Sharing experiences

- Did you stimulate farmers to share their experiences in response to what they learned today?
- How did you make sure that farmers are prepared to share their knowledge?
- Did you stimulate farmers to come up with questions that can be used for further learning?
- How did you respond to these questions?
- Did you use these learning opportunities?
- Did you summarize today's observations of IPM/ICM-FP plot and other field experiment plots?

Insect zoos

- Were all insect zoos maintained in good condition?
- Did 100% of the farmers observe the insect zoos?
- Did you start more insect zoos, based on field observations or questions by farmers?
- How did you make sure that all farmers share responsibilities in taking care of these insect zoos?

Facilitation method

- Did you have a group dynamics activity?
- Did the farmers enjoy it?
- Did it contribute to group building?
- Was the special topic selected by the farmers?
- Were you well prepared on that topic (materials, questions, exercises)?
- Did you agree with the farmers on time and location for next meeting?
- Are all farmers committed to this?
- Did you feel 100% satisfied about this session?
- Did you run this session as a facilitator, or did you lecture?
- Was your time management ok?
- Did the farmers enjoy learning?
- What were the problems you faced during this session?
- Make a list of "things to do" for the next FFS session!!!



Group Dynamics exercises, such as the “Water Brigade”, strengthen relationships between FFS participants

Of course the key indicator of quality is the attendance by the farmers. If farmers regularly attend the training, this is a clear sign that the training is useful to them, but only if there are no other “incentives” that attract the farmers. Therefore it is important to keep FFSs as sober as possible, without payment to farmers for attendance, without snacks, t-shirts or farm inputs, and without access to cheap credit, etc.

Indicators of success

An important indicator for the success of an ICM FFS is *increased income* for the farmers. This is accomplished by increasing the crop production and/or by reducing the cost of farm inputs. Several factors may help increase the yield, including the choice of crop varieties, better fertilizer management and better pest management. Cost of farm inputs can be reduced for example by avoiding unnecessary pesticide applications.

Another indicator for success of an ICM FFS is *improved health* of farm families. This is accomplished by increased knowledge on nutrition and by promoting fruits and vegetables in the homestead garden. Also reduced pesticide use contributes to improved health as farmers are less exposed to toxic chemicals.

Yet another indicator of success is *empowerment of farmers*. Farmers who attended an FFS, especially the women, increase their status within the community and feel more confident.

Some of these indicators are measured during the FFS by the farmers. At the beginning of the FFS season a benchmark survey is conducted to collect data on production, pesticide use and fertilizer use. These data of before the training are then compared this with their new production data during the FFS season. This allows them to calculate the economic benefit of improved farm practices.

These data, which are collected with assistance of the FFS facilitators, may be biased. They also don't give the correct picture of what happens after the FFS. Do farmers actually continue using improved farming methods in the season(s) after the training, when they are not guided (or tempted) by facilitators to do so?

Success factors

- Quality of facilitators
- Follow principles of FFS approach
- Synchronize with crop
- Monitoring and backstopping

To measure these longer-term effects of FFS training, detailed and independent impact studies are needed. Several of such studies have been conducted in the past (see References, page 63) and have confirmed that even several years after the FFS training there is still a significant difference between trained and untrained farmers. This difference is not only a better technical knowledge, but also a clear difference in farm practices with sustained higher production and lower pesticide use.

There is only limited information at the moment about the long-term effect of sessions on health and nutrition and homestead vegetable production, which generally are attended by women farmers. A detailed impact study which is going to be organized in late 2010 will be designed to include this type of information.

Empowerment of farmers is more difficult to measure and express in numbers. It can however be measured indirectly by studying the performance of farmer clubs and UNFAs.

Success factors

There are several factors that are essential for the success of large scale FFS programmes. These are:

- Develop good FFS facilitators,
- Follow the principles of the FFS approach,
- Synchronize with the crop season, and
- Provide continuous monitoring and technical backstopping by experienced master trainers

Season-long Training of Trainers courses are essential to develop high quality facilitators. Any short-cuts to the development of facilitators will compromise the quality of the

facilitators and the FFSs they organize will not have the required quality. If a facilitator has not been sufficiently trained, he/she will not be able to follow the principles of the FFS approach. The training will be top-down lecturing and will not be based on the experiential learning cycle.

A Farmer Field Schools in a crop depends entirely on the availability of all the crop stages during the training cycle. Field experiments that are conducted by farmers during the FFS have to be planned before seedbed preparation. Therefore the success of a crops FFS depends on timely planning, funding and distribution of training materials to synchronize the entire training exactly with the cropping season.

Monitoring and backstopping are another crucial factor to maintaining the quality of the FFSs. Experienced master trainers need to regularly visit the FFSs to monitor progress, provide assistance in solving problems, and provide technical guidance and support to the FFS facilitators. Information collected by MTs during these monitoring/backstopping visits is used by the Component Management Unit (CMU) of AEC for making informed management decisions and contributes to adjusting and fine-tuning of the FFS curriculum and correcting laps and gaps in the FFS programme.

Quality versus quantity

Up-scaling is good, because with more FFSs you can reach more farmers. But in the past years we have seen that up-scaling can lead to lower quality.

In the first phase of SPPS the programme had 10 master trainers to monitor and backstop 3,200 FFS with 25 participants each (80,000 farmers in 5 years). Now in AEC we have 8 master trainers and we aim at 10,800 FFS with 50 participants each (540,000 farmers in 6 years). Also for DAE field level staffs who are involved in monitoring, the number of FFSs has increased while at the same time they have an enormous workload with other Upazila activities and other projects. Consequently, the up-scaling has resulted in less monitoring and backstopping which are essential for the quality of the FFS programme.

In a large scale FFS programme sufficient resources should be made available for monitoring, technical backstopping and refresher training of facilitators. You cannot run a quality FFS programme without a number of full-time very experienced Master Trainers and a strong and sufficient large team of DAE field monitors.

Past, present and future (IPM to ICM to IFM?)

FFSs in Bangladesh have since the early 1990s gone through a long process of development. The first FFS were in crops (rice, vegetables, cotton) and have developed from a focus on IPM to a much broader Integrated Crop Management curriculum. Apart from a

comprehensive crops module the ICM FFS includes also modules on homestead activities, health and nutrition, and club formation. Most of these crop-based FFSs have been organized through the DAE, but also some NGOs (e.g. CARE and Aid Comilla) have organized this type of FFS.

More recently FFS were developed in the aquaculture and livestock sectors. These FFS include several modules such as, poultry rearing, small ruminants, beef fattening, homestead vegetable gardens, fish ponds, etc. Further development of these modules is ongoing to introduce more experiential learning in the training process. Most of the aquaculture and livestock FFS have been organized with assistance of Community Based Organization.

Bangladesh has very few specialized farmers. Most farmers grow not only rice but also grow other crops. At their homestead they grow vegetables, keep chickens or ducks, often they have one or more cow, goats or sheep, and in many cases they have access to fish ponds. Even farmers who are categorized as “landless” are often engaged in a variety of farming activities. From a farmers’ point of view it therefore makes sense to have FFSs that can deal with a wide variety of topics.

Recently several workshops have been organized to look into the possibility of stronger collaboration between the crops sector and the aquaculture and livestock sectors. Ideas of an FFS curriculum in Integrated Farm management are emerging. This would be an FFS curriculum including a variety of modules. Based on a Farm Management Analysis (FMA) and Training Needs Assessment (TNA), each FFS would include a number of modules that reflect the need of the participants.



Farmers have prepared a map of an Integrated Farm

In the development and piloting of a possible IFM FFS, AEC and RFLDC are currently collaborating with FAO and UNDP. FAO is currently starting a new World Bank funded project (ECRRP project) which has started piloting 15 IFM FFS in the Barisal region. UNDP has received DANIDA funding for an Agriculture and Food Security Project (AFSP) in the Chittagong Hill Tracts, which is also working towards an FFS curriculum that integrates the crops, aquaculture and livestock sector. AEC in collaboration with RFLDC Noakhali is piloting 28 IFM FFS in the Noakhali area.

It is too early to predict if IFM FFS are the future for Bangladesh. While it seems a logical step, it is also possible that implementation of FFS with such an integrated curriculum turns out to be too difficult to be practical. Combining crops, livestock and aquaculture in one curriculum is not only a technical, but even more an organizational challenge. Pilot FFS will be needed to learn how different ministries, departments and community based organizations can work together on Integrated Farm Management. Depending on the outcome of these pilot FFSs, decisions can be made on how to continue with the development and implementation of FFSs in Bangladesh.

References

Some publications and documents for background reading

- Berg, Henk van den, 2004. IPM Farmer Field Schools: A synthesis of 25 impact evaluations. Global IPM Facility.
- Bijlmakers, H. (ed.), 2005. IPM Farmer Field Schools: Refresh your memory. DANIDA, Bangkok, Thailand.
 - o http://thailand.ipm-info.org/farmerfieldschools/00_contents_ffs.htm
- Bijlmakers, H. and Muhammad Ashraf Islam, 2007. Changing the strategies of Farmer Field Schools in Bangladesh. LEISA Magazine, vol. 23 no. 4.
 - o <http://ileia.leisa.info/index.php>
- Bijlmakers, H., 2009. Farmer Field Schools or Climate Field Schools
- Callens, K. and K. Gallagher, 2003. Incorporating nutrition in Farmer Field Schools. Food, Nutrition and Agriculture no. 32. FAO, Rome, Italy.
- Gallagher, K., 2003. Fundamental elements of a Farmer Field School. LEISA Magazine, vol. 19 no.1.
 - o <http://ileia.leisa.info/index.php>
- John Pontius, Russell Dilts & Andrew Bartlett, 2000. From Farmer Field Schools to Community IPM: Ten Years of IPM Training in Asia.
 - o <http://www.communityipm.org/downloads.html>
- Regional Fisheries and Livestock Development Project, February 2010. Guideline on the Process of Development and Implementation of Farmer Field School (FFS) under RFLDC Noakhali.

- Consolidating Extension in the Lao PDR. Part 1: The Global Evolution of Extension (pp. 1-29). National Agricultural and Forestry Extension Service (NAFES) with support from the Laos Extension for Agriculture Project (LEAP), 2005.
 - o <http://www.laolink.org/reading-materials.htm>

FFS impact reports during SPPS-1 (1997-2002)

- Impact of IPM activities in Rice during T.Aman 1998 season in Bangladesh. Feb 1999. SPPS Report 17.
- Farmer Field Schools: Impact of IPM activities in vegetables during the Summer 1998 season in Bangladesh. April 1999. SPPS Report 20.
- Farmer Field Schools: Impact of IPM activities in vegetables during the Winter 1998/99 season in Bangladesh. June 1999. SPPS Report 26.
- Sustainability and Impact of IPM Training in Bangladesh. November 1999. SPPS Report 29.
- Impact of IPM activities in Rice during Boro and T.Aman 1999. Feb 2000. SPPS Report 32.
- Sustainability and Impact of IPM Training in Bangladesh - One year after the Farmer Field School. April 2001. SPPS Report 48.
- Impact study FFS Boro 2000. May 2001. SPPS Report 54
- Impact study FFS T.Aman 2000. May 2001. SPPS Report 55
- Impact FFS Winter 2000/2001. June 2001. SPPS Report 56
- Report of the Evaluation Mission of IPM Projects in Bangladesh. FAO, BGD/95/003. November 2000.

FFS impact reports during SPPS-2 (2002-2006)

- Larsen et al (2002a). Impact, sustainability and lateral spread of IPM in rice in Bangladesh
- Larsen et al (2002b). Impact, sustainability and lateral spread of IPM in vegetables in Bangladesh
- Syed Nurul Alam et al, (2004). Impact Assessment of Training in vegetable IPM of DAE DANIDA SPPS Project Phase II.
- Rafiqul Islam et al (2004) Impact of the IPM training of Farmers during Boro 2003 (Component of Strengthening Plant Protection Services)
- Laurence, Alida. October 2006. Assessment of the impact of SPPS component activities in Integrated Pest Management.

Surveys conducted by AEC (2006-2010)

- Nutritional Baseline Survey Final Report. AEC report. September 2007.
- Midterm Impact Assessment of the Agricultural Extension Component of the Agriculture Sector Program Support phase 2.
 - o Part 1 - Report on the farmer trainer survey. June 2009.
 - o Part 2 - Report on the departmental trainer survey. June 2009.
 - o Part 3 - Report on the farmer survey. June 2009.

Annexes

- Annex 1: The Global Evolution of Extension.
- Annex 2: FFS ICM curriculum (version 2010)
- Annex 3: Complete list of FFS materials (2010)
- Annex 4: Sample program of a Review and Planning Workshop
- Annex 5: A set of forms used for ICM FFS, Farmers Club and UNFA
- Annex 6: FFS or Climate Field Schools

Annex 1: The Global Evolution of Extension.

Part 1 (pp. 1-29) of Consolidating Extension in the Lao PDR. National Agricultural and Forestry Extension Service (NAFES) with support from the Laos Extension for Agriculture Project (LEAP), 2005.

Part 1: The Global Evolution of Extension



1.1 An Introduction to Extension

1.1.1 *The underlying concept*

In almost every country of the world there are organisations carrying out activities that could be called 'extension'. Rarely, however, are these organisations doing the same thing. This raises a fundamental question: *what is extension?*

Despite all of the differences, extension organisations and programmes have some common features that makes it possible to identify an underlying concept. In the broadest of terms ...

... extension is a system of communication that is designed to affect the knowledge of rural people in a manner that supports the achievement of development policies.

In the context of extension, 'communication' refers to the flow of information and ideas, not the transportation of people or materials. People naturally communicate with each other, but these activities cannot be described as 'extension' unless they are part of a system that is planned and managed to achieve certain ends.

Extension systems have a number of components including goals, strategies and activities. Typical goals include increasing food production, improving the management of natural resources, and strengthening community development. Strategies include commodity-oriented extension, research-based extension and the Training and Visit system. The most common activities are training sessions, advisory meetings, demonstrations and the use of mass media.

1.1.2 *Terminology*

The term 'extension' was first used to describe adult education programmes in England in the second half of the 19th Century; these programmes helped to expand – or *extend* - the work of Universities beyond the campus and into the neighbouring community. The term was later adopted in the United States of America, while in Britain it was replaced with 'advisory service' in the 20th

Century. A number of other terms are used in different parts of the world to describe the same – or a similar – concept:

Dutch:	Voorlichting (“lighting the path”)
German:	Beratung (“advisory work”)
French:	Vulgarisation (“simplification”)
Spanish:	Capacitacion (“improving skills”)
Lao, Thai:	Song-Suem (“to promote”)

In this document, the term ‘extension approach’ is used in the general sense of *a way of implementing extension activities*. Other terms used in this document have more precise meanings:

- ‘Extension paradigms’ are alternative visions of the purpose of extension, distinguished by how and why the communication process takes place (see 1.1.4)
- ‘Extension Systems’ are complete sets of organisational components, including goals, structures, human resources, procedures, subject matter and activities (see 1.1.6)
- ‘Extension strategies’ are patterns of activity that characterise certain systems (see 1.2)

1.1.3 Definitions

There is no widely accepted definition of extension. The ten examples given below are taken from a number of books on extension published over a period of more than 50 years (references are at the end of this document):

1949: *The central task of extension is to help rural families help themselves by applying science, whether physical or social, to the daily routines of farming, homemaking, and family and community living*¹

1965: *Agricultural extension has been described as a system of out-of-school education for rural people.*²

1966: *Extension personnel have the task of bringing scientific knowledge to farm families in the farms and homes. The object of the task is to improve the efficiency of agriculture*³

1973: *Extension is a service or system which assists farm people, through educational procedures, in improving farming methods and techniques, increasing production efficiency and income, bettering their levels of living and lifting social and educational standards*⁴

1974: *Extension involves the conscious use of communication of information to help people form sound opinions and make good decisions*⁵

1982: *Agricultural Extension: Assistance to farmers to help them identify and analyse their production problems and become aware of the opportunities for improvement*⁶

1988: *Extension is a professional communication intervention deployed by an institution to induce change in voluntary behaviours with a presumed public or collective utility*⁷

1997: *Extension [is] the organized exchange of information and the purposive transfer of skills*⁸

1999: *The essence of agricultural extension is to facilitate interplay and nurture synergies within a total information system involving agricultural research, agricultural education and a vast complex of information-providing businesses*⁹

2004: *Extension [is] a series of embedded communicative interventions that are meant, among others, to develop and/or induce innovations which supposedly help to resolve (usually multi-actor) problematic situations*¹⁰

1.1.4 Different extension paradigms

The definitions given above include a large number of ideas, not all of which are consistent with each other. This diversity suggests that the broad concept of extension encompasses more than one vision about what these extension systems *are* doing, or *should be* doing. Four distinct visions, or *paradigms*, can be identified by examining the communication processes that occur within those systems that have been given the name of extension. In particular, two issues need to be looked at: *how* communication take place, and *why* it take place.

a) How communication takes place in an extension system: paternalism versus participation

Early books on extension often describe a model of communication that involved the transmission of messages from 'senders' to 'receivers'. As part of this model, senders are usually people in authority, such as government planners, researchers, and extension staff, while receivers are usually farmers who are relatively poor and uneducated. Although this model might include something called 'feedback', it is clear that the flow of information from senders to receivers is expected to be far more influential than anything going the other way. Senders are in control of the communication process, and the purpose of feedback is to allow the sender to be more effective in formulating and transmitting messages.

The transmission model of communication is closely related to the idea that extension workers are the link (i.e. message carriers) between researchers (senders) and farmers (receivers). Extension programmes based on this model has been described as 'paternalistic'; in other words, the actors in the

communication process have a parent/child or teacher/student relationship. Other authors have used the term 'top-down' to describe these programmes.

In many countries, paternalistic extension is gradually being replaced by more participatory approaches, in which the knowledge and opinions of farmers is considered to be just as important as that of researchers or government officials. Participatory approaches involve information-sharing and joint decision-making. The terms 'interactive' and 'bottom-up' have been used to describe these approaches.

The development of participatory extension requires a re-examination of the communication process. At the present time, no single description has replaced the transmission model that is referred to above, but two ideas are becoming widely accepted:

- Communication in the context of participatory extension cannot usefully be described in a linear manner with distinct groups of senders and receivers. Instead, extension activities take place within a *knowledge system* consisting of many actors who play different roles at different times.
- Although some actors in the knowledge system have more authority than others, communication usually involves a *negotiation* rather than a transmission. What takes place is a dialogue, with actors collaborating in the construction of shared meanings rather than simply exchanging information.

b) Why communication takes place: persuasion versus education

Although extension programmes have many different goals, most programmes fall into one of two basic categories:

- systems of communication that aim to change the behaviour of rural people;
- systems of communication that aim to change the knowledge of rural people.

There is, of course, a close relationship between knowledge and behaviour; changes in the former often lead to a change in the latter. But the difference between these two categories is found in the answer to a fundamental question: *who decides?* Who decides what practices rural people should adopt? Who decides what technology they should use, and how they use it? Who decides the manner in which they cooperate with each other and the schedule of their activities?

If the answer to these questions is 'government policy-makers' or 'project managers' or 'researchers', then the purpose of extension is to change behaviour. This approach to extension has been variously described as 'directive extension', 'social marketing' and 'propaganda'.

If the answer is 'farmers' or 'rural people' or 'local men and women', then the purpose of extension is changing knowledge. This knowledge helps rural

people make *their own* decisions regarding farming practices. This approach to extension is closely related to 'non-formal education' and 'conscientization'.

c) Four paradigms, with examples

Any particular extension system can be described both in terms of *how* communication takes place and *why* it takes place. It is not the case that paternalistic systems are always persuasive, nor is it the case that participatory projects are necessarily educational. Instead there are four possible combinations, each of which represents a different extension paradigm, as follows:

- Technology Transfer (persuasive+paternalistic). This paradigm was prevalent in colonial times, and reappeared in the 1970's and 1980's when the Training and Visit system was established across Asia. Technology transfer involves a top-down approach that delivers specific recommendations to farmers about the practices they should adopt.
- Advisory work (persuasive+participatory). This paradigm can be seen today where government organisations or private consulting companies respond to farmers enquiries with technical prescriptions. It also takes the form of projects managed by donor agencies and NGOs that use participatory approaches to promote pre-determined packages of technology.
- Human Resource Development (educational+paternalistic). This paradigm dominated the earliest days of extension in Europe and North America, when universities gave training to rural people who were too poor to attend full-time courses. It continues today in the outreach activities of colleges around the world. Top-down teaching methods are employed, but students are expected to make their own decisions about how to use the knowledge they acquire.
- Facilitation for empowerment (educational+participatory). This paradigm involves methods such as experiential learning and farmer-to-farmer exchanges. Knowledge is gained through interactive processes and the participants are encouraged to make their own decisions. The best known examples in Asia are projects that use Farmer Field Schools (FFS) or Participatory Technology Development (PTD).

It must be noted that there is some disagreement about whether or not the concept and name of 'extension' really encompasses all four paradigms. Some experts believe that the term should be restricted to persuasive approaches, while others believe it should only be used for educational activities. And some people have argued that the terms 'extension' and 'participation' are contradictory¹¹. There are philosophical reasons behind these disagreements. From a practical point of view, however, communication processes that conform to each of these four paradigms are currently being organized under the name of extension in one part of the world or another. Pragmatically, if not ideologically, all of these activities *are* extension.

1.1.5 Historical development

a) Origins of extension

Men and women have been growing crops and raising livestock for approximately 10,000 years. Throughout this period, farmers have continually adapted their technology, assessed the results, and shared what they have learned with other members of the community. Most of this communication has taken the form of verbal explanations and practical demonstrations, but some information took a more durable form as soon as systems of writing were developed. Details of agricultural practices have been found in records from ancient Mesopotamia, Egypt and China going back more than 3,000 years.

It is not known where or when the first extension activities took place. It is known, however, that Chinese officials were creating agricultural policies, documenting practical knowledge, and disseminating advice to farmers *at least 2,000 years ago*. For example, in approximately 800 BC, the minister responsible for agriculture under one of the Chou Emperors organized the teaching of crop rotation and drainage to farmers. The minister also leased equipment to farmers, built grain stores and supplied free food during times of famine¹².

The birth of the modern extension service has been attributed to events that took place in Ireland in the middle of the 19th Century¹³. Between 1845-51 the Irish potato crop was destroyed by fungal diseases and a severe famine occurred. The British Government arranged for 'practical instructors' to travel to rural areas and teach small farmer how to cultivate alternative crops. This scheme attracted the attention of government officials in Germany, who organized their own system of traveling instructors. By the end of the 19th century, the idea had spread to Denmark, Netherlands, Italy, and France.

The term 'university extension' was first used by the Universities of Cambridge and Oxford in 1867 to describe teaching activities that *extended* the work of the institution beyond the campus. Most of these early activities were not, however, related to agriculture. It was not until the beginning of the 20th century, when colleges in the United States started conducting demonstrations at agricultural shows and giving lectures to farmer's clubs, that the term 'extension service' was applied to the type of work that we now recognize by that name.

b) Four generations of extension in Asia

The development of extension services in modern Asia has differed from country to country. Despite the variations, it is possible to identify a general sequence of four periods or 'generations':

Colonial agriculture: Experimental stations were established in many Asian countries by the colonial powers. The focus of attention was usually on export

crops such as rubber, tea, cotton and sugar. Technical advice was provided to plantation managers and large landowners. Assistance to small farmers who grew subsistence crops was rare, except in times of crisis.

Diverse top-down extension. After independence, commodity-based extension services emerged from the remnants of the colonial system, with production targets established as part of 5-year development plans. In addition, various schemes were initiated to meet the needs of small farmers, with support from foreign donors.

Unified top-down extension. During the 1970's and '80's, the Training and Visit system was introduced by the World Bank. Existing organizations were merged into a single national service. Regular messages were delivered to groups of farmers, promoting the adoption of 'green revolution' technologies.

Diverse bottom-up extension. When World Bank funding came to an end, the T&V system collapsed in many countries, leaving behind a patchwork of programmes and projects funded from various other sources. The decline of central planning, combined with a growing concern for sustainability and equity, has resulted in participatory methods gradually replacing top-down approaches.

The fourth generation is well established in some countries, while it has only just begun in other places. While it seems likely that participatory approaches will continue to spread in the next few years, it is impossible to predict the long-term future of extension. Compared to 20 years ago, agricultural extension now receives considerably less support from donor agencies. Among academics working in this field, some have recently argued that agricultural extension "needs to be reinvented as a professional practice"¹⁰. Other authors have abandoned the idea of extension as a distinct concept, and prefer to think in terms of 'knowledge systems' in which farmers are seen as experts rather than adopters¹⁴

1.1.6 Components of an extension system

A 'system' is a set of interrelated components that work in a unified manner. The components of an extension system usually consist of the following:

- Goals and objectives: These are agreements regarding what the system, or parts of the system, aims to achieve. These agreements are usually in the form of written statements. Goals are generally broader in scope than objectives.
- Programmes and projects: These terms refer to an approved series of activities aimed at the achievement of specific objectives within a pre-determined timeframe. Projects are generally shorter and/or narrower in scope than programmes.
- Human resources: the people who are engaged in the activities carried out in the system, and the qualifications and capabilities they possess

This usually refers to the staff of extension organisations and projects, but can also include participating farmers.

- Organisational structures: the arrangement of staff, including titles, levels of authority, precise responsibilities, and linkages.
- Planning and management procedures: the approved sequence of steps that are taken to make decisions, coordinate and organise activities.
- Financial mechanisms: sources of funds, cost-sharing arrangements, and procedures for making expenditures.
- Strategies: patterns of activity, or combinations of methods, that are designed to bring about the achievement of goals.
- Extension methods: categories of activity, distinguished by the manner in which communication takes place (e.g. the scale of the activity and the materials that are used).
- Activities: specific efforts undertaken by particular people in accordance with a certain method.
- Subject matter: the informational content of activities; the topics that are included and/or the technologies that are the focus of the activity.

1.1.7 Typical goals

Goals are the starting point for the planning and management of extension. They exist at a number of levels: national development policies, local government plans and project objectives. Below are some typical policy level goals for agricultural or forestry extension:

Sector	Policy
Agriculture and Food Production	• improve national food security
	• produce inputs for industry
	• reduce imports / improve trade balance
Natural Resource Management	• enhance sustainability of production
	• reduce conflicts among resource users
	• conserve biodiversity / prevent disasters
Community Development	• improve welfare of rural people
	• expand employment opportunities
	• create self-reliance / organisational development

There is a close relationship between the extension paradigms described in section 1.1.4 above, and the goals that are formulated by governments or donor agencies. Both the paradigm and the precise goals are a reflection of how these organisations view their own role and that of rural people.

Persuasive approaches to extension are often linked to goals that emphasise medium-term production targets. For example, when a Government decides that it will increase rice production by a certain percentage over the next five

years, the task of extension could be to transfer the technology that researchers think will achieve those targets. When goals are broader or longer term, extension is likely to give less emphasis to persuasion and more to education. For example, when a Government decides to promote diversified sustainable agriculture, the task of extension might be to help farmers develop the ability to analyse constraints and opportunities, and make their own decisions about what to grow and how to grow it.

1.2 Extension strategies

1.2.1 Overview

This section takes a closer look at how extension activities are organised in order to achieve the agreed goals.

In most countries there is at least one Government Department with the primary function of organising extension services to rural people. In some cases there are a number of Departments that have separate mandates for agricultural extension, livestock extension, and fisheries extension. In addition, other institutions, such as universities, research stations and NGOs, often carry out extension activities as a secondary function.

Whether it is a primary or secondary function, extension work sometimes takes the form of routine activities, that are carried out with little variation from area to area and year to year, while in other cases it is organised in the form of programmes and projects that have precise objectives and a pre-determined timeframe.

It has already been noted that extension institutions and programmes are highly diverse, but it is possible to identify a limited number of strategies that are being followed. These strategies, or patterns of activity, are summarised below.

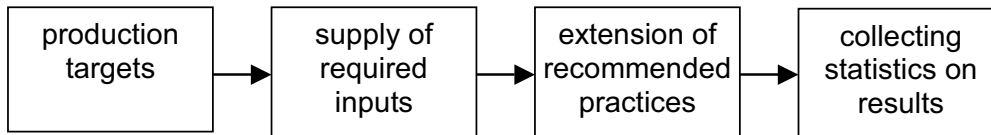
1.2.2 General agricultural support services

This strategy was commonly used by Ministries of Agriculture prior to the introduction of the Training and Visit system. At that time, Governments often employed multi-functional field workers who carried out extension activities *and* performed a number of other duties, including:

- supplying inputs such as credit, seeds, and chemicals;
- providing services such as livestock vaccinations and soil tests;
- organising groups such as cooperatives and water users associations;
- regulatory work such as plant quarantine and supervision of markets;
- collecting and compiling statistics on land use, production etc.

- acting as a general channel of communication between the Government and rural people (e.g. announcing elections, health campaigns)

This was a reasonable strategy to adopt when: a) the goal was to increase production through the transfer of technology, and b) activities were being carried out in areas that were difficult to reach or where there was limited private sector activity. In particular, this strategy involved a planned link between four things:



This strategy had a number of weaknesses. Firstly, in many countries the Government was not very efficient at supplying inputs; farmers complained of poor quality, late delivery and corruption by officials. Furthermore, because inputs were often subsidised, this strategy prevented the development of a private sector that might do a better job.

Another problem with this strategy was that multi-functional staff spent only a small amount of time on educational activities, with the result that very few farmers – usually the richer ones - were able to get any advice. When advice was available, it took the form of recommendations about the inputs that should be used, and rarely helped farmers to develop the ability to carry out their own analysis of problems and opportunities.

1.2.3 Commodity-oriented extension

Commodity-oriented extension combines the features of a support service with a focus on a single crop. This strategy is most commonly used for export crops such as rubber, tea, cotton, sugar, and jute.

Two particular features of this strategy can be noted. Firstly, commodity-oriented extension is often part of *contract farming*. This involves farmers signing an agreement with a government purchasing body, a processing company or - more recently - a large retailer such as a supermarket chain. Under the contract, the farmer is supplied with inputs (often on a credit basis) and is guaranteed a certain price by the buyer. The farmer must use the varieties and techniques that are prescribed by the buyer, and is not allowed to sell to another organisation. Contract farming has been used by sugar mills in Asia for more than 100 years. In recent years the system has become common in the poultry sector, and there are signs that it may also become important in the production of vegetables (something that has already happened in Europe).

A second notable feature about commodity-oriented extension is that it often involves a close link with research. Varieties and techniques are developed and tested by the same organisation that provides inputs and advice.

Consequently, the technical quality of information given to farmers is often very high, although it is focussed on a narrow range of topics that are considered important by the purchasing body.

Contract farming and commodity-oriented extension is often highly productive, and farmers can benefit from the financial security that comes from guaranteed prices. But two problems sometimes occur:

- Farmers lose all decision-making power, becoming little more than labourers on their own land;
- The profits of producers are squeezed by monopolistic or oligopolistic buyers, and farmers become permanently indebted.

1.2.4 Advisory services

Unlike the previous two strategies, advisory services focus on the provision of information rather than other inputs such as credit and chemicals. In some cases, advice is given to individual farmers, while in other cases it is channelled through groups.

Advisory services are prevalent in Europe. These services were often started by the Government, but some have been privatised in recent years. In addition, specialised consulting companies have been launched to serve the interests of particular types of producer (e.g. greenhouse farmers, dairy farmers). Consequently, many European farmers now pay for information, just like they pay for other inputs. This information covers a range of technical, financial and regulatory issues, and is selected by highly-trained advisors in response to the requests made by the farmers.

A different approach to advisory work is often carried out as part of development projects in Asia. Many projects use participatory approaches to promote certain techniques, such as compost-making, mushroom cultivation, fish raising, poultry vaccination, and so on. While these projects may appear to be a type of community development (see section 1.2.6 below), the solutions to problems faced by members of the community have been decided in advance by outsiders. It is the role of these outsiders, as experts rather than facilitators, that makes this type of extension similar to that which occurs in Europe.

In both cases, a high level of interaction between farmers and their advisors can ensure that information is relevant to local needs. Nevertheless, the interaction usually gives farmers the answers to immediate problems, rather than contributing to the development of a lasting ability to solve problems for themselves. In this way, advisory services can result in a *dependency* between rural people and outside advisors, with the former remaining clients rather than becoming experts themselves.

1.2.5 Training and Visit

Starting in 1975, the Training and Visit System soon became the dominant strategy for agricultural extension in South and South-East Asia. It was designed to address the weaknesses of support services that existed at the time, including:

- fragmentation of services (many organisations were involved in extension)
- dilution of efforts (extension staff had many duties to perform)
- absence of systematic planning and management (activities were carried out on an *ad hoc* basis)
- poor coverage of the extension service (not enough field workers, and weak supervision)
- low status and weak knowledge of field workers (they were badly trained and rarely updated with new ideas)

With funding from the World Bank, a new system was created by merging various extension organisations, increasing the number of staff, investing in training facilities, and adopting a blueprint for field activities.

This blueprint involved a schedule of activities that was repeated every two weeks. The schedule started with a training session at which Subject Matter Specialists (SMS) taught field workers the *recommendations* for that fortnight. In the days that followed, the field workers would visit between 6 and 8 groups of *contact farmers* where the latest recommendations would be delivered. These groups, each consisting of approximately 10 farmers, were expected to pass the recommendations to other farmers in their community.

There has been considerable debate about the advantages and disadvantages of the Training and Visit System. The World Bank claims that the system was far more efficient than earlier extension services, and that it made a major contribution to increases in crop production in many parts of Asia. Opponents argue that the system only benefited rich farmers who could afford to adopt *green revolution* technologies (particularly new cereal varieties and chemical inputs). One point of agreement is that the cost of running the system was unsustainable. When World Bank projects came to an end, the T&V system was severely modified, or it completely collapsed.

Section 1.3.1 provides a closer look at some important issues relating to the Training and Visit system.

1.2.6 Community development

Community development differs from the strategies described above in that it involves rural people in making their own decisions and organising their own activities. Self-reliance, as opposed to dependence on outside experts, is

usually a goal of community development programmes. Other important features of this strategy are

- efforts are often made to involve all members of the community: men and women, young and old, land-owners and tenants.
- the needs of the community are examined in an *holistic* manner, with the result that agricultural activities might be combined with efforts to combat illiteracy, improve rural infrastructure, tackle health problems etc.
- local government institutions, such as village development committees and sub-district offices of the government, usually play an important role in community development. These institutions are often bypassed by other strategies

As part of a community development programmes, extension activities have three important characteristics. Firstly, subject matter is selected in response to needs that have been identified by the community. Secondly, methods are used that enhance capability (such as skills training) rather than simply disseminate information. Thirdly, collective action is encouraged, rather than individual efforts to solve problems.

This strategy can have a sustainable impact on the livelihoods of rural people, and benefit groups that are neglected by other strategies. A major disadvantage, however, is the difficulty of *scaling up*. Success stories are often limited to a few villages or a particular district. This is because effective community development requires skilled facilitators who are able to work closely with a community over a long period of time. These facilitators must be able to operate in a responsive manner *and* receive specialist back-up when it is required. Bureaucratic structures in government and foreign agencies are often a constraint to the flexibility that is required.

1.2.7 Research-based extension

In most countries, agricultural research and extension is the responsibility of separate organisations. This has often led to a number of interrelated problems:

- lack of consensus on priorities for agricultural development
- A weak flow of technical information, particularly in response to field problems;
- conflicting advice being given to farmers;
- the development of technologies that are effective on research stations but which are not appropriate under normal farming conditions;
- recommendations being made by extension workers that have not been properly tested.

A number of approaches have been adopted to overcome these problems. In some cases there is a coordinating unit or committee that maintains a close link between agricultural research and extension. In other cases, extension

departments have carried out their own *adaptive research*. A third case involves research institutions conducting their own extension activities or *outreach programmes*.

Where research-based extension has been organised, three methods have been commonly used: publications, field days, and demonstrations plots. Whatever the method, the information that is extended to farmers by researchers is often highly technical, and focussed on a single issue (e.g. yield comparison of selected varieties, control of a certain pests or diseases). In the past, researchers have often neglected social, economic and environmental issues. This has changed to some extent with the growth of *farming systems research and extension* (FSR/E).

1.2.8 University-based extension

This strategy has been used in parts of Europe and North America for more than 100 years, and has been adopted by some educational institutions in Asia. There are universities in India, for example, with training centres on campus that give short courses to farmers and rural youth.

The most famous example of university-based extension is the system of *land-grant colleges and universities* in the United States of America. There are currently more than 100 of these institutions, with campuses in each State. These institutions receive government funding for educational activities aimed at working people, and agriculture is one of the major subjects that is covered. Just like universities anywhere else in the world, the land-grant institutions organise degree courses on campus, but they also manage most of the extension services in the USA.

Governments can save money by having one set of facilities and human resources that are responsible for both higher education and extension. One difficulty with this strategy is, however, the setting of goals. Which Ministry, Education or Agriculture, will make decisions about the objectives of extension programmes, or will the University decide for itself?

Another disadvantage with university-based extension is that the same subject matter and educational methods is sometimes used for degree students *and* rural people, which is often not appropriate to the needs and interests of farmers.

1.2.9 Extension projects

It has already been mentioned that a project is an “approved series of activities aimed at the achievement of specific objectives within a pre-determined timeframe”. Projects are often carried out in combination with other strategies. For example, a government might use its own resources to implement a number of projects within the framework of an agricultural

support service. Or NGOs might implement projects using a community development strategy.

The advantage of organizing extension work on the basis of projects is that this strategy focuses attention on particular problems, groups of people and/or geographical areas. By establishing precise objectives, and concentrating efforts on achieving those objectives, extension organizations can produce greater benefits than when they are operating in a routine manner. The disadvantage, however, is that the benefits only apply to the people or areas covered by the project, and they are not always sustained once the project has been completed.

A particular type of project that must be mentioned is the *extension campaign*. Campaigns employ a combination of methods to deliver specific *messages* to a precisely defined *target audience*. Campaigns are a feature of the transfer of technology paradigm, and they use techniques borrowed from marketing and propaganda. They usually involve an analysis of the knowledge, attitudes and practices (KAP) of the audience, the *pre-testing* of materials, and the measurement of *adoption rates*.

1.3 Major trends in extension during the last 25 years

1.3.1 *The rise and fall of the Training and Visit System (T&V)*

Originally designed by an Israeli expert called Daniel Benor, the Training and Visit system was first implemented in Turkey in 1967. Ten years later the World Bank had launched the first big T&V projects in India and published the first handbook for the system. By 1984 the system was operating in 40 countries, and by 1992 the World Bank had disbursed more than \$3 billion through 512 T&V projects. The main features of the system are summarised in section 1.2.5 above.

The T&V system had its critics from the start, but by the mid 1990's a leading academic was able to write "without a doubt, the T&V system is now widely considered as ineffective"¹⁵. For many years the World Bank continued to claim that the system was generating considerable benefits, although it might need to be modified or allowed to 'evolve'¹⁶. By the end of the '90's, however, the Bank's own staff were re-examining the results of T&V projects that had previously been considered success stories, and they were admitting that the system had been "ineffective, inefficient and unsustainable"¹⁷.

The rise and the fall of the T&V system is explained partly by the underlying philosophy of the system, which is rooted in the transfer of technology paradigm, and partly by the practical difficulties of implementing the system.

In the 1960's and 70's, many Governments and donors thought that agricultural development could be brought about by means of *planned innovation*, and that top-down methods were necessary to bring about the

required changes in the behaviour of rural people. It was believed that *progressive farmers* would lead the way, and that extension should focus on delivering recommendations to this group of people. This philosophy went out of fashion in many countries during the 1980's and 90's, particularly among the major donors, and has been replaced with a more pluralistic approach to agricultural development that involves a mixture of privatisation and poverty alleviation.

Among the practical difficulties faced by T&V was the problem of providing farmers with a steady stream of relevant and useful messages. Because the system operated in a top-down manner, it could only deliver general recommendations (e.g. "plant variety IR36", "use 50kg of nitrogen fertiliser per hectare", "spray methyl parathion to control stem borers"). Not only were these recommendations frequently inappropriate, cheaper methods for delivering this type of information were available, such as radio. And once a certain number of farmers had adopted the recommended practices, there was no further need to repeat the messages. What was needed instead was location-specific advice about complex issues (e.g. animal nutrition, soil conservation, agro-forestry, integrated pest management), but the T&V system was not designed to respond to these needs.

The T&V system has also been criticised for the way in which the blueprint ignored local knowledge systems and social realities, including the important roles that are played by women, and the interests of specific groups such as tenant farmers and ethnic minorities. Contact farmers in the T&V system were almost always men, they usually owned irrigated land, and they had better access to inputs and credits. The system did not promote collective action as a solution to agricultural problems, and there is little evidence to suggest that contact farmers passed information onto *secondary adopters* other than members of their own families. Consequently, the T&V system, like many of the extension services before it, often reinforced the disparities that exist in rural society and did nothing to address the causes of poverty.

1.3.2 The development of participatory approaches

Although participatory approaches to extension existed prior to the advent of the Training and Visit System, the philosophical and practical failings of World Bank projects during the 70's and 80's encouraged a number of experts to develop new approaches that were fundamentally different from the transfer of technology paradigm. Three approaches that have been implemented in various parts of Asia during the last decade are summarised below.

a) Rapid Rural Appraisal (RRA) and related techniques

In the early 1980's, a number of experts were seeking ways of collecting information from rural people that overcame both the reductionism of formal surveys, and the biases of typical field visits. In 1983, Robert Chambers called these new techniques 'Rapid Rural Appraisal'. A few years later, in 1987, an international conference was held in Thailand to share experiences relating to RRA. This was followed by a rapid growth in the development of methods that

involved rural people in examining their own problems, setting their own goals, and monitoring their own achievements. By the mid 1990's, the term RRA had been replaced by a number of other terms including 'Participatory Rural Appraisal (PRA)' and 'Participatory Learning and Action' (PLA).

Hundreds of participatory techniques and tools have been described in a variety of books and newsletters, or taught at training courses around the world^{18,19}. These techniques can be divided into four categories:

- *Group dynamics*, e.g. learning contracts, role reversals, feedback sessions
- *Sampling*, e.g. transect walks, wealth ranking, social mapping
- *Interviewing*, e.g. focus group discussions, semi-structured interviews, triangulation
- *Visualization* e.g. venn diagrams, matrix scoring, timelines

A key idea that has accompanied the development of PRA techniques is that of a *new professionalism*, based on the participatory+educational paradigm. Robert Chambers has explained this as follows:

"The central thrusts of the [new] paradigm ... are decentralization and empowerment. Decentralization means that resources and discretion are devolved, turning back the inward and upward flows of resources and people. Empowerment means that people, especially poorer people, are enabled to take more control over their lives, and secure a better livelihood with ownership and control of productive assets as one key element. Decentralization and empowerment enable local people to exploit the diverse complexities of their own conditions, and to adapt to rapid change"²⁰.

b) Participatory Technology Development (PTD)

From the many participatory techniques that were developed during the 1980's, a process emerged that has been called Participatory Technology Development (PTD). One of the leading authorities on this process is the Institute for Low External Input Agriculture (ILEIA) based in the Netherlands.

ILEIA has described PTD as "a process between local communities and outside facilitators which involves:

- gaining a joint understanding of the main characteristics and changes of that particular agro-ecological system;
- defining priority problems;
- experimenting locally with a variety of options derived both from indigenous knowledge ... and from formal science, and
- enhancing farmer's experimental capacities and farmer-to-farmer communication"²¹.

The 'outside facilitators' who participate in PTD are usually researchers, sometimes consisting of a team that includes both agricultural scientists and

social scientists. While PTD is closely linked to research, it crosses the boundary into extension because it involves learning activities with farmers. This blurring of the distinction between different institutions and disciplines is one of the characteristic of participatory approaches.

c) Farmer Field Schools

The Farmer Field School (FFS) is a group-based learning process. It was designed in 1989 by experts working for the UN Food and Agriculture Organisation (FAO) in Indonesia. The original purpose was to help farmers develop the ability to carry out Integrated Pest Management (IPM) as an alternative to the indiscriminate use of pesticides. The success of the FFS in Indonesia led to the spread of the methodology to other countries. By the end of the 90's more than two million farmers across Asia had participated in these activities. Programmes based on the FFS have been organized by a variety of Government Departments (Agricultural Extension, Crop Protection, Adult Education) with funds from a number of donors, government budgets, and – in some cases – resources provided by farmers themselves²².

During an FFS, farmers participate in an *experiential learning* process that helps them to understand the ecology of their rice fields. This process involves experiments, field observations and group analysis. Weekly sessions are conducted throughout the cropping season (from planting to harvest). Originally, these sessions were facilitated by government field staff who had completed a full season of field-based training, but from the mid 1990's an increasing number of FFS have been facilitated by farmers who train other farmers.

Although the first FFS were designed to promote IPM, the goal of community empowerment has become increasingly important. This is possible because the FFS curriculum was built on the assumption that farmers could only implement IPM once they had acquired the ability to carry out their own analysis, make their own decisions and organise their own activities. Many farmers continue to hold meetings and carry out experiments after the FFS has been completed, and some are involved in information-sharing and advocacy that reaches beyond their community.

d) Types of participation

The three approaches that are described above - RRA, PTD and the FFS - have similar goals and involve similar techniques. Nevertheless, the term 'participation' continues to be a source of misunderstanding in extension programmes. Some extension workers may believe that farmers participate in meetings simply by attending, while others feel that it is necessary for farmers to set the agenda and make the decisions before the term can be used properly.

As part of the management of participatory approaches, it is useful to make a clear distinction between different levels or 'types' of participation. One possible typology has been developed by Jules Pretty:

A typology of participation (after Pretty, 1994²³)

<i>Type</i>	<i>Characteristics</i>
1. Passive Participation	People participate by being told what is going to happen or has already happened.
2. Participation in Information Giving	People participate by answering questions posed by extractive researches using questionnaire surveys or similar approaches.
3. Participation by Consultation	People participate by being consulted, and external agents listen to views. These external agents define both problems and solutions and may modify these in the light of people's responses.
4. Participation for Material Incentive	People participate by providing resources, for example labour, in return for food, cash, or other material incentives. Much on-farm research falls in this category.
5. Functional Participation	People participate by forming groups to meet predetermined objectives related to the project, which can involve the development or promotion of externally initiated social organization.
6. Interactive Participation	People participate in joint analysis, which leads to action plans and the formation of new local institutions or the strengthening of existing ones.
7. Self-Mobilization	People participate by taking initiatives independent of external institution to change systems. They develop contacts with external institutions for resources and technical advice they need, but retain control over how resources are used.

The participatory approaches described earlier are all aiming at the highest two levels in this typology, and the term 'empowerment' is increasingly used to distinguish between these types of participation and the others.

e) The participation of women

The participation of women in extension activities has been an issue of special concern during the past 25 years due to increased recognition that:

- women are often key decision makers in rural households, and/or they contribute a significant part of the labour for farming activities, and
- the impact of new technology or practices often affects men and women differently, particularly with respect to workload and income.

Women have been excluded from past extension activities for a number of reasons, including: a) agricultural policy does not fully recognise the contribution of women, b) the content and methods used by extension

programmes are not adapted to women's interests, availability or level of education, c) contact with government officials is seen to be the responsibility of the head of the household, d) most extension workers are men and it is culturally unacceptable for them to meet with women.

In the last two decades, *gender analysis* has become a key tool for increasing the participation of women²⁴. This analysis helps to educate extension workers about the division of labour and decision-making responsibilities in rural communities, and contributes to the planning of extension activities that are more relevant to the needs of women.

Typically, gender analysis will reveal that women are responsible for poultry raising and vegetable production, which are done close to the homestead and do not require heavy labour, while men are responsible for cattle raising and rice production (except during transplanting and harvesting when everybody is involved).

Other efforts to improve women's participation have included:

- Recruitment and training of female extension workers;
- Setting targets for women's involvement and monitoring achievements;
- Holding meetings with local leaders to promote women's participation;
- Working through existing women's groups, such as savings and credit groups, or adult literacy circles;
- Combining the extension of production technologies with education about health and nutrition, with a particular focus on the needs of children;
- The use of participatory processes that respect the indigenous knowledge held by women, such as the use of herbal remedies;
- Addressing the problems of domestic fuel and water, which create huge demands on women's time in some countries
- Changing the timing of extension activities, so that they are carried out when women are available.
- Conducting practical training sessions in the village, not at training centres or research stations which requires travelling and overnight stays.

1.3.3 *The increased involvement of the private sector, and attempts at cost-recovery*

The massive cost and inefficiencies of the Training and Visit System have encouraged some Governments and donor agencies to seek alternative ways of funding extension programmes. At the same time, there has been a growing interest in making extension services more *accountable* to the needs of rural people, added to which has been the recognition that these needs are becoming increasingly complex. These concerns have resulted in attention being given to the role that the private sector might play in extension.

Although there is considerable agreement about the need to use participatory approaches, there is an on-going debate about the desirability of private sector involvement in agricultural extension. There are some people who believe that agricultural knowledge is a public good and should not be turned into a commodity. There are others who believe that the only way to provide farmers with a relevant and sustainable service is through a cost-sharing mechanism.

There are two basic types of private sector involvement in extension: services that are contracted by government and donors agencies, and services that are paid for by farmers. Although the second type of involvement is usually thought to be the most desirable - as part of the establishment of an *knowledge market*, contracting by government is sometimes seen as a necessary step towards the creation of this market.

Some other general considerations relating to contracting, privatisation and cost-recovery are :

- A distinction should be made between: a) replacing government extension workers with privately financed consultants, and b) scaling down government services while supporting farmer-to-farmer extension. Both approaches can save costs for the Government, but there is a difference in the extension paradigm that is being promoted.
- Input providers such as pesticide companies and equipment retailers, are often involved in providing farmers with advice. Although these activities are part of the agricultural knowledge system, they are not really extension. A contribution to the achievement of *development policies* is inherent to the concept of extension (see section 1.1.1). Communication activities that support *commercial objectives* are better described as 'marketing'.
- Farmers across Asia have been paying for knowledge for many years. Magazines and booklets containing agricultural information, many of which are privately produced, have always been popular with literate farmers. Some farmers pay fees to become members of groups and associations that give them access to information and services. It must also be noted that cash payments are not the only type of expenditure. The *opportunity cost* of attending regular meetings or training sessions can be considerable, and experimenting with new practices often involves a increased level of labour and risks.

Since 2000 there have been number of attempts to compile and examine global experience with alternative financing arrangements for agricultural extension^{25, 26, 27}. The following examples illustrate a number of different approaches:

In Chile... the Agricultural Advisory Service reaches approximately 50,000 farmers. The service is managed by the national government and – since 1983 – it uses a strategy called Private Technology Transfer (PTT). This involves contracts awarded to private consulting firms or NGOs. The system is designed to include cost-sharing by farmers, but local government gives

vouchers to poorer farmers so that they can buy services. In recent years, farmers' organizations have gained a greater say in deciding which firms should be contracted to provide the advisory services.

In Thailand... extension services in the poultry industry have been integrated with contract farming for more than a decade. Both technical and managerial advice is provided to broiler producers by big companies, with the costs of this advice attached to the charges for feed, medicines, housing, etc. It has been reported, however, that contract farmers know practically nothing about the market prices for inputs and outputs. When some small farmers formed their own cooperatives, the big companies refused to supply either advice or veterinary services, and would only buy cooperative chickens based on extra strict grading criteria.

In India... the Ministry of Agriculture and the Agricultural Bank has recently started a scheme to train and deploy private extension workers called "agripreneurs". These agripreneurs are agricultural graduates who operate 'agriclinics' on a fee basis. Farmers pay for assistance in the development of business opportunities and the provision of services. To date there are 112 agripreneurs in 10 States who are operating without any subsidy. They are carrying out services such as soil testing and nursery management, and assisting farmers in starting businesses such as organic production and food processing.

In Sri Lanka... a large NGO called Sarvodaya has charged farmers the equivalent of \$20 each to attend Farmer Field Schools where they learnt about integrated pest management. The payment was made at the end of the 4-month course, after farmers had harvested and sold their rice crop. The charges were calculated to cover the actual cost of running the training, and were based on the estimated savings that farmers would make from reducing the use of pesticides.

In Vietnam... Women in a remote area in the North of the country pay a public veterinarian for regular visits to their village in order to vaccinate piglets. They negotiate payment *in kind* depending on the effectiveness of the services. For every six piglets that they raise to a marketable age, the women agreed to give one piglet to the vet as remuneration.

Some of the lessons that can be drawn from these cases are the following:

- Decisions about the type and level of private sector involvement need to be made on a case-by-case basis, rather than following a blueprint based on ideological arguments;
- Subsidies and legal measures may need to be put into place to protect the interests of poorer farmers who are less able to afford extension services;
- Farmers (or *clients*) need to be involved in decision making if services are to be relevant and effective. If government agencies issue contracts to private firms or NGOs without adequate consultation, services might not be any better than those previously provided by government staff;

- Farmers are more likely to pay for information and other services if they believe they will get an immediate financial benefit;
- Farmer associations and organisations can be an effective way of giving small producers a voice in negotiating contracts with extension providers and monitoring the standard of service.

1.4 Extension methods

1.4.1 Overview

Most extension programmes make use of a combination of methods, but any specific strategy is likely to be dominated by one or two types of activity. Under the T&V system, for example, 'group meetings' were the dominant method, but print materials and demonstrations were also used.

There are many factors that affect the selection of methods, including:

- the total number of rural families to be reached;
- the ratio of farm families to extension workers;
- the diversity of cropping systems;
- typical problems faced by farmers and the knowledge and skills needed to overcome these problems;
- cultural diversity including variations in language;
- literacy rates;
- the geography of the area;
- availability of transportation
- available funds.

Perhaps more important than any of these factors, however, is the extension *paradigm*. If the extension service has *transfer of technology* as its goal, it is likely to involve one-way communication such as radio broadcasts or demonstrations. If, however, *facilitation of empowerment* is the over-riding aim of extension, the service is more likely to use interactive methods such as experiential learning and farmer-to-farmer exchanges.

1.4.2 Mass media

Magazines, booklets, radio and television are all forms of mass media. In each case they involve a one-way flow of information, from a small number of *senders* to large number of *receivers*. The receivers are often described as the 'audience', a term which emphasises the passive role that these people play in the communication process.

Mass media have the advantage of reaching a large number of people at a lower cost than other extension methods. Print media such as booklets can be used to deliver information to thousands of locations in a form that is detailed, standardised and durable. Broadcast media such as radio usually delivers simpler and more transient information, but it can reach remote areas almost instantly. These methods are an effective way of creating an *awareness* of policies, problems, facts and opinions, but they have an uncertain influence on the *action* that people take. Radio cannot be used to negotiate solutions to problems, and booklets cannot cultivate the skills needed to implement new practices.

Although mass media cannot deliver location-specific advice, it can be used as part of a programme of *distance learning* that helps rural people to improve their understanding of general ideas. Farmers can use these ideas during their own analysis of local problems and opportunities. Mass media can be combined with other methods to improve the effectiveness of distance learning. For example, group meetings can be held at which people discuss what they have heard on the radio or read in booklets.

Language and culture can be barriers to the use of mass media. Rural people often have different beliefs and dialects to the experts and government officials who produce extension materials. One way to reduce this problem is to involve rural people in the production process. For example: farmer workshops can be organised to compile existing knowledge, print materials can be tested before they are finalised, and radio programmes can include interviews with members of the intended audience.

With the spread of computers and the internet, new methods of disseminating agricultural information have appeared. Compact disks, websites and email are now widely used by farmers in Europe and North America, and there are on-going projects to promote this technology in various parts of Asia. It is too early, however, to reach any conclusions about the effectiveness of these methods as part of different extension paradigms.

1.4.3 Inter-personal

The term 'inter-personal' implies that – unlike in the case of mass media - there is an exchange of information and ideas between extension workers and rural people. There are opportunities for both sides to ask questions, and both sides to give answers.

There are two general inter-personal methods:

Individual Visits: this method was popular when extension services were focussed on wealthier and so-called 'progressive' farmers. Extension workers would make regular visits to these farmers, examine their crops or livestock, provide advice and arrange for inputs. This method is still possible when farmers are paying for extension services, as is the case in parts of Europe and North America, but it is hard to justify using individual visits as a major

component of a publicly financed service, particularly when the goals of the service include poverty alleviation and equitable development. There are simply not enough extension workers to use this method in a fair and efficient manner. However, it continues to be useful for extension workers to visit individual farmers as a way of learning about the problems and opportunities they face, as long as this knowledge is subsequently used for the benefit of the community as a whole.

Group Meetings: This method is generally more efficient and equitable than individual visits, although a lot depends on the composition of the groups. There are many kinds of groups that exist in rural areas: farmer cooperatives water user associations, youth clubs, etc. In some countries it is possible to carry out extension programmes through existing groups, while in other cases it may be necessary to form new groups. In either case, groups that are established by the government tend to be dominated by men from relatively richer families; special efforts are required to ensure that women and the poor are able to participate. It must also be noted that there are two broad types of extension groups: those that are established to meet the needs of the extension worker, and those that are formed around issues identified by rural people. Groups that consist of people with a shared interest, such as a problem they all face or a technique they all want to learn, are more likely to benefit from extension activities than groups which consist of people who are simply curious or who have been instructed to attend.

1.4.4 Demonstrations

There are two types of demonstration that are carried out as part of extension programmes:

Method Demonstrations. This type of demonstration is used to teach a specific farming activity such as the pruning of fruit trees, vaccinating poultry, or the maintenance of 2-wheel tractors. During the demonstration, farmers are shown the sequence of steps that are involved in the activity, and given an explanation of the factors that lead to the desired result. The process is often repeated a number of times. On its own, the method demonstration will provide farmers with information, but if they are to develop any skill they need an opportunity to carry out the activity themselves. Supervised practice can be part of a method demonstration if the number of participants is small and sufficient materials are available.

Result Demonstrations. This type of demonstration is used to show the benefits of a particular technology, such as a new variety of rice, or certain level of fertilizer. The technology is applied on a 'demonstration plot' located in a place that is visible to farmers. In the past, these plots were used to make comparisons between 'traditional' and 'recommended' practices, whereas it is now more likely that a range of practices will be demonstrated, so that farmers can make their own decision about which is most suitable for them. Most farmers recognise that the conditions that exist at demonstration plots are different to the conditions on their own farm.

The basic principles for both types of demonstration are²⁸:

- Subject matter: only proven technologies should be used (otherwise the activity should be called a 'trial' not a demonstration);
- Preparation: facilitators should never contemplate giving a demonstration without careful planning and preparation.
- Participation: demonstrations should be carried out on local farms with farmers' participation rather than on extension plots or research stations;
- Simplicity: simple demonstrations of a single practice or new idea will be far more effective than ambitious and over-complicated demonstrations that demand too much of farmers;
- Learning: the demonstration is a learning environment and the facilitator must be aware of the learning requirements in terms of space, time, equipment and techniques;
- Follow-up: demonstrations should be part of a process, with follow-up meetings or visits that give guidance on implementation and help solve any problems that arise.

1.4.5 Training sessions

Training sessions have always been a feature of extension programmes. Individual sessions can be conducted as part of group meetings, or they can be combined to create training courses that extend over a number of days or even weeks. The fundamentals of traditional training are well known: the subject matter should be carefully selected to meet the needs of the participants, supporting materials should be prepared in advance, and questions should be asked to check that participants have learnt what was intended.

These fundamentals continue to be applied across the world, but during the past twenty years there have been a number of changes to the way in which training is organised as part of extension programmes:

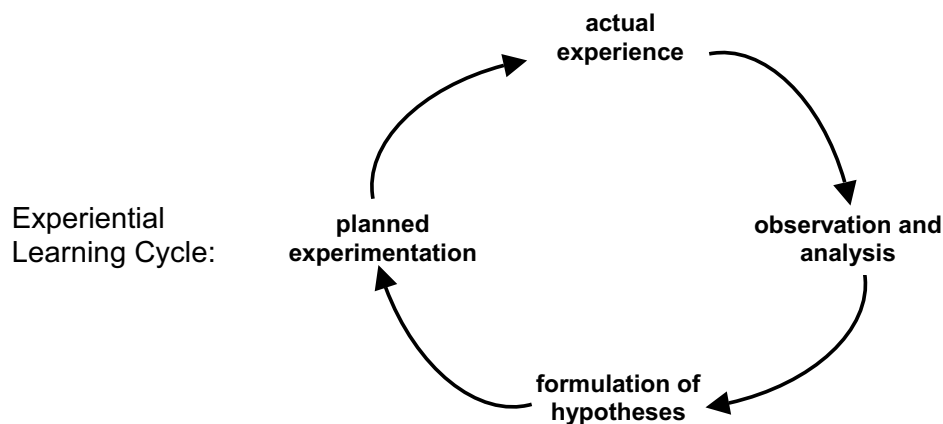
- In the past, a lot of money was spent on special training centres where extension staff or farmers could attend courses. Nowadays, courses are more likely to be conducted using existing facilities, - such as village meeting rooms and schools – or in farmer's fields and homesteads.
- Previously, training courses were based on a series of lectures and demonstrations, whereas now there is more 'learning by doing', with real materials replacing artificial teaching aids.
- No longer are the participants of training sessions sitting in rows facing the extension worker; instead they are often organised into small groups, where they solve problems and share results with each other.
- Training is not limited to scientific facts, but also covers managerial and organisational skills. And the content is not always limited to one subject,

but instead covers a number of integrated issues, drawing on concepts such as farming systems or rural livelihoods

- Government extension workers or NGOs staff are no longer expected to manage the training sessions from beginning to end. Rural people can also act as resource persons and facilitators.

1.4.6 *Experiential learning*

Experiential learning is increasingly used as part of participatory and educational approaches to extension. The process of experiential learning starts with an analysis of current practices and problems. As part of an agricultural extension programme, this analysis is carried out by rural people, usually with support from a facilitator. Based on their own analysis, the participants formulate hypotheses and plan a course of action that will enable them to test their ideas. These experiments are carried out in the context of normal work, the results are analysed, and further action is planned. This cycle of activities is summarised in the following diagram:



Experiential learning is a crucial part of both Farmer Field Schools (FFS) and Participatory Technology Development (PTD). The term 'action research' is also used to describe this method. Whatever it is called, the experiential learning process is fundamentally different from *didactic* methods that are used as part of paternalistic extension approaches. Didactic methods, such as lectures and demonstrations, start with an expert presenting rural people with externally-formulated hypotheses, including general scientific principles and the solutions to particular problems.

In the case of the FFS, for example, farmers are not given any lectures about the relationship between pests and beneficial insects. Instead they learn about this relationship by making careful observations of what is happening in their own fields. Based on these observation, they formulate and test their own ideas about how to manage pests.

There are a number of advantages to this method:

- it ensures that extension activities have a high degree of relevance to the needs and interests of rural people;
- it incorporates existing knowledge into the analysis of problems;
- it creates a high degree of 'ownership' of solutions that are generated;
- it develops a capability for 'critical thinking', which leads to continuous and self-reliant learning.

1.4.7 Farmer-to-farmer activities

Farmers have been learning from each other for thousands of years, but it is only in recent years that this has become a widely accepted extension method. Some examples are:

Farmer expert workshops. In most rural communities there are people who are acknowledged as having some special knowledge or skill. They might be an expert in the use of herbs and wild plants, or maybe they know how to repair certain types of equipment. Workshops attended by farmer experts can make an important contribution to both the planning and implementation of extension programmes. The participants of these workshops can identify problems and opportunities, assess proposals from outside experts, and act as tutors for other members of the community.

Cross Visits. Farming practices are often highly diverse. The design of grain stores, for example, or the methods used to treating sick animals, might be different from village to village. Organising visits between villages can be a good way to encourage the spread of *best practices*, or to encourage experimentation. The presence of a facilitator during these visits might help to stimulate discussion and improve the depth of observations that are made, but facilitators should be careful not to dominate the process.

Community consultants. These are rural people who facilitate training, provide expert advice, and/or act as a link between their community and other organisations. They might be selected to organise a single activity, or they could be appointed to provide a regular service to other members of the community. Various names have been used for these consultants, including 'village extension workers', 'farmer trainers' and *animateurs*. It is necessary to make a distinction between two types of community consultants: those who carry out activities that have been planned by experts from outside the community (e.g. government experts or NGO staff) and those who carry out activities that have been planned by members of the community. Both might use participatory methods, but only the latter will contribute to greater self-reliance. In some extension programmes, community consultants are given cash payments in return for their services. Elsewhere they work on a voluntary basis or are compensated by *in kind* payments (e.g. labour-sharing or donations of agricultural produce).

Farmer field days. Traditionally, field days were organised by Government extension staff as part of the transfer of technology paradigm. It is also

possible, however, for farmers to organise their own field days. This is particularly useful when a group has completed a training course or have carried out some experiments. In this situation, the field day is an opportunity to share results and give encouragement to other farmers.

In conclusion, by treating farmers as *actors* in the extension process rather than as the *audience*, a wider range of extension methods becomes available. A number of recent projects around the world have shown that farmer-to-farmer methods are low in cost but high in effectiveness. Further developments in this area can be expected.

Annex 2:

FFS ICM curriculum (version 2010)

This is the current ICM FFS curriculum with 20 weekly sessions.

11 sessions are on rice, mainly attended by men (blue color)

4 sessions are on homestead related topics, mainly for women (pink color)

5 sessions are for men and women together (green color)

A field day is organized at the end of the FFS

Curriculum for FFS on Integrated Crop Management (ICM)

(Version 2010)

Session	Timing & Duration	Activities / Topics
0	<p>Before FFS</p> <p>(Facilitators along with tag SAAO will organize a meeting with the possible FFS farmers. This preparation should start at least 2-3 weeks before seedbed preparation.)</p>	<p>Several activities need to be prepared before the actual start of the FFS, even before the start of the growing season. These include:</p> <ul style="list-style-type: none"> - Benchmark survey - Selection of 25 farm families (man and wife/daughter/in law) - Site selection for the FFS - Identify the local crop production constraints after discussing with the farmers - Site selection for seed bed, ICM plots, variety observation plots, and for ail crops - Collection of seed of the variety for ICM plot (need 100 hills per plot of 2x2 meter) - Collection of different varieties seeds for variety observation plots - Collection of vegetable seeds for ails crops - Preparation of materials for ballot boxes (prepare separate questions, 10 for women and 10 for men) - Purchase FFS materials (UAO receives budget and will organize this in consultation with Upazila ICM team) <ul style="list-style-type: none"> o <i>Make clear appointment for the day and starting time of first FFS session, both for the men and women to attend.</i>
1	<p>1st session</p> <p>♂♀</p> <p>Before seedbed preparation</p> <p>5 hours</p> <p>FFS male and female farmers will attend the whole session.</p>	<ul style="list-style-type: none"> - Pre FFS ballot box test for men and women - Introduction to Farmer Field School (FFS) and Integrated Crop Management (ICM) - Discussion: Norms and Expectations for FFS participants - Presentation of main subjects for each of the 20 sessions. - Presentation of the budget for the FFS and list of materials. Bangla copy of budget and materials list must be given to the FFS group. - Discuss the importance of group work and form groups for women and for men (each 5 groups with 5 persons per group) and selection of group leader. An exercise to select group name. - Group Dynamics: Role play to present the name of the group. - Brief inauguration of the FFS - Discussion on ICM vs FP (Farmers Practice) plot - Special topic on seed health: Characteristics of good quality seed, seed selection, sorting of seeds, germination test, seedbed preparation and sowing seed in the seed bed. - Special information for women <ul style="list-style-type: none"> o <i>Each of the 25 women can have a personal activity (either Homestead Vegetable Garden, Farm Yard Manure (FYM) or Tree plantation).</i>
2	<p>2nd session</p> <p>♂</p> <p>Seed bed preparation</p> <p>4 hours</p>	<ul style="list-style-type: none"> - Observation and short discussion on results of germination test - Exercise on village soil fertility grade mapping. - Select one location for field studies on soil fertility grades - Techniques of soil sample collection. - Collection of soil samples from the 3 soil fertility grade study plots. <ul style="list-style-type: none"> o <i>Samples must be tested and the results must later be presented to the farmers before transplanting.</i> - Group Dynamics-e.g. "List as many as you can" or "Mental map exercise" or - Special topic: Effect of organic matter on soil texture, soil composition, water holding capacity, etc.

Session	Timing & Duration	Activities / Topics
3 ♀	3 rd session Women only Homestead vegetables 3-4 hours	<ul style="list-style-type: none"> - Homestead vegetable gardening: Introduction (how and why) and setting up plots - Introduction to some vegetable pests and defenders: collection, sorting, identification, and preservation technique of insects found in vegetable gardens or fruit trees. - Pest management in homestead vegetable garden by using ICM concepts. - Group Dynamics (e.g. "The longest line" or - Special topic: Discuss and practice hand pollination in vegetables - Improved stove preparation (practical)
4 ♂	4 th session Before transplanting 3-4 hours	<ul style="list-style-type: none"> - Seedbed observation: collection, sorting, identification and preservation technique of pest and defenders from seed bed - Short discussion on status of the seed bed and a conclusion by the group - Discussion on soil test results - Introduction to AEZ and fertilizer calculation and concept of IPNS and fertilizer adjustment - Group Dynamics (e.g. "Message relay" or - Special topic: Uprooting and transplanting technique
5 ♂	5 th session 3-4 hours Transplanting time	<ul style="list-style-type: none"> - Discuss details and set-up the study/observation plots <ol style="list-style-type: none"> 1. ICM plot versus FP plot 2. Variety study plot 3. Ail crop 4. Other trials/studies according to farmers decision (e.g. RFC/no. of seedling/age of seedling/AWD) - Group Dynamics (e.g. "Doing things for or with peoples (across the river)" or - Short discussion on granular pesticide application (discuss why not in ICM plot) - Discussion on the plant nutrition system along with the role of N, P, K, S and Zn
6 ♂	6 th session Transplanting time 3-4 hours	<ul style="list-style-type: none"> - Discuss details and set-up study/observation plots: <ol style="list-style-type: none"> 1. Fertilizer Management Plot : 3 plots, comparing Integrated Plant Nutrition System (IPNS), Inorganic Fertilizer (IF) and Farmers Practice (FP)) 2. Insect Zoo (IZ) 3. Fertilizer Application Method study, LCC, USG and prilled urea application - Group Dynamics (e.g. "Water Brigade" or - Discussion on different observation plots e.g. Detillering (DT), Defoliation (DF)
7 ♂♀	7 th session 14 DAT 3-4 hours The first part of today is only for men (about 2 hours). The farmer club session (1-1.5 hour) is for both <u>men</u> and <u>women</u>	<ul style="list-style-type: none"> - Identification of growth stage of rice plant (tillering stage) and activities related to growth stage such as top dressing, irrigation management, weed management and pest management - Techniques of field sampling. - Sorting, collection and identification of pests and defenders and analyze the results. <p>Farmers club session (1):</p> <ol style="list-style-type: none"> 1. Group dynamics (e.g. "Breaking sticks" or "The old man with 5 quarreling sons") 2. In which activities can we help each other? 3. Discuss the importance of forming groups/club. 4. Make a decision to form a farmers club 5. Select a good name for the club 6. Discuss what is a by-laws and why it is needed. 7. Form a sub-committee (one facilitator, local SAO and 2 farmer representatives (one female and one male)) to formulate by- laws.

Session	Timing & Duration	Activities / Topics
8 ♂	8 th session 21 DAT 3-4 hours	<ul style="list-style-type: none"> - Observe insect zoo and reset the insect zoo, if necessary. - Set-up observation plots on detillering and defoliation. - Field survey techniques for pests and diseases of rice, and field sampling of pests and defenders of rice. - Discussion: Introduction to the concept of Agro-ecosystem. What is Agro Ecosystem Analysis (AESA)? How to do AESA? - Agro-Eco-System Analysis (AESA-1) - Group Dynamics (e.g. "Role play on Predation" or "IPM story" or - Special topic: Food habits of crop defenders - General discussion on rice pest management, including insect/disease which was found important during the AESA session - Agree on follow-up of AESA decision
9 ♀	9 th session Women activities (but men may join) Farm Yard Manure 28 DAT 3-4 hours	<ul style="list-style-type: none"> - Importance of organic manure for vegetable production (soil structure, water holding capacity) - Sources of organic manures. - Importance of covering the FYM pit and protect from sun and rainwater. - Practical session on FYM preparation. - Food and nutrition - Group Dynamics ("Role play adverse effect of pesticides") - Special topic: Adverse effect of pesticides (discussion following the role play). How to reduce risk when handling and storage of pesticides - Special topic: (based on request by women, if any)
10 ♂	10 th session 35 DAT 3-4 hours	<ul style="list-style-type: none"> - Observation of insect zoo and re-set, if needed. - Observation of different study plot - Practice AESA-2 - Group Dynamics (e.g. "Role play on pesticide" or - Management of current pest: Insect or disease, which was found during the AESA session. - Special topic: Adverse effect of pesticides (discussion and role play) and discussion on how to reduce risk of pesticides. - Agree on follow-up of AESA decision (What has to be done? Who does what?)
11 ♂♀	11 th session 42 DAT The first part of today is only for men (about 2 hours). The farmer club session (1-1.5 hour) is for both <u>men</u> and <u>women</u>	<ul style="list-style-type: none"> - Observation of different study plots and decision making for that plot - Management of current pest: Pest or disease found during the field observations <p>Farmers club session (2):</p> <ol style="list-style-type: none"> 1. Group Dynamics (e.g. "Working with parts" or 2. Discussion on: House/land for the club/procedures for a land /renting house 3. The sub-committee presents the draft by-laws before the members of the club. 4. Discussion on the draft by-laws and approve the by-laws(with corrections if any)

Session	Timing & Duration	Activities / Topics
12 ♂	12 th session 49 DAT 3-4 hours	<ul style="list-style-type: none"> - Review if decisions from AESA-2 were implemented. - Discussion on seed production techniques and practice (1st roughing) - Observation of different study plots and decision making for that plot . - Practice AESA-3 - Group Dynamics (e.g. "Protecting one self" or "Role play on seed" or "Natural defenders, pests and diseases" or - Management of current pest: Insect or disease found important during the AESA session - Special topic: Conservation and Augmentation of Natural Enemies (parasitoids and predators) - Agree on follow-up of AESA decision (What has to be done? Who does what?)
13 ♂	13 th session 56 DAT 3-4 hours	<ul style="list-style-type: none"> - Review if decisions from AESA-3 were implemented - Observation of different study plots and decision making for that plot. - Practice AESA-4 - Group Dynamics (e.g. "The boat is sinking (Titanic)" or - Management of current pest: Insect or disease which was found during this session during AESA - Discussion on reproductive phase and related management practices - Special Topic: Exercise on nutrient mining and nutrient flow - Special topic: (based on request by farmers, if any) - Agree on follow-up of AESA decision (What has to be done? Who does what?)
14 ♂	14 th session 63 DAT 3-4 hours	<ul style="list-style-type: none"> - Review if decisions from AESA-4 were implemented - Observation of different study plots and decision making for that plot. - Practice AESA -5 - 2nd roughing practice for seed plot (ICM plot) - Group Dynamics (e.g. Blind fold game" or "7 Up game" or - Management of current pest: Insect or disease which was found during the AESA - Special topic: (based on request by farmers, if any) - Agree on follow-up of AESA decision (What has to be done? Who does what?)
15 ♂♀	15 th session 70 DAT The first part of today is only for men (about 1.5 hours). The farmer club session (about 2 hours) is for both <u>men</u> and <u>women</u>	<ul style="list-style-type: none"> - Review if decisions from AESA-5 were implemented - Observation of different study plots and decision making for that plot - Management of current pest: Pest or disease which were found to be a problem in the field during the session. <p>Farmers club session (3):</p> <ol style="list-style-type: none"> 1. Form a club committee according to the by-laws (women members should be at least 1/3 of the executive committee) 2. Discuss the duties and responsibilities of the club bearers and the general members. 3. Discuss how to conduct a meeting and write a resolution. and how to keep other records for the clubs 4. Fix monthly/weekly subscription 5. Opening bank account in the name of club 6. Discussion on follow up session and drafting a follow up session plan (tentative selection of topics according to new follow up guidelines)

Session	Timing & Duration	Activities / Topics
16 ♂	16 th session 77 DAT 3-4 hours	<ul style="list-style-type: none"> - Review if last weeks decisions were implemented - Observation of different study plots and decision making for that plot - Practice AESA-6 - Management of current pest: Insect or disease observed during AESA - Group Dynamics (e.g. "Finding lost items" or "Puzzles (Drawing insect)" or ".....") - Special topic: (based on request by farmers, if any) - Follow-up discussion on: how the follow-up session plan can be implemented. - Agree on follow-up of AESA decision (What has to be done? Who does what?) - Next week is a women session; therefore assign "homework" to few farmers who should observe the ICM plot next week and report about this in session 18.
17 ♀	17 th session 84 DAT Women activities Homestead vegetable gardening & post harvest management 3-4 hours	<ul style="list-style-type: none"> - Brief visit to the vegetable plots and improved stove followed by brief discussion about the vegetables and about experiences with the stove - Practical on planting of saplings, and tree management. - Introduction to some pests of fruit-trees and natural enemies (parasitoids and predators) of those pests, and discuss their management in the light of ICM. - Food & nutrition - Group Dynamics (e.g. "Targeting" or "Division of labour" or ".....") - Post harvest management of rice and vegetable seeds (harvesting, drying, winnowing, storage and preservation of seed, and storage pest management) - Summarize and planning for next session (any special topic requests?) <p>Planning of future activities for women (after club formation).</p> <ol style="list-style-type: none"> 1. Make an annual work plan with a budget (specially the women related part) for the club by identifying the local resources, distribute responsibilities among the members to implement the annual plan. 2. Select topics for follow up session that are of interest for women and discuss how these follow-up sessions can be implemented.
18 ♂♀	18 th session 91 DAT The first part of today is only for men (about 1.5 hours). The farmer club session (about 2 hours) is for both <u>men</u> and <u>women</u>	<ul style="list-style-type: none"> - Review if decisions from AESA-6 were implemented - Observation of different study plots and decision making for that plot - Management of current pest: Insect or disease which was found important during field observations - Benefit calculation for improved practices (exercise) comparing the ICM with FP and also the fertility grade studies <p>Farmers club session (4): Planning of future activities:</p> <ol style="list-style-type: none"> 1. Make an annual work plan with a budget for the club by identifying the local resources; distribute responsibilities among the members to implement the annual plan. The work plan must have special activities for men and for women, and may also have combined activities. 2. Finalize the follow up session plan (with topics both for men and women) 3. Discuss how the annual plan and follow-up sessions can be implemented. 4. Finalizing the issue of : House/land for the club (follow up of discussion of club session-2) Discuss the issue of club registration(documents and procedures)

Session	Timing & Duration	Activities / Topics
19 ♀	19 th session 98 DAT Women Activities 3-4 hours Nutrition and cooking	<ul style="list-style-type: none"> - Vegetable garden visit, field sampling pest and defenders and observations - Discussion on vegetable garden field visit, identification and discussion on collected pests and defenders, and the management of these pests (=AESA style exercise for the women) - Follow up on Farm Yard Manure production and Tree Plantation - Group Dynamics (e.g. "Ring relay" or "Cup relay" or "Rubber band passing") - Special topic: Basic principles of human nutrition. What is balanced food, discuss different types of food and why balanced food is needed - Practical on making balanced food. - Follow-up discussion on how the annual work plan can be implemented. - Discuss program and planning for the field day. Who does what and when?
20 ♂	20 th session 105 DAT Harvesting time 3-4 hours	<ul style="list-style-type: none"> - Organic sources of nutrient and IPNS concept in case the club members decide to use legumes and green manure for next season. - Importance of Green Manure (GM) / Brown Manure (BM) and it's cultivation procedures - Seed collection. Processing and storage of seed. - Adverse effect of chemicals used for fruit ripening, fish & vegetable processing - Harvesting and yield recording of all observation and study plots, and make economic calculations for all plots - Discussions and conclusions on all the studies - Follow-up discussion on how the annual work plan can be implemented - Field day preparation. Who does what and when?
-	Field day session 4 hours Before harvesting time (= with crop still in field, but no yield data available) or After harvest (no crop in field, but all yield results are available)	<ul style="list-style-type: none"> - Registration - Group formation, - Field and booth visit. <p>ICM Component Booths:</p> <ol style="list-style-type: none"> 1. ICM Component booth: Banners, explanation of what is ICM, including the ail crops, LCC and USG 2. AESA booth: Explain AESA, Pests and Defenders, augmentation and conservation 3. Pesticides booth: Adverse effect of pesticides and risk reduction: showing adverse effect and how to reduce risk while transportation, storage, spraying, etc. 4. Soil booth: Including soil health, IPNS, show fertilizer recommendations for different grades, plant nutrition, nutrient mining and nutrient flow, results from observation plots, etc. 5. Seed booth: Seed health, seed germination , seed production, storage and preservation, results from variety study plots etc 6. Improved Homestead activities: Showing homestead vegetable garden, information on human nutrition and cooking, improved stove, FYM, tree plantation etc. 7. Farmers Club booth: Show activity plans for the coming year and activities already performed. <p>Big group presentations:</p> <ul style="list-style-type: none"> - Two farmers (male & female) summarizes what they have done and learned in the FFS - Two persons (male and female) present their plans for a club - Official inauguration of the club for all members (men and women) and visitors. - Rewarding of the best female (2) and best male (2) farmers. - Distribution of certificates to FFS farmers

Annex 3:

Complete list of FFS materials (2009)

Most FFS materials are purchases at Upazila level but some materials are purchased centrally at AEC headquarters and distributed to the Upazilas before the start of the FFS.

Some of the FFS materials are marked as “permanent” (e.g. calculator) which means they are only supplied once to each FFS facilitator.

List of FFS materials (T.Aman 2009)

Materials to be purchased at Upazila for each FFS

(Budget supplied to UAO)

No	Name of item	No. per FFS	
1	Aica (150 ml.)	1	Pots (150g)
2	Anti-cutter	1	Pcs.
3	Art paper	20	Pcs.
4	Ball pen (Econo)	53	Pcs.
5	Bamboo sticks	-	Maximum 400 Taka
6	Colour pencil (Luna)	5	Boxes
7	Cotton roll (small)	2	Rolls (400 g)
8	Detergent powder 225/100 gm.)	1	Boxes
9	Earthen pots	11	Pcs.
10	Eraser	5	Pcs.
11	Fertilizer for trials / study / soil test	-	Maximum 1500 Taka
12	Forceps	5	Pcs.
13	Homio vial with caps	0.5	Boxes
14	Knife	1	Pcs.
15	Marker (permanent)	10	Pcs.
16	Paper clip (Large)	8	Pcs.
17	Paper tape	2	Rolls
18	Pencil (Wooden)-Gold fish	10	Pcs.
19	Pencil sharpener	5	Pcs.
20	Plastic bowl (Medium)	6	Pcs.
21	Plastic boyum (medium)	5	Pcs.
22	Plastic boyum (small)	10	Pcs.
23	Plastic Sheet (9' x 15 ')	3	Pcs.
24	Plastic tube to make aspirator	15	Feet
25	Poly bag (10" X 12")	50	Pcs.
26	Poly bag for insect zoo (29.5"x 40.5")	5	Pcs.
27	Rope	1	Kilos
28	Rubber band (100 each pkt.)	2	Pkts.
29	Scale (wooden) 30 cm	5	Pcs.
30	Seeds for trials / study	-	Maximum 100 Taka
31	Signboards big 3'x2'	4	Pcs.
32	Signboards small	27	Pcs.
33	Sweep net	5	Pcs.
34	Thread ball	1	Rolls
35	Water pan	5	Pcs.
36	White paper (Karnaphuli)	80	Pcs.
Budget FFS materials			6500

Permanent materials

No	Name of item	No. per FFS	
1	Beaker (Plastic) -500 ml.	3	Pcs.
2	Hardboard	6	Pcs.
3	Scale (wooden) 1 meter	2	Pcs.
4	Scissors	2	Pcs.
Budget FFS permanent materials			927

* If some permanent items were previous provided to the Upazila this amount will be lower

Budget to each FFS for women activities

No	Name of activity	Taka	No.	Total
1	Farm Yard Manure demo	300	5	1500
2	Trees plantation	100	10	1000
3	Vegetable garden	100	10	1000
4	Improved stove demonstration	250	1	250
Total for women activities				3750

Materials supplied by AEC to the Upazila or direct to facilitator

(Note: No budget needed for this at the Upazila)

No	Name of item	No. per FFS	No. per Upazila	No. per facilitator (incl. FTs)	
1	Certificate (ICM)	50			Pcs.
2	Different kind of forms	1			Set
3	Register book-FFS	1			Pcs.
4	Stock register		1		Pcs.
5	Cash book		1		Pcs.
6	Leaflet Hispa	5			Pcs.
7	Leaflet BSFB	5			Pcs.
8	Leaflet on Rice fish culture	5			Pcs.
9	Leaflet on Seed health	5			Pcs.
10	Leaflet on BPH	5			Pcs.
11	Leaflet (Aile crop)	5			Pcs.
12	Cap ICM (for men)	26	5	1	Pcs.
13	Scarf ICM (for women)	26			Pcs.
14	Carrying bag	1			Pcs.
15	Magnifying glass			1	Pcs.
16	Calculator (Citizen)			1	Pcs.
17	Register book- Farmer Club	2			Pcs.
18	Exercise book	50			Pcs.
19	Ethyl acetate (100ml)	1			Pcs.
20	Baicao (125 ml)	1			Pcs.
21	Poster ICM	1	2		Pcs.
22	Poster fertilizer calculation	1	2		Pcs.

Permanent
Permanent

Budget available for snacks or savings

Type of session	Tk/person	Persons	Cost per session	No.sessions	Taka
1 Inaugural session					1000
11 sessions for only male	15	30	450	11	4950
4 sessions for both male and female	15	55	825	4	3300
4 sessions for only female	15	30	450	4	1800
Total for snacks / savings per FFS					11050

Budget provided for other expenses

Other expenses					Taka
Rewards participants (2 male, 2 female)					800
Field day					4500
Total for other expenses per FFS					5300

Overview of procedures:

1	Budget for FFS is supplied from AEC to UAO
2	Some materials are supplied directly from AEC to Upazila
3	UAO assigns the task of purchasing materials to two or more persons INCLUDING the ICM team leader and if necessary other ICM facilitators
4	All FFS farmers (males and females) should be informed (during the 1st session) about this list of materials and about these available budgets for women activities, snacks/savings, field day and awards. (A list of materials and the budget will therefore be included in the FFS exercise books and FFS register)
5	Each FFS receives as soon as possible all materials according to the list of materials
6	UAO timely provides budget for women activities, field day and rewards to each FFS (to facilitators: DT or FT)
7	FFS facilitators (DTs, FTs) record all received materials and budget immediately in the FFS register
8	During the 1st FFS session the use of snack money is discussed. Instead of using the money for snacks, farmers may decide to save this money for their club. If farmers decide to save the snack money for their club, the UAO will deposit the money to the club account as soon as they have opened the club bank account

Annex 4:

Sample program of a Review and Planning Workshop

Review and planning workshops are organized two times per year.

In May the workshops review the Boro season and make planning for the coming T.Aman season

In November the workshops review T.Aman and plan for the coming Boro season

For pilot FFS in other crops (wheat, potato, cabbage/cauliflower, bean, eggplant) separate workshops are organized for review, curriculum adjustments and planning. Timing of these workshops depends on the cropping season.

Example of Day's Program for Review and Planning Workshops

Time	Activities	Person Responsible
08.30-09.00	Registration	
09.00-09.30	Inaugural session	
09.30-10.00	Introduction to AEC and its future activities	
10.00-10.30	Problems encountered in running ICM FFS and suggestions for improvement	
10.30-11.00	Report collection.	
11.00-11.15	T E A B R E A K	
11.15-12.00	Participatory discussion on ICM FFS Trials and ICM FFS curriculum (revised portion)	
12.00-01.00	Simple technique of fertilizer calculation	
01.00-02.00	PRAYER & LUNCH	
02.00-02.45	Club formation & management including registration	
02.45-03.15	Introduction to FFS materials & Budget	
03.15-03.45	Feed back on ICM FFS register	
03.45-04.15	Backstopping for FT- FFS	
04.15-04.45	Planning for Boro ICM FFS next season	
04.45-05.00	Closing	

Annex 5:

A set of forms used for ICM FFS, Farmers Club and UNFA

During the FFS cycle a number of forms are used to collect data and to assist in monitoring. Examples are included of the most common forms:

- FFS identification
- FFS benchmark data
- FFS monitoring
- FFS trial results
- Farmers Club identification
- Farmers Club monitoring
- UNFA data sheet
- UNFA monitoring
- Mobile monitoring report

ICM FFS IDENTIFICATION

DAE-DANIDA Agricultural Extension Component
Khamarbari, Dhaka-1215

ICM FFS ID #		<small>Location of ICM FFS site: Example: Residence of Md. Rahimuddin, North of Patolbari Jame Mosque.</small>	
ICM FFS Name			
Village			
Block			
Union			
Upazila			
District			
Region		Cropping Pattern	
		Crop Name	

	Name	Designation	Mobile Number
Facilitator-1 (ICM Team Leader)			
Facilitator-2			
Tag SAAO			

Facilitator 1 and 2 must be ICM trained person.

ICM FFS day (Circle the actual day)			Time of day (Circle and give time)	
Monday	Tuesday	Wednesday	Morning	At.....am
Thursday	Saturday	Sunday	Afternoon	At.....pm

Starting date of FFS	:	
Number of Female Farmers	:	
Number of Male Farmers	:	
Total number of FFS Farmers	:	

Prepared by	:	<hr/>
Designation	:	<hr/>
		Signature of UAO: <hr/>
		Name & Date
Signature	:	<hr/>
Date	:	<hr/>

NB: Any alteration of information must be informed to AEC office. ICM FFS site description should be so clear that any one can find it easily.

FFS ID no:

Benchmark Survey Form for ICM

DAE-DANIDA Agricultural Extension Component

FFS name:		FFS season*: Boro / T. Aman	FFS year:	Facilitator: AAO / AEO / SAPPO / SAAO/FT
Region:	District:	Upazila:	Block:	FFS team leader:

High Yielding Variety (HYV)																		
Sl. No.	Farmers name	Can read (Y/N)	No. of family members	Owner or tenant (O/T)	Irrigated land (Y/N)	Did grow crop (Y/N)	Area of HYV crop (Ha)	Use of organic manure kg	Use of fertilizer (Kg)					Cost for fertilizers	No. of pesticides sprays	No. of granular applications	Total Cost of pesticides (Tk.)	Total yield (Kg)
									UREA	TSP	MP	GYP	ZINC					
1																		
2																		
3																		
4																		
5																		
6																		
7																		
8																		
9																		
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20																		
21																		
22																		
23																		
24																		
25																		
*Circle your choice		Total who can read	Total	Total owners	Total with irrigation	Total with crops	Total area	Total organic manure used	Total urea used kg	Total TSP used kg	Total MP used kg	Total Gyp used kg	Total Zinc Used kg	Total cost for fertilizer Tk	Total sprays	Total granular application	Total cost of pesticides	Total yield in kg
						(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)
		% who can read	Avg. family size	% who owns land	% with irrigated land		Avg. HYV area in hectare	Average organic matter used kg/ha	Avg. urea used kg/ha	Avg. TSP used kg/ha	Avg. MP used kg/ha	Avg. GYP used kg/ha	Avr Avg. zinc used kg/ha	Avr cost fertilizer	Ave spray/farmer	Avg. granular /farmer	Avg. cost of pesticides/ha	Avg. yield per hectare in kg.
					(b/a)	(c/b)	(d/b)	(e/b)	(f/b)	(g/b)	(h/b)	(i/b)	(j/a)	(k/a)	(l/b)	(m/b)		

ICM FFS MONITORING

(For DAE monitors. Please send it to HQ, just after monitoring)

DAE-DANIDA Agricultural Extension Component
Khamarbari, Dhaka-1215

ICM FFS ID # :	Starting Date of FFS:		
Upazila:	District:		
FFS session number on monitoring day			
Number of sessions conducted so far	Male:	Female:	Combined:
Number of farmers attending	Male:	Female:	Total:
Day and Time of the FFS	Day:	Time:	
Selection of farmers*	Good	Satisfactory	Poor
FFS site selection*	Good	Satisfactory	Poor
Facilitators performance*	Good	Satisfactory	Poor
Crop stage*	Seedling / Tillering / Booting / Heading / Flowering / Ripening		
Session corresponds to the crop stage?*	Yes		No
Fields survey on the day of monitoring: (if field survey done on that day)	Pests (Name & No.)		Defenders (Name & No.)
Observation plots set*	ICM Plot / Defoliation / Detillering / Fertilizer Application Method / Missing Element Trials / Variety Observation Plot / Grade Demonstrations / Ails Crops / Insect Zoo / Rice-Fish Culture		
No. of soil fertility grade demo's set	1	2	3
Women activities accomplished	Homestead veg. garden / Tree plantation / Nutrition and cooking / FYM / Improved stove / Other-		
Is the ICM FFS running as per curriculum*	Yes		No
If no, please explain:			
No. of club sessions conducted*	1	2	3 4
Activities and achievement of the club*	Committee formed / Subscription started / IGA started / Opened bank account / Records maintained / Annual plan / Finalize meeting place / Others		
Problems faced to run the FFS. Please Specify:			
Procurement status of FFS materials*	Good	Satisfactory	Poor
Quality of materials*	Good	Satisfactory	Poor
Financial Management*	Good	Satisfactory	Poor
Visits by High Officials: Names:	Designation:		

Farmers opinion about the ICM FFS and training:		
FFS register maintained properly*	Yes	No
Have you written comments in FFS Register	Yes	No
Overall Grading of the FFS*	Excellent / Good / Average / Improvement needed / Poor	
Other Observations	Suggestions for Improvement	
Name of Monitoring Officer:		
Designation*	SAAO / SAPPO / AEO/ AAO / UAO / CPS / PPS DTO / DD	
Monitoring Officer's signature & date:		

* Please circle the adequate option(s)

ICM Farmers' Field School Trial Result

DAE-DANIDA Agricultural Extension Component
Khamarbari, Dhaka-1215

Date: _____

District: _____

Upazila: _____

Name of the ICM team leader: _____

Sl.#	Name of trial	Yield (kg/ha)		
		ICM		FP
1.	ICM plot			
2.	Fertilizer Grade Demonstration:	IPNS	IFP	FP
	Grade-1 demo plot			
	Grade-2 demo plot			
	Grade-3 demo plot			
3.	Variety Trial:			
	Variety-1 (Name)			
	Variety-2 (Name)			
	Variety-3 (Name)			
	Variety-4 (Name)			
	Variety-5 (Name)			
4.	Fertilizer Application Method:			
	LCC plot			
	USG plot			
	Prilled urea			
5.	Defoliation:			
	Defoliation 0%			
	Defoliation 25%			
	Defoliation 50%			
6.	Detillering:			
	Detillering 0%			
	Detillering 10%			
	Detillering 25%			
7.	Ail crops			
8.	RFC			

Prepared by: _____

Designation: _____

Signature & Date: _____

(Signature of UAO)

ICM CLUB IDENTIFICATION

DAE-DANIDA Agricultural Extension Component
Khamarbari, Dhaka-1215

ICM FFS ID #			Location of ICM Club: Example: Residence of Md. Rahimuddin, North of Patolbari Jame Mosque.
ICM Club Name			
Post Office			
Upazila			
District			
Date of Establishment			
Club Members			
Type	Members from ICM FFS	Members from Outside (if any)	
Male			
Female			
Total	1	2	Total Club Members (1+2)
Contact Person (Responsible for Club Activities)			
Name:		Designation:	Mobile # :
Information on ICM Club Executive Committee			
Sl. #	Name of the Committee Members	Designation	Mobile Number
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			
Annual Activity Plan:			
1			
2			
3			
4			
5			
Submitted by:			
Signature of ICM Club President Name & Date:		Signature and Seal of AAO/AEO/SAPPO Name & Date:	
Signature and Seal of UAO Name & Date:			

FARMER CLUB MONITORING

DAE-DANIDA Agricultural Extension Component
Khamarbari, Dhaka-1215

Club Name:										ID #				
Club Address:					Block:									
Union:				Upazila:										
District:				Date of establishment:										
Name of President or Secretary:								Phone:						
Account Information:					Bank Name :									
Account Name					Account Number :									
Club members :				Male:		Female:		Total:						
No. of members in club executive committee				Male:		Female:		Total:						
Club house (Tick the right one)			Rented		Own		Temporary		Contract		No			
Club signboard*			Yes				No							
Club by-laws*			Yes				No							
Registration (if yes pl. write Regi. No. with organization)*			No	Yes	Registration No.		Organization							
Maintain cashbook*			NA		Not updated			Updated						
Maintain fee collection register*			NA		Not updated			Updated						
Monthly meeting resulation register*			NA		Not updated			Updated						
Annual Plan of Work*			NA		Not updated			Updated						
Monthly membership fee*			No		Yes		If Yes, Tk./month:							
Monthly meeting*			Not held			Regular			Irregular					
Received fund for follow-up training*			No	Yes	If yes, how many follow-up sessions implemented*				0	1	2	3	4	5
If no, mention reason														
Received financial supports			Name of Agency			Grant Amount (Tk.)		Name of Agency		Grant Amount (Tk.)				
Savings of the club			Cash in hand (Tk.)			Cash invested (Tk.)		Cash in bank (Tk.)		Total (Tk.)				
What are the activities club have investead														
Does the club is a member of UNFA			Yes					No						
Is it paying subscription to UNFA regularly			Yes					No						
What are the ICM technologies currently practiced by club members*			Use balanced fertilizer		Improved seed	FYM	Green manuring	Compost	Perching	Light trapping	Others (specify)			
What are the ICM technologies currently practiced by women club members*			Homestead vegetable gardening		Tree Plantation		FYM	Improved Stove		Other (specify)				
What are the technologies have been transferred by the club to other farmers*			Balanced fertilizer use	Homestead garden	Improved seed	FYM	Green manuring	Compost	Perching	Light trapping	Others (specify)			
What are the Income Generating Activities (IGA) club have been implementing*			Seed production		Poultry		Nursery	Fish culture		Other (specify)				
Which social activities club have been implementing*			Sanitation		Literacy		Dowry	Other (specify)						
Which other organizations/projects have been working with the club*			OFRD/BARI		SW/MOA		NATP	AIS	Others (specify)					
Mention last visit date of a DAE officer in this club			Designation				Date							
Overall grading of the club*			Excellent		Good		Improvement needed			Bad				

Please ask the following questions to three randomly selected members of the club

Questions	Farmer-1	Farmer-2	Farmer-3
Which rice variety did you grow before training in IPM/ICM FFS			
Which rice variety are you growing now			
Which ICM technology had you used in last crop season (Seed/variety/Cropping pattern/Modern practices)			
Which new crop production technology had you used in last crop season			
How much rice had you produced in last crop season (kg per decimal)			
Where did you sell your farm products especially rice and vegetables			
What is your annual income at the moment			
In which month of the year your family skip meal for survival			

*Please tick on appropriate options

Name of the monitor:	
Designation of the monitor	
Signature and Date	

UNFA Data Sheet

DAE-DANIDA Agricultural Extension Component
Khamarbari, Dhaka-1215

UNFA ID # (office use)			<u>Office Location of UNFA</u>	
UNFA Name				
Union				
Upazila				
District				
Date of Establishment				
UNFA Members				
Type	Executive/Ad hoc Committee Members	General Members		
Male				
Female				
Total	1	2	Total number of clubs under UNFA	
Information on UNFA Executive/Ad hoc Committee				
Sl. #	Name of the Committee Members	Designation	Mobile Number	
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
Annual Work Plan		Start Date	Completion Date	
1				
2				
3				
4				
5				
6				
7				
Submitted by:				
_____ Signature of UNFA President/Convener Name & Date:		_____ Signature and Seal of AAO/AEO/SAPPO Name & Date:		
_____ Signature and Seal of UAO Name & Date:				
				P. T. O

UNFA MONITORING FORM

DAE-DANIDA Agricultural Extension Component
Khamarbari, Dhaka-1215

UNFA Name:		ID #	
UNFA Address:		Union:	
Upazila	District:		
Date of establishment:			
Name & phone number of President or Secretary:			
Account Information:		Bank Name :	
Account Name		Account Number :	
Number of member club	ICM clubs	IPM clubs	Other clubs
Status of Executive Committee	Adhoc	Regular	If regular, mention its tenure
No. of members in club executive committee	Male:	Female:	Total:
UNFA Office (Tick the right one)	UP premise	Own	Temporary
UNFA signboard	Yes		No
UNFA by-laws	Yes		No
Registration (if yes pl. write registration no.)	No	Yes	If yes, Registration No.
Maintain cashbook	NA	Not updated	Updated
Maintain fee collection register	NA	Not updated	Updated
Monthly meeting resulation register	NA	Not updated	Updated
Annual Plan of Work	NA	Not updated	Updated
Monthly membership fee	No	Yes	If Yes, Tk./month:
Monthly meeting	Not held		Regular
Received Tk. 3000 from AEC	No	Yes	If yes, how did you spend
Received financial supports	AEC	Tk.	Other Agency
Savings of the UNFA	Cash in hand	Cash in bank	
	Cash invested	Total	
What are the activities UNFA has investead			
What are the activities UNFA had carried out for trnsfer of ICM technologies (balanced fertilizer / Green manuring / Compost / Perching / Light trapping, etc. to other farmers			
What are the activities UNFA had conducted in response to clime change, environmental polution, nutrition and HIV/AIDS			
What are the activities UNFA had done to activate the member clubs			
What are the activities UNFA had done for marketing of farmer products for fair price			
Which social activities UNFA has been implementing	Sanitation / Literacy program / Dowry free movement / Others (specify)		
Mention last visit date of a DAE officer	Designation		Date
Overall grading of the UNFA	Excellent	Good	Improvement needed
			Bad
Your overall observations	Suggestions for Improvements		

Name of the monitor:

Signature:

Designation of the monitor:

Date:

Report on Mobile Monitoring

DAE-DANIDA Agricultural Extension Component

Name & Designation of Monitor : _____

Total no. of FFS (Boro/T.Aman) : _____

Total No. of Assigned Upazila for Monitor : _____

Reporting Month : _____

Sl. #	Contacted Date	Name of Upazila	FFS Monitored			FFS Status Session Completed (No.)	FFS Material Status			FFS Fund Status			DAE's Monitoring		FFS Trials established (No)	Club		Comments if any
			DT	FT	Person Contacted		FR	PR	NR	FR	PR	NR	Done	Not Done		R	AFR	

FR = Fully Received
 PR = Partially Received
 NR = Not Received
 R = Registered
 AFR = Applied for Registration

Signature & Date

Annex 6: Farmer Field Schools or Climate Field Schools?

Farmer Field Schools or Climate Field Schools?

Climate Change is a hot keyword. It looks like every change in the environment is now being attributed to Climate Change and every development activity is suddenly an “adaptation to Climate Change”.

With Farmer Field Schools being an effective and widely accepted approach to farmer education, it now seems that we have to follow fashion and change them into Climate Field Schools. I disagree with this and will try to explain why.

Farmer Field Schools are an effective way of working with small and poor farmers because they focus on actual problems that are occurring today. The problems that occur today (whether drought or flooding or an insect attack or a nutrient deficiency) need to be solved today, because that’s the main (economic) concern of the farmer. FFSs have been designed to do that.

Of course Climate Change can also create problems for these farmers, but I would like to look at it from the farmers’ point of view and separate it in 3 categories.

- 1) Changes that have already taken place
- 2) Changes that are taking place
- 3) Possible changes in the future (some years)

A change in environment that has already taken place has become a reality for the concerned farmers. For example in Bangladesh some areas have salinity problems and this has been attributed to climate change (for example through higher sea levels). An FFS working with these farmers will address salinity as a current existing problem (for example by testing saline tolerant varieties together with the farmers). Whether this salinity problem is a result of climate change or not is not relevant to the farmers. We don’t need a “Climate Field School” to deal with this salinity problem, just a “normal” FFS will do as it will recognize the salinity as a current problem for the farmers and thus pay attention to it.

Another such example of changes that have taken place already is drought. In some drought prone areas, the frequent droughts have been attributed to climate change. One could argue whether this is true or not, but whether this is true or not doesn’t matter to the farmers. If there is a drought problem the FFS will recognize it as a problem and pay attention to it, just like it would pay attention to a sudden outbreak of a disease.

What about changes that are taking place now? We all know the graphs of temperatures going up, with predictions about expected global temperatures in the next 50 or 100 years. But a prediction of 6°C global warming during the 21st century is equivalent to an average increase of 0.06°C per year. This cannot be of a concern for a small Bangladeshi farmer, because he/she is used to deal with much bigger differences that take place from season to season and from year to year. Some years are warmer, some are cooler, some are wetter, and some are drier. Farmers know this, and their main problems are when extreme situations occur. Even with average temperature going up, his real

problem of today could be an unusual low temperature just after he prepared his seedbed for the Boro season. A “normal” FFS will deal with that problem.

Changes that are going to take place in the future will of course create problems for the farmers. It could be entirely new problems, or it could be a higher frequency of already known problems. In both cases it will require farmers to make changes in the way they operate. It could be a small change (e.g. dealing with a new pest or disease) or a very big change (e.g. changing to a complete different winter crop if the weather has become too warm for his current crop). But whatever change is required, we cannot make the change now (imagine a Danish farmer starting to grow rice now, because he expects a tropical climate in 100 years). The problem is not here yet, so it is not relevant for the farmer at this moment. A “normal” FFS will not talk about this non existing problem. A Climate Field School probably will, but will it get the attention of the farmers? Or will they fall asleep? Or rather start thinking about their rice field which seems a bit dry and they are worried because it doesn’t look like rain today?

This doesn’t mean that we should ignore Climate Change when we work with farmers. Perhaps discussions about Climate Change should even become a regular part of Farmer Field Schools. New problems that will occur in the near or far future may not be relevant now, but we can help farmers be better prepared for an uncertain future and make them more flexible in the way they work. Let’s help farmers be better “scientists” who continue experimenting and innovating the way they work after they complete the FFS.

In Bangladesh we try to develop each Farmer Field School into a Farmer Club. The idea is that in the club the farmers continue working as a group to improve their livelihoods. Sometimes this doesn’t work, especially if a group lacks good leaders, but many of these clubs remain very active and develop a wide range of club activities. Club activities can roughly be divided in three groups:

- 1) Economic
- 2) Social
- 3) Experimental

Almost all clubs have a savings plan, and with these savings they can finance a number of activities. A group can purchase a piece of farm equipment for shared use (e.g. pump, power tiller, rickshaw van), start a small business (e.g. seed business) or decide to give small loans within their group for individual economic activities (e.g. buy a cow, goat, chicken, fruit trees).

Social activities may include awareness building on social issues (e.g. dowry, child marriages, and health issues) or organizing sport or cultural events.

It’s the third group of activities where I see a potential role for discussions on Climate Change with FFS farmers. Testing out new ideas can be done more easily by a group of farmers than by individuals. In the FFS the farmers have already conducted some field experiments as a group activity, such as comparing different crop varieties. As a club they can continue doing this, and they can go even a step further and test new crops which they have never grown before, or test other drastic changes in their cropping pattern which could prepare them for future adaptations to climate

change. Discussions on climate change with the farmer clubs (or already during the FFS) could motivate them to be more active in testing and innovating farming methods.

My opinion is that we should not confuse farmers with climate change. Farmer Field Schools can deal with climate related problems even without mentioning the word “climate change”. But if discussions on Climate Change can make them more interested in science, in experimenting with new technologies or crops, and in developing innovations, we should of course use them as a tool to improve our FFS. It will make them better prepared for an uncertain future.

Hein Bijlmakers

22-10-2009