Guidelines for Farmer Field Schools

IPM in rice and vegetables

DAE-DANIDA
Strengthening Plant Protection Services Component – Phase II

10th Version - October 2002
IPM FOR SAFER ENVIRONMENT, HIGHER PROFIT AND BETTER HEALTH

DAE-DANIDA SPPS project
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Preface

This FFS guideline is the 10th revised and combined version of guideline for running Farmer Field Schools (FFS) conducted by Strengthening Plant Protection Services Component phase II.

The guideline builds largely on previous versions, which have been developed during the SPPS phase I period with a good input from many people, Master Trainers, Local Training Consultant and other component staff. Also some valuable feedback from field officers (AAO, AEO, PPI and BS) has been given.

This version has been revised in order to match with the component objectives of the SPPS II. This implies changes such as:

- Combined rice and vegetable guideline, as all Upazilas are expected to run both rice and vegetable FFS.
- Vegetable crop specific curriculum for five vegetable crops (brinjal, bean, cabbage, cauliflower and tomato)
- Greater emphasis on the IPM club formation, as all FFS must be succeeded by an IPM club which is formed at the end of FFS season.
- New booths introduced at field days also to enforce the establishment of IPM clubs in 200 Upazilas.

Developing the quality of the concept of FFS as well as the FFS guideline is a continuous process. The SPPS II component welcomes any suggestion at any time, which may contribute to improvement of either running FFS, FFS guideline or improvement of any other related field.
1 Introduction

The introduction explains the history of the DAE-executed and DANIDA-funded component, which is a part of the Agricultural Sector programme support, and presents the component objective and targets.

Strengthening Plant Protection Services (SPPS) has during its first phase been undertaking farmers training through Farmer field Schools (FFS). The IPM training performed has been executed through Department of Agricultural Extension (DAE), which, through its extension workers (AAOs/AEOs, PPIs and BSs), has contributed extensively to the outcome of the SPPS component's 5-year programme. During this period more than 110,000 farmers have become IPM graduates from more than 4500 FFS.

One of the objectives of the SPPS component was to develop the capacity of DAE to undertake effective IPM training. A large number of people, 626 DAE staff from 136 Upazilas and 75 NGO staff, have through SPPS phase I received season-long IPM training during 14 Training of Trainers courses.

In most of the SPPS Upazilas, the staff includes trained persons as follows: 1 Additional Agricultural Officer (AAO) / Agricultural Extension Officer (AEO), 1 Plant Protection Inspector (PPI) and 2 or 3 Block Supervisors (BS).

The impact of the IPM training has shown in many ways. The use of pesticides has decreased among IPM trained farmers, at the same time as the same farmers have obtained higher yields in their fields. Also a general empowerment of both male and female farmers has been observed in the wake of the FFS activities.

During the first phase of the SPPS component target was accomplished with a surplus of achievements. This performance lead eventually to the formulation and approval of the SPPS phase II, which has now been running since September 1st 2002.

The objectives of the SPPS II are to create awareness as well as to develop capacity within the agricultural sector. Secondly the component is expected to play a role in the implementation of the national IPM policy. Thirdly the objective is to continue the dissemination of the IPM concept as an environment friendly way of dealing with crop pests and diseases.

The target of the component is within 200 Upazilas (136+ 64) to organize through the component period:

- 4,680 FFS in rice IPM to train 117,000 rice farmers
- 3,120 FFS in vegetable IPM to train 78,000 vegetable farmers.

600 of the above mentioned FFS is expected to be conducted by farmer trainers.

Additionally to the target for FFS establishment the component is committed to support the development of each single FFS into an IPM club, meaning 7,800 IPM clubs to be established.

This document provides an integrated guideline on running Farmer Field Schools in IPM in rice, brinjal, beans, cabbage, cauliflower and tomatoes. It includes details on the organization of the FFS (curriculum, field experiments etc.) and on the monitoring of the FFS (collection of data, supervision, reporting, etc.). It furthermore provides information on budget and accounting matters and gives a list of training materials needed for running FFS.
2 Organization of the FFS

The description on organization of FFS outlines the national framework and setup in Bangladesh, in which the training of farmers through FFS takes place.

The SPPS II is conducting farmers training through FFS in 200 Upazilas in 64 districts (figure 1). Although rice is the major crop, great emphasis will be put into vegetables FFS. This means that both rice and vegetable FFS will be running in all operating Upazilas.

In 136 (old SPPS) Upazilas, the already established IPM team of the SPPS phase I, usually consisting of 1 AAO/AEO, 1 PPI and 2 BS, will continue their good work. The facilitators of the IPM teams are always graduates from season-long Training of Trainers (ToT) courses. During SPPS phase I, only selected Upazilas were assigned to run vegetable FFS.

In 64 (new UNDP or CAD) Upazilas the rice FFS trained staff will conduct FFS according to their training status and capacity. All 64 Upazilas have persons trained in rice IPM only.

As most of the facilitators in the UNDP/CAD Upazilas are non trained as regards vegetables (but have substantial experience in running FFS) the SPPS II component has found it sound to initiate the running of both rice and vegetables FFS in these Upazilas. Furthermore the SPPS II component will conduct crash courses during the FFS-season. In this way the facilitators are upgraded to run vegetable FFS, and some experiences will, in the “new Upazilas”, be obtained even in the early stage of the SPPS II component period.

A complete team of 4 trained facilitators is usually expected to run 6 FFS during each growing season. In Upazilas where the number of trained facilitators is less, the number of FFS may also be less. The actual number of FFSs will be decided in consultation with the component during a review/planning workshop, before the start of each season. The number of FFS per Upazila may vary from season to season according to the current capacity. Also the number of FFS may be adjusted by the component head quarter if is found that performance of FFS facilitators or the quality of FFS of some Upazilas is not good enough.

Rice FFSs are organized during the Boro and T. Aman seasons. Field schools in vegetable IPM will take place in seasons called Winter or Summer. The “Winter” refers roughly to FFSs starting between September and December, while “Summer” is referring to FFSs that are running between February and August.

The IPM-trained AAO/AEO will have the overall supervisory responsibility to keep the quality and practical nature of the training high in all the six FFS in his/her Upazila. Furthermore, the AEO will be responsible for organizing and supervising all sorts of FFS activities for all the six FFSs in his/her Upazila.

In Upazilas with a “normal” IPM team (consisting of 1 AEO, 1 PPI and 2 BS), the actual day-to-day running of the FFSs will be carried out as follows:

1. The trained AEO and 1 trained BS will together run 3 FFSs.
2. The trained PPI and the other trained BS will together run 3 FFSs.
3. In each FFS, there is also provision for 1 local untrained BS to be involved as a facilitator. This untrained BS will assist the two trained facilitators while gaining experience in facilitating IPM Farmer Field Schools.

So in each FFS session, there should be at least 3 DAE staff present (2 trained, 1 untrained).
The 200 Upazilas are scattered in all 64 districts of Bangladesh, although in certain areas the running of FFS is not quite as intensive as in other areas. This may be due to various natural conditions (like e.g. floods in rainy season or lack of irrigation facilities during dry seasons).

![SPPS Project Areas (2nd Phase) Bangladesh](image)

*Figure 1. SPPS II IPM-Upazilas of Bangladesh.*
3 Selection of farmers for FFS

This chapter gives details how to select farmers for a FFS and how to form a group of farmers, which will sustain, even after the FFS has been completed. This is especially relevant for AAO/AEOs, PPIs and BSs.

Farmer selection should be done well before the start of the growing season. It is essential that already BEFORE preparing the seedbeds, the facilitators organize the first session. Topics to be discussed will include selection of varieties (for variety experiment), seed health, seedbed preparation, transplanting and an introduction to various experiments.

When selecting farmers for participation in the FFS, the following criteria should be used:

- **How many farmers:** Total 25 farmers, but only 1 person per farming family.
- **Sex of farmers:** In rice FFS, at least 20% of the participants should be women. In vegetable FFS, at least 50% should be women, but if possible, FFSs with 100% females should be organized. When selecting female participants, it is recommended to also talk with the father or husband and explain clearly the objectives of the FFS.
  
  Note: the same targets (20% and 50%) apply when inviting untrained farmers to attend field days.

- **Pesticide use:** Preferably include farmers with a high pesticide use. It is however, very important to select only farmers who spend their own money for pest control (so do not include tenants or laborers who just obey their landlord).

- **Crop type:** One FFS should as a general rule consist of farmers growing the same type of crops. This is important because the impact assessment done after the FFS season includes figures on yield use of pesticides etc. In order to compare the crop management performance of farmers it is obvious that the figure on yield of brinjal should not be compared to e.g. a figure on yield of beans.

- **Crop stage:** Start with a group of farmers who are ready to start a crop. You should be in contact with the farmers before they start planting. An FFS is a season-long activity (seed to harvest).

- **Location of farmers:** Select farmers who live close together (in one village). This will encourage cooperation between the farmers.

- **Experience of farmers:** Select farmers with no previous IPM training.

- **Age of farmers:** Select preferably younger farmers (generally at least below the age of 50). It may however in certain cases be relevant to select older farmers if such farmers are natural leaders in the rural community.

- **Education of farmers** Select both literate illiterate people. Assessments made have shown that both groups benefit equally from the FFS-training. For an illiterate farmer it is even more important to get the possibility to learn about IPM. It must be kept in mind that the training aims broadly at empowerment of farmers.
4 Running a Farmers Field School

This chapter explains the elements of farmers training and how you run a FFS. It is especially relevant for AAOs, AEOs, PPIs, and BSs.

A Farmers Field School consists of 25 farmers. Each FFS session is attended by at least 3 facilitators. Two of these should be IPM-trained facilitators (i.e. graduates from a ToT).

The facilitators will conduct FFS sessions weekly or if the growth season extends 14 weeks 14 sessions in the full growth season. The first day will be a full day of training (8 hours, lunch included) while the other visits will take approximately 3 hours during the morning or afternoon. There will be a total of 14 sessions during a complete cropping season (seed to harvest) including 1 field day for neighboring farmers.

The FFS should cover the entire growing season. Therefore, if the main vegetable in the FFS has a long growing season (e.g. brinjal and tomato), the 14 sessions should be spread over a longer period by skipping one or more weeks. The first session will be at the beginning of the crop season and the last session will be around harvest time.

Except for the first day, where a general introduction to IPM is included, most sessions follow the same pattern:

Each session follows the same schedule throughout the season

1) Recapitulation of the previous session.
2) Presentation of the day’s program.
3) Field visit. Observations and data collection.
4) AESA (= Agro-EcoSystem Analysis). Drawing. Analysis of the observations. Discussion and decision making for field management.
5) Presentation of AESA.
6) Fieldwork. Follow up of AESA and work in field experiments.
7) Group dynamics exercise.
8) Special topic(s).
9) Day’s evaluation and planning for the next session.

Note: Do not include more than 2 special topics in one session.

The agenda for FFS sessions mentioned above is explained in the curriculum for FFS (chapter 6).

The following paragraphs explain the ideas of field experiments, AESA concept and group dynamics, which is used as a part of the FFS training.

4.1 Field experiments in the FFS

In each FFS session several field experiments should be set up or checked. The objective of such activities is to learn by discovering and to stimulate a problem-solving attitude. For more details on the various field experiments, see chapter 5, page 11.
An experiment to be included in each FFS is to compare an IPM plot with a Farmers Practice plot. In the IPM plot, the FFS will manage the crop according to their decisions that are based on AESA. In the Farmers Practice plot, the crop will be managed according to the practices used by surrounding farmers who have not received any IPM training.

Experiments that may be included in a FFS are defoliation or detilling in rice and defoliation or pruning in vegetables. The purpose of conducting these experiments with the farmers is to grow confidence and to discover the capacity of plants to compensate for certain levels of damage (e.g. leaf damage, loss of tillers/shoots).

Each rice FFS should, if possible, include an experiment with rice-fish culture. This will promote the growing of fish in rice fields. It gives the farmers an additional source of income, it enriches the farmers’ diet, and it is another reason to avoid using pesticides. To include rice-fish experiments in a FFS, it is essential that the facilitators meet with the FFS farmers well before the growing season. A plot should be selected before transplanting and preparations (digging of trenches) should be made well in advance.

Also, each FFS will promote the growing of vegetables as all crops. In the IPM plot, all ails should be planted with different types of vegetables, with emphasis on beans (yard-long bean, country bean). Small experiments can be set up to test plant spacing on ails or to compare various types of supports for climbing vegetables (yard-long-bean, bottle gourd, etc.). Also this requires some preparations before the actual start of the FFS, especially to grow some vegetable seedlings.

To stimulate a problem-solving attitude many more experiments can be included, depending on the situation and depending on the wishes of farmers. Examples (depending on crop type) are: fertilizer experiments, variety experiments, healthy seed experiment, seedling transplanting experiment, plant spacing experiment, inter-cropping experiments and weeding experiments.

Vegetables FFSs may include two or more different types of vegetables. The selection of these vegetables depends on the location and season. It is however important to select vegetables, which are known to have excessive use of pesticides, for example Brinjal.

1) Note: As the farmers are working in groups (usually 5 groups of 5 farmers in each FFS), the responsibilities to carry out the various experiments can be divided between groups.

4.2 AESA

The Agro-EcoSystem Analysis (AESA) is an important component in most FFS sessions. The facilitators should always make sure that sufficient time is allocated for:

- Field observations
- Identification of pest and defenders
- Drawing and analysis
- Presentation
- Discussion and decision making

Facilitators will have to ensure that all farmers can participate actively. Spend time and talk with the farmers while they are in the field. Assist them to observe all aspects of the crop. Encourage discussion by asking leading questions. Make sure that also shy persons or illiterate persons become actively involved in the process.

Facilitators will also have to ensure the follow-up of the decisions that were taken during the AESA. For example, if it was decided to practice “clean cultivation”, make sure that some persons take the responsibility to remove weeds, infested shoots, dead leaves, etc.
4.3 **Group dynamics and team-building exercises**

An FFS will run for 14 sessions (one season). One of the objectives of a FFS is to encourage farmers to continue meeting and discussing their crop management in the following seasons.

To stimulate the process of group formation, the facilitators will therefore include group dynamics exercises in each FFS session (except for field day). Select exercises that show the positive impact of working together (see annex 4).

During the IPM-TOT-training courses various group dynamic exercises was introduced and practiced as a part of the training (see overview next page). Although the group dynamic and team-building exercises have been a part of the FFS curriculum since the initial stage of the SPPS component, this part of the training may in some cases have been neglected as an important part of the curriculum.

However it must be emphasized that this "soft" part of the FFS curriculum is very important! The importance has increased along with the fact that each FFS is going to turn into an IPM club during the SPPS phase II. A precondition for this act to be implemented successfully is the forming of a strong FFS group of people. Only if the group of people is functioning well the formation of an IPM club that last will be possible.

In the group dynamics it is equally important also to mention the importance of dealing with gender related issues, of which one group dynamic exercise has been addressed to.

Therefore it is most important to make sure that each FFS session contains one group dynamic exercise. The most giving exercises are listed in the box below (see also annex 4).
Important group dynamic and team-building exercises

1. List as many objects you can see.
2. Working with parts.
4. Whispering game.
5. The longest line.
6. Drawing without lifting the pen.
7. Building towers.
8. Gender division of labor in agriculture.
10. Cooperative square exercise.
11. Drawing a house.
12. Natural defenders, pests and diseases.
13. Parasitization.
14. Catch the dragon’s tail.
15. Ballot box test.

In the process of training, try to identify “leaders” in the group who can play a key role in keeping the group together. These leaders may after the last FFS session play an important role in organizing IPM clubs or may be used as facilitators in running a “farmer-to-farmer” education program.
5 Details on Field Experiments in the FFS

This chapter gives some more details on how the various field experiments in the FFS will be conducted. It is especially relevant for AAOs, AEOs, PPIs, and BSs.

5.1 Compare IPM plot with a Farmer’s Practice plot

The most important experiment in each FFS is to compare an IPM plot with a Farmers traditional practice plot.

The IPM plot will be managed according to the principles of Integrated Pest Management. Decisions on how to manage this plot will be made by making an Agro-EcoSystem Analysis (AESA).

The Farmer’s practice plot will be managed according to the methods used by untrained farmers in the area surrounding the FFS.

Objectives:
- To learn the various aspects of IPM in a practical way.
- To make farmers experts in decision making
- To compare IPM and existing Farmers practices.
- To grow confidence in farmers about IPM practices.
- To create awareness about the bad effect of pesticides.

Activities:
- One or more fields should be selected as the IPM plots. The owner(s) of these fields should agree that all crop management would be done according to IPM principles.
- At some distance (100 meter or more) from the IPM plot, select a farmers practice plot, where management will be carried out according to the methods used by untrained farmers in the area surrounding the FFS. This field will be used as a comparison with the IPM plot.
- Prepare the IPM plot according to IPM principles (planting distance, number of seedlings, balanced fertilizer use, etc.)
- Weekly, the participants will carry out an Agro-Eco System Analysis (AESA). Together, in a participatory discussion, the participants of the FFS will then make decisions on crop management.
- Make sure that all IPM methodologies get attention. The IPM plot should be a clear example for all participants and neighboring farmers showing the proper spacing, line planting, healthy plants, clean cultivation, perching, all crops and whatever is relevant in the specific crop in the field.
- Place a FFS signboard in the IPM plot. This should be done immediately during the first session of the FFS.

5.2 AESA

Decision-making in IPM requires an analysis of the eco-system. The Agro-Eco System Analysis (AESA) is an important element in the FFS sessions. Farmers will learn how to observe the crop, how to analyze the field situation and how to make the proper decisions for their crop management.
Objectives:

- Decision making for the IPM plot, based on observations, analyzing, drawing and discussions.
- To familiarize the farmers with the process of decision-making based on observations and analysis from their own fields.

Activities:

- Go to the field in groups. Walk across the field and choose 10 plants randomly. Observe keenly each of these plants and record your observations:
  - Plant: observe the plant height, number of leaves or shoots, crop stage, deficiency symptoms, etc.
  - Pests: observe and count pests at different places on the plant.
  - Defenders: observe and count parasites and predators.
  - Diseases: observe leaves and stems and identify any visible disease symptoms.
  - Rats: count numbers of plants affected by rats.
  - Weeds: observe weeds in the field and their intensity.
  - Water: observe the water situation of the field.
  - Weather: observe the weather condition.

- While walking in the field, manually collect insects in plastic bags. Use a water pan to collect additional insects. Collect plant parts with disease symptoms.
- Also while walking in the field, talk with the farmers about what they see. Point out interesting aspects of the crop. Stimulate discussions between farmers.
- Find a shady place to sit as a group for drawing and discussion.
- If needed the insects may be killed by using ethyl acetate (new item of FFS materials). This agent, which is used as a substitute for chloroform, should be used in the same way as chloroform (although it will kill more slowly).

- Each group will first identify the pests, defenders and diseases collected.
- Each group will then analyze the field situation and present their analysis in a drawing (AESA drawing). As a facilitator, make sure that all participants in each group are actively involved. Stimulate discussions between the farmers.
- Each drawing will show a plant representing the field situation. The weather condition, water level, disease symptoms, etc. will be shown in the drawing. Pest insects will be drawn on the left. Defenders (beneficial insects) will be drawn on the right. 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 recommendation.
- A member of each group will now present their analysis in front of all participants.
- The facilitator will facilitate a discussion by asking guiding questions. It is important to make sure that also shy persons or illiterate persons become actively involved in this process. Pay attention to women and make sure that they can also actively participate in the discussion.
- Be alert for learning opportunities. Some questions should not be answered directly. Instead, a small experiment can be initiated to find out the answer (for example by setting up additional pot cage studies).
- Formulate a common conclusion. The whole group should support the decision on what field management is required.
- Make sure that the farmers will carry out all the required activities. Assign responsibilities to make sure that all required activities in the IPM plot are carried out according to the AESA decision.
5.3 Defoliation study in rice and vegetables

In rice crops: hispa, whorl maggot, leaf folder, case worm, swarming caterpillar, rice hairy caterpillar, ear cutting caterpillar and grasshoppers are leaf feeders, attacking the rice plant at various growth stages. The rice plant has a tremendous capacity to recover and compensate for this damage by producing new leaves and extra tillers, especially at early and mid tillering stage. A defoliation study can be conducted to simulate the damage by leaf feeders and to observe this compensation by the rice plant.

In vegetable crops: many species are attacked by leaf feeding insects such as caterpillars or beetles. In most cases, the plants can easily tolerate certain levels of damage. The plants recover and compensate for the damage by producing new leaves or extra shoots. A defoliation study can be conducted to simulate the damage by leaf feeders and to observe the compensation by the plant. A pruning study can be used to study the effect of removing shoots (simulate shoot borer damage).

Objectives:
- To grow confidence among the farmers that certain levels of damage will be compensated by the plant
- To study which stages of the plant can compensate for damage.

Activities - in rice:
- Set this trial up with 7 treatments. The treatments depend on the season. There will be 2 levels of defoliation (25% and 50%) at 3 crop stages:
  - In Boro season:
    i. Control plot (no defoliation)
    ii. Plot with 25% defoliation at 20 DAT
    iii. Plot with 50% defoliation at 20 DAT
    iv. Plot with 25% defoliation at 40 DAT
    v. Plot with 50% defoliation at 40 DAT
    vi. Plot with 25% defoliation at flag leaf stage
    vii. Plot with 50% defoliation at flag leaf stage
  - In T. Aman season:
    viii. Control plot (no defoliation)
    ix. Plot with 25% defoliation at 20 DAT
    x. Plot with 50% defoliation at 20 DAT
    xi. Plot with 25% defoliation at 30 DAT
    xii. Plot with 50% defoliation at 30 DAT
    xiii. Plot with 25% defoliation at flag leaf stage
    xiv. Plot with 50% defoliation at flag leaf stage
- The trial will be set up in an existing plot with uniform planting.
- Select one square meter for each treatment and mark each plot with 4 sticks and some rope, thread or colored band.
- Maintain a distance between the treatments.
- The total number of tillers and leaves will be counted in each plot. Cut the leaves with scissors or a sharp knife according to the treatment.
• Place small signboards near each plot to indicate the treatment. On the signboards, try to use pictures instead of text.
• In each plot, select and mark 5 random hills for weekly observations.

Observations - in rice:
• Weekly a quick visual observation and comparison of the plots.
• Fortnightly record keeping of all treatments.
• Count the number of tillers from five random hills in each plot.
• Count the number of leaves from five random hills in each plot.
• Towards the end of the season, compare yield related characteristics, such as: number of productive tillers, number of spike lets, and length of plants.
• Measure the yield in each of the 5 plots.
• Discuss the capacity of the rice plant to compensate for certain levels of damage by leaf feeders.

Activities - in vegetables:
• How to set up this trial depends on the crop involved. Discuss with the farmers which treatments (percentage defoliation or pruning) will be tested. Keep it simple, don’t use too many treatments.
• The trial will be set up in an existing plot with uniform planting.
• Select a plot with several plants for each treatment and mark each plot with 4 sticks and some rope, thread or colored band.
• Maintain a distance between the treatments.
• If possible, set up 3 or 4 replications of the treatments to make it a proper experiment.
• The total number of shoots and leaves will be counted in each plot. Cut the leaves or shoots with scissors or a sharp knife according to the treatment.
• Place small signboards near each plot to indicate the treatment. On the signboards, try to use pictures instead of text.

Observations – in vegetables:
• Weekly a quick visual observation and comparison of the plots.
• Fortnightly record keeping of all treatments.
• Count the number of shoots from five random plants in each plot.
• Count the number of leaves from five random plants in each plot.
• Towards the end of the season, compare yield related characteristics, such as: number of productive shoots, number of flowers, number of fruits, length of plants.
• Measure the yield in each treatment.
• Discuss the capacity plant to compensate for certain levels of damage by leaf feeders or shoot borers.

5.4 Detilerring study in rice
Stem borer and gall midge are internal feeders who cause damage to the tillers of the rice plant. Like in the case of defoliation the rice plant has a tremendous capacity to recover and compensate for the damage of lost tillers by producing extra tillers, especially at early and mid tillering stage. A detilerring study can be conducted to simulate the damage by internal feeders and to observe this compensation by the rice plant.
Objectives:
- To grow confidence among the farmers that certain levels of tiller damage will be compensated by the plant.
- To study which stages of the plant can compensate for tiller damage.

Activities:
- Set these trials up with 5 treatments, depending on the season (see below). There will be 2 levels of detilling (10% and 25%) at 2 crop stages:
  - In Boro season:
    - xv. Control plot (no detilling)
    - xvi. Plot with 10% detilling at 20 DAT
    - xvii. Plot with 25% detilling at 20 DAT
    - xviii. Plot with 10% detilling at 40 DAT
    - xix. Plot with 25% detilling at 40 DAT
  - In T. Aman season:
    - xx. Control plot (no detilling)
    - xxi. Plot with 10% detilling at 20 DAT
    - xxii. Plot with 25% detilling at 20 DAT
    - xxiii. Plot with 10% detilling at 30 DAT
    - xxiv. Plot with 25% detilling at 30 DAT
- The trial will be set up in an existing plot with uniform planting.
- Select one square meter for each treatment and mark each plot with 4 sticks and some rope, thread or colored band.
- Maintain a distance between the treatments.
- The total number of tillers will be counted in each plot. Calculate how many tillers should be removed according to the treatment. Cut the tillers with scissors or a sharp knife.
- Place small signboards near each plot to indicate the treatment. On the signboards, try to use pictures instead of text.
- In each plot, select and mark 5 random hills for weekly observations.

Observations:
- Weekly a quick visual observation and comparison of the plots.
- Fortnightly record keeping of all treatments.
- Count the number of tillers from five random hills in each plot.
- Count the total no. of dead hearts / white heads (in case that there is natural tiller damage)
- Towards the end of the season, compare yield related characteristics, such as: number of productive tillers, number of spike lets, length of plants.
- Measure the yield in each of the 5 plots.
- Discuss the compensation capacity of the rice plant. Conclude that the rice plant produces an excess of tillers.

5.5 Rice Fish Culture in rice
Fish is a good source of protein for the farmer’s family. By growing fish in his rice field, the farmer will improve the diet of his family and have an additional source of income. Rice fish culture is only possible if the farmer uses IPM to manage his rice crop.
Objectives:
- The farmer will learn the techniques of rice fish culture
- The farmer will be able to evaluate the economic benefit of rice fish culture

Activities:
- A plot for RFC should be selected before transplanting and preparation (digging of trenches) should be made well in advance.
- In site selection for RFC, consider the following points:
  xxv. There must be an irrigation source available
  xxvi. The field should have a high bund (minimum 1 feet)
  xxvii. Preferably medium lowland
  xxviii. Preferable clay soil or clay loam soil
  xxix. It should be a flood free area
  xxx. The field should be near a farmer’s house (to facilitate management)
- A trench of about 0.6 meter deep and 0.6 meter wide will be made at one side of the rice field. This trench will be connected to a ditch of 1 x 1 meter and 1 meter deep. The length of the trench depends on the surface of the rice field. Total surface of the trench + ditch should be 2 – 3 % of the total plot surface.
- Three types of fish are suitable for RFC: Common carp or Mirror carp, Telapia and Thai Sarpuchi.
- Use fingerlings at a size of 3 to 4 inches (7 to 10 cm)
- Number of fingerlings released will be 20 to 25 per decimal (40 m²).
- Release the fingerlings in the evening.
- Fingerlings are released at about 10 days after transplanting.
- Before releasing the fingerlings, dip in 2% salt solution.
- Conditioning before releasing to adjust the fingerlings to the water temperature.
- Manage the field according the IPM principles.
- Do not use pesticide in this plot.
- Grow vegetables on the ais.
- Grow vegetables over the trench to provide shade for the fish (for example Bottle gourd or Snake gourd).
- Regular observations of the rice field, vegetables and growth of fish.
- Maintain the optimum water level.

Observations:
- Keep records of all costs involved (fingerlings, seeds, etc.)
- Keep record of all outputs (vegetables and fish sold)
- Measure the rice yield and calculate how much of the rice production was lost because of the trench.
- Calculate if RFC was profitable. Did the production of fish and vegetables compensate for the cost of the fingerlings and the lost surface?

Note: The plot with Rice Fish Culture can be easily combined with the IPM plot!

5.6 Compare different varieties of rice and vegetables
For all crops there are different varieties available. In the case of rice more than 40 HYV are now recommend by BRRI. For both rice and various vegetable species the varieties differ in

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many aspects such as yield, tolerance or resistance to pests and diseases, plant height, taste, etc. A farmer should be able to select the variety that is most suitable for his own situation.

Regarding the selection of varieties it is also important to mention that it is not only the yield, which is important but also several inherent qualitative characters – which may in the end influence the total economic outcome of the crop land.

**Objectives:**
- To learn how to compare varieties and how to decide which ones are suitable for the farmer’s own situation.
- To observe differences in pest and disease tolerance and yield between some varieties.
- To get a better understanding of positive features and limitations of certain varieties.

**Activities:**
- Provide some seedlings of 3 to 5 varieties (in rice including HYV).
- Use also some seedlings of local available varieties.
- Set up plots with several plants of each variety (the number depends on the crop selected, availability of seedlings, etc. In rice 2 m² (50 hills) will be sufficient.
- If possible, set up 3 or 4 replications of the treatments to make it a proper experiment.
- Mark each plot with 4 sticks and some rope.
- Use recommended dose of fertilizer for each variety.
- Place a small signboard next to each plot with the name of the variety.

**Observations:**
- Regular observations to see the morphological differences between the varieties.
- Observe weekly the differences in pest infestation and diseases.
- Look at differences such as: number of productive tillers/shoots, number of seeds/flowers, size and shape of seeds/ fruits.
- Measure the yield of each plot.
- Discussion on the positive and negative characteristics of each variety.
- If Hybrid varieties (in rice) are included, then discuss also the consequences of growing hybrids (farmer has to buy new seeds every season)

**5.7 Pot cages / insect zoo**

Predators and parasites play an important role in keeping pest populations under control. To understand this process, it is essential for participants in the FFS to make direct observations of the activities and behavior of these insects. Pot cages are very useful when you ant to demonstrate these direct observations.

Pot cages will help the participants to study life cycles, egg laying, feeding, mating, growth and behavior of insects. The interactions between pests and defenders (predators and parasites) can be studied. Damage symptoms can be easily observed and can be directly related to the feeding behavior of the pest.

**Objectives:**
- To learn about mode and rate of predation by direct observations of defenders.
- To learn about mode and rate of parasitization by direct observations of defenders.
- To learn about the life cycle of pests and beneficial insects.
- To learn about the nature of damage caused by insect pests.
<table>
<thead>
<tr>
<th>Session</th>
<th>Theme</th>
<th>Activities</th>
</tr>
</thead>
</table>
| 12th Field day | - Registration and group formation (30 minutes)  
- Field visit through following 6 booths: (2 hours)  
  a. IPM components  
  b. Pest and defenders of vegetables, Insect zoo  
  c. Sampling of pest & defenders and AESA  
  d. Bad effect of pesticides  
  e. Augmentation & conservation of defenders  
  f. Ideas and one year plan for IPM club  
- Discussion session (1 hour) | - UAO, IPM facilitators, Tag BS and FFS farmers  
- ADD/PPS and other local elite can attend. |
| 13th session (3 hours) | - Field sampling, sorting and identification of pests and defenders  
- Field work: Follow up AESA-9 decisions,  
- Insect zoos observation.  
- AESA-10 practice and presentation  
- Group dynamics exercise ice breaking  
- Special topic: IPM club activities  
- Special topic: Farmers to farmers training | - IPM facilitators and Tag BS. |
| 14th session (3 hours) | - Field observation: Trials and concluding field trial results  
- Post evaluation through Ballot box test  
- Closing ceremony. Certificate and prize distribution  
- Special topic: Harvesting and post harvesting handling of fruits.  
- Analysis of yield, compare yield with that of untrained farmers.  
- Follow up survey. | - IPM facilitators and Tag BS. |
| 22nd session | - Compilation of all data  
- FFS form fill up  
- Preparation for the review and planning workshop. | - IPM facilitators.  
- UAO, AAO/AEO are responsible for financial part. |
### 6.4 Curriculum for Farmer Field Schools in Cabbage

<table>
<thead>
<tr>
<th>Week</th>
<th>Crop stage</th>
<th>Session</th>
<th>Topics or activities</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-5</td>
<td>Seedling</td>
<td></td>
<td>Seedbed preparation, sowing, seedling raising, seedbed management etc.</td>
<td>IPM team leader, Tag BS and some farmers.</td>
</tr>
<tr>
<td>6</td>
<td>Seedling</td>
<td></td>
<td>Collection of seedling and transplanting</td>
<td>IPM team leader, Tag BS and some farmers.</td>
</tr>
<tr>
<td>7-8</td>
<td>Recovery and seedling establishment period</td>
<td></td>
<td>- Management of the transplanted crop &lt;br&gt;- Site selection &lt;br&gt;- Farmers selection &lt;br&gt;- Bench mark survey &lt;br&gt;- Preparation for field trials &lt;br&gt;- Planning about session day and time, materials procurement.</td>
<td>IPM facilitators, Tag BS and some farmers.</td>
</tr>
<tr>
<td>8</td>
<td>Vegetative growth</td>
<td>1&lt;sup&gt;st&lt;/sup&gt; session (8 hours)</td>
<td>- Inaugural ceremony &lt;br&gt;- Pre evaluation through ballot box test &lt;br&gt;- Knowing each other and group formation &lt;br&gt;- Introduction to IPM and FFS &lt;br&gt;- Discussion: norms setting and expectation &lt;br&gt;- Ice-breaking &lt;br&gt;- Participatory discussion and practice on seed health and seed selection, germination &lt;br&gt;- Discussion, demonstration, practice on land preparation, seed sowing, seedling management, etc. &lt;br&gt;- Field observation: Sampling methods, field sampling, sorting and identification of pests and defenders &lt;br&gt;- Discussion on field trials (IPM versus FP)</td>
<td>UAO, IPM facilitators and Tag BS.</td>
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<tr>
<td>9</td>
<td>Vegetative growth</td>
<td>2&lt;sup&gt;nd&lt;/sup&gt; session (4 hours)</td>
<td>- Field sampling, sorting and identification of pests and defenders &lt;br&gt;- Setting insect zones. &lt;br&gt;- Discussion: What is AESA? Introduction to concept of Vegetable agro-ecosystem. &lt;br&gt;- Group dynamics exercise &lt;br&gt;- Special Topic: Why IPM? What is IPM? - Objectives and components of IPM. &lt;br&gt;- Conservation of defenders. &lt;br&gt;- Weed management. &lt;br&gt;- Army worm management. &lt;br&gt;- Foliage and damping off and cutworm.</td>
<td>IPM facilitators and Tag BS.</td>
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<td>10</td>
<td>Vegetative growth</td>
<td>3&lt;sup&gt;rd&lt;/sup&gt; session (3 hours)</td>
<td>- Field sampling, sorting and identification of Pests and Defenders &lt;br&gt;- Observation insect zones. &lt;br&gt;- AESA-1 practice and presentation &lt;br&gt;- Group dynamics exercise &lt;br&gt;- Special Topic: Bad effect of pesticides or fertilizer and water management. &lt;br&gt;- Augmentation and conservation of defenders.</td>
<td>IPM facilitators and Tag BS. Monitoring by UAO/PPS.</td>
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<tr>
<td>11</td>
<td>Vegetative growth, bud initiation and flowering</td>
<td>4&lt;sup&gt;th&lt;/sup&gt; session (3 hours)</td>
<td>- Field sampling, sorting and identification of pests and defenders &lt;br&gt;- Field work: Follow up AESA-1 decisions, insect zoo observation. &lt;br&gt;- AESA-2 practice and presentation &lt;br&gt;- Group dynamics exercise &lt;br&gt;- Trap and intercropping &lt;br&gt;- Special Topic: Could our life be better? could we help our selves by helping each other? (IPM club session 1)</td>
<td>- IPM facilitators and Tag BS. - Monitoring by PPS.</td>
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<td>Session</td>
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<td>12</td>
<td>Vegetative growth and flowering</td>
<td>5th session (3 hours) - Field sampling, sorting and identification of pests and defenders - Field work: Follow up AESA-2 decisions - Insect zoo observation - AESA-3 practice and presentation - Group dynamics exercise - Special Topic: Management of Alternaria leaf spot disease</td>
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<td>-IPM facilitators and Tag BS.</td>
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<td>13</td>
<td>Fruit setting</td>
<td>6th session (3 hours) - Field sampling, sorting and identification of pests and defenders - Field work: Follow up AESA-3 decisions - Insect zoo observation - AESA-4 practice and presentation - Group dynamics exercise - Special Topic: Management of Diamond Back Moth and Prodenia caterpillar - Food web and food chain</td>
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<td>IPM facilitators and Tag BS. Monitoring by UAOPPS</td>
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<td>14</td>
<td>Fruit bearing</td>
<td>7th session (3 hours) - Field sampling, sorting and identification of pests and defenders - Field work: Follow up AESA-4 decisions, monitoring of trials - Insect zoo observation - AESA-5 practice and presentation - Group dynamics exercise / ice breaking - Special Topic: Biological control: Predator and parasitoids</td>
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<td>IPM facilitators and Tag BS.</td>
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<td>15</td>
<td>Fruit bearing and harvesting</td>
<td>8th session (3 hours) - Field sampling, sorting and identification of pests and defenders - Field work: Follow up AESA-5 decisions, - Insect zoo observation - AESA-6 practice and presentation - Group dynamics exercise / ice breaking - Special Topic: Management of diseases in general - Cut worm management - Tobacco caterpillar management - Safe handling of pesticides</td>
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<td>IPM facilitators and Tag BS.</td>
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<td>16</td>
<td>Fruit bearing and harvesting</td>
<td>9th session (3 hours) - Field sampling, sorting and identification of pests and defenders - Field work: Follow up AESA-6 decisions, - Insect zoo observation - AESA-7 practice and presentation - Group dynamics exercise / ice breaking - Special Topic: Management aphids, conservation of natural enemies</td>
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<td>-IPM facilitators and Tag BS. -Monitoring by DD/AD</td>
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<td>17</td>
<td>Fruit bearing and harvesting</td>
<td>10th session (3 hours) - Field sampling, sorting and identification of pests and defenders - Field work: Follow up AESA-7 decisions, - Insect zoo observation - AESA-8 practice and presentation - Special topic: Effect of pesticides on defenders and pests - Group formation, what do we need to think of? (IPM club session 2)</td>
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<td>IPM facilitators and Tag BS.</td>
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<td>18</td>
<td>Fruit bearing and harvesting</td>
<td>11th session (3 hours) - Field sampling, sorting and identification of pests and defenders - Field work: Follow up AESA-8 decisions, - Insect zoo observation - AESA-9 practice and presentation - Group dynamics exercise / ice breaking - Special Topic: Brainstorming on possible activities during the first year of IPM club (IPM club session 3)</td>
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<td>-IPM facilitators and Tag BS.</td>
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<td>Day</td>
<td>Activity</td>
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<td>Field Day</td>
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<tr>
<td>19</td>
<td>Fruit bearing and harvesting</td>
<td>12th</td>
<td>Registration and group formation (30 minutes)</td>
<td>-IMF, IPM facilitators, Tag BS and FFS farmers, AD/DD/PPS and other local elite can attend</td>
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<td></td>
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<td>-Field visit through following 6 booths: (2 hours)</td>
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<td>a. IPM components</td>
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<td>b. Pest and defenders of vegetables, insect zoo</td>
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<td>c. Sampling of pest &amp; defenders and AESA</td>
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<td>d. Bad effect of pesticides</td>
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<td>e. Augmentation &amp; conservation of defenders</td>
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<td>f. Ideas and one year plan for IPM club</td>
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<td>-Discussion session (1 hour)</td>
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<td>20</td>
<td>Fruit bearing and harvesting</td>
<td>13th</td>
<td>Field sampling, sorting and identification</td>
<td>-IPM facilitators and Tag BS</td>
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<td>of pests and defenders</td>
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<td>-Field work: Follow up AESA-9 decisions</td>
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<td>-Insect zoos observation.</td>
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<td>-AESA-10 practice and presentation</td>
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<td>-Group dynamics exercise/ ice breaking</td>
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<td>-Special topic: IPM club activities</td>
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<td>-Special topic: Farmers to farmers training</td>
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<tr>
<td>21</td>
<td>Fruit bearing and harvesting</td>
<td>14th</td>
<td>Field observation: Trials and concluding field trial results</td>
<td>-IPM facilitators and Tag BS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>session</td>
<td>-Post evaluation through Ballot box test</td>
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<td>-Closing ceremony. Certificate and prize distribution</td>
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<td>-Special topic: Harvesting and post harvesting management.</td>
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<td>-Analysis of yield, compare yield with that of untrained farmers.</td>
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<td>-Follow up survey.</td>
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<td>22</td>
<td>Final harvesting</td>
<td>No</td>
<td>Compilation of all data</td>
<td>-IPM facilitators.</td>
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<td></td>
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<td>session</td>
<td>FFS form fill up</td>
<td>-UAO, AAO/AEO are responsible for financial part</td>
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<td></td>
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<td>Preparation for the review and planning workshop.</td>
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</tbody>
</table>

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### 6.5 Curriculum for Farmer Field Schools in Cauliflower

<table>
<thead>
<tr>
<th>Week</th>
<th>Crop stage</th>
<th>Session</th>
<th>Topics or activities</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-5</td>
<td>Seeding</td>
<td></td>
<td>Seedbed preparation, sowing, seeding raising, seedbed management etc.</td>
<td>IPM team leader, Tag BS and some farmers.</td>
</tr>
<tr>
<td>6</td>
<td>Seeding</td>
<td></td>
<td>Collection of seedling and transplanting</td>
<td>IPM team leader, Tag BS and some farmers.</td>
</tr>
</tbody>
</table>
| 7-8  | Recovery and seedling establishment period |         | -Management of the transplanted crop  
-Participation in the crop  
-Farmers selection  
-Bench mark survey  
-Preparation for field trials  
-Planning about session day and time, materials procurement | IPM facilitators, Tag BS and some farmers. |
| 8    | Vegetative growth | 1st session (6 hours) | -Inaugural ceremony  
-Pre evaluation through Ballot box test  
-Knowing each other and group formation  
-Introduction to IPM and FFS  
-Discussion: norms setting and expectation  
-Ice-breaking  
-Participatory discussion and practice on seed health and seed selection, germination  
-Discussion, demonstration, practice on land preparation, seed sowing, seedling management, etc.  
-Field observation: Sampling methods. Field sampling, sorting and identification of pests and defenders  
-Discussion on field trials (IPM versus FP) | UAO, IPM facilitators and Tag BS. |
| 9    | Vegetative growth | 2nd session (4 hours) | -Field sampling, sorting and identification of pests and defenders  
-Setting insect zoos  
-Discussion: What is AESA? Introduction to concept of Vegetable agro-ecosystem.  
-Group dynamics exercise  
-Special Topic: Why IPM? What is IPM? -Objectives and components of IPM.  
-Conservation of defenders.  
-Weed management.  
-Foot rot / damping off and cutworm management | IPM facilitators and Tag BS. |
| 10   | Vegetative growth | 3rd session (3 hours) | -Field sampling, sorting and identification of Pests and Defenders  
-Observation insect zoos  
-AESA-1 practice and presentation  
-Group dynamics exercise  
-Special Topic: Bad effect of pesticides or fertilizer and water management.  
-Augmentation and conservation of defenders. | IPM facilitators and Tag BS. Monitoring by UAO/PPS. |
| 11   | Vegetative growth, bud initiation and flowering | 4th session (3 hours) | -Field sampling, sorting and identification of pests and defenders  
-Field work: Follow up AESA-1 decisions, insect zoo observation.  
-AESA-2 practice and presentation  
-Group dynamics exercise  
-Trap and intercropping  
-Special Topic: Could our life be better? could we help our selves by helping each other? (IPM club session 1) | IPM facilitators and Tag BS. Monitoring by PPS. |
<table>
<thead>
<tr>
<th>Session</th>
<th>Stage</th>
<th>Date</th>
<th>Activities</th>
</tr>
</thead>
</table>
| 12 | Vegetative growth and flowering | 6th session (3 hours) | - Field sampling, sorting and identification of pests and defencers  
- Field work: Follow up AESA-2 decisions  
- Insect zoo observation.  
- AESA-3 practice and presentation  
- Group dynamics exercise  
- Special Topic: Management of Alternaria leaf spot disease. |
| 13 | Fruit setting | 7th session (3 hours) | - Field sampling, sorting and identification of pests and defencers  
- Field work: Follow up AESA-3 decisions  
- Insect zoo observation.  
- AESA-4 practice and presentation  
- Group dynamics exercise  
- Special Topic: Management of Diamond Back Moth and Prodenia and black hairy caterpillar.  
- Food web and food chain. |
| 14 | Fruit bearing | 8th session (3 hours) | - Field sampling, sorting and identification of pests and defencers  
- Field work: Follow up AESA-4 decisions, monitoring of trials  
- Insect zoo observation.  
- AESA-5 practice and presentation  
- Group dynamics exercise/ ice breaking  
- Special Topic: Biological control: Predator and parasitoids. |
| 15 | Fruit bearing and harvesting | 9th session (3 hours) | - Field sampling, sorting and identification of pests and defencers  
- Field work: Follow up AESA-5 decisions,  
- Insect zoo observation.  
- AESA-6 practice and presentation  
- Group dynamics exercises/ ice breaking  
- Special Topic: Management of diseases in general.  
- Safe handling of pesticides. |
| 16 | Fruit bearing and harvesting | 10th session (3 hours) | - Field sampling, sorting and identification of pests and defencers  
- Field work: Follow up AESA-6 decisions,  
- Insect zoo observation.  
- AESA-7 practice and presentation  
- Group dynamics exercises / ice breaking  
- Special Topic: Management aphids, conservation of national enemies  
- Semilooper / green looper management. |
| 17 | Fruit bearing and harvesting | 11th session (3 hours) | - Field sampling, sorting and identification of pests and defencers  
- Field work: Follow up AESA-7 decisions,  
- Insect zoo observation.  
- AESA-8 practice and presentation  
- Special Topic: Aphids and its enemies and practical management  
- Special topic: Effect of pesticides on defencers and pests  
- Group formation, what do we need to think of? (IPM club session 2) |
| 18 | Fruit bearing and harvesting | 12th session (3 hours) | - Field sampling, sorting and identification of pests and defencers  
- Field work: Follow up AESA-8 decisions,  
- Insect zoo observation.  
- AESA-9 practice and presentation  
- Group dynamics exercises/ ice breaking  
- Special Topic: Brainstorming on possible activities during the first year of IPM club (IPM club session 3) |
<table>
<thead>
<tr>
<th>Day</th>
<th>Session</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>19</td>
<td>Fruit bearing and harvesting</td>
<td>12th session Field day</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Registration and group formation (30 minutes)</td>
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<td></td>
<td></td>
<td>- Field visit through following 6 booths: (2 hours)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>a. IPM components</td>
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<tr>
<td></td>
<td></td>
<td>b. Pest and defenders of vegetables, insect zoo</td>
</tr>
<tr>
<td></td>
<td></td>
<td>c. Sampling of pest &amp; defenders and AESA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>d. Bad effect of pesticides</td>
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<tr>
<td></td>
<td></td>
<td>e. Augmentation &amp; conservation of defenders</td>
</tr>
<tr>
<td></td>
<td></td>
<td>f. Ideas and one year plan for IPM club</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Discussion session (1 hour)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- UAO, IPM facilitators, Tag BS and FFS farmers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- AD/DD/PSS and other local elite can attend</td>
</tr>
<tr>
<td>20</td>
<td>Fruit bearing and harvesting</td>
<td>13th session (3 hours)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Field sampling, sorting and identification of pests and defenders</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Field work: Follow up AESA-9 decisions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- AESA-10 practice and presentation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Group dynamics exercise/ ice breaking</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Special topic: IPM club activities</td>
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<tr>
<td></td>
<td></td>
<td>- Special topic: Farmers to farmers training</td>
</tr>
<tr>
<td>21</td>
<td>Fruit bearing and harvesting</td>
<td>14th session (3 hours)</td>
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<td></td>
<td></td>
<td>- Field observation: Trials and concluding field trial results</td>
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<td>- Post evaluation through Ballot box test</td>
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<td>- Closing ceremony. Certificate and prize distribution</td>
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<td></td>
<td>- Special topic: Harvesting and post harvesting management</td>
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<td></td>
<td></td>
<td>- Analysis of yield, compare yield with that of untrained farmers</td>
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<td></td>
<td>- Follow up survey</td>
</tr>
<tr>
<td>22</td>
<td>Final harvesting</td>
<td>No session</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Compilation of all data</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- FFS form fill up</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Preparation for the review and planning workshop</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- UAO, AAO/AEO are responsible for financial part</td>
</tr>
</tbody>
</table>
## 6.6 Curriculum for Farmer Field Schools in Tomato

<table>
<thead>
<tr>
<th>Week</th>
<th>Crop stage</th>
<th>Session</th>
<th>Topics or activities</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-5</td>
<td>Seedling</td>
<td>1st</td>
<td>Seeded preparation, sowing, seedling raising, seedbed management etc.</td>
<td>IPM team leader, Tag BS and some farmers.</td>
</tr>
<tr>
<td>6</td>
<td>Seedling</td>
<td></td>
<td>Collection of seedling and transplanting</td>
<td>IPM team leader, Tag BS and some farmers.</td>
</tr>
</tbody>
</table>
| 7-8  | Recovery and seedling establishment period |         | - Management of the transplanted crop  
- Site selection  
- Farmers selection  
- Bench mark survey  
- Preparation for field trials  
- Planning about session day and time, materials procurement. | IPM facilitators, Tag BS and some farmers. |
| 8    | Vegetative growth | 1st session  
(8 hours) | - Inaugural ceremony  
- Pre evaluation through Ballot box test  
- Knowing each other and group formation  
- Introduction to IPM and FFS  
- Discussion: norms setting and expectation  
- Ice-breaking  
- Participatory discussion and practice on seed health and seed selection, germination  
- Discussion, demonstration, practice on land preparation, seed sowing, seedling management, etc.  
- Field observation: Sampling methods.  
- Field sampling, sorting and identification of pests and defenders  
- Discussion on field trials (IPM versus FP)  
- Fertilizer management, and all crops.  
- Special topic: Grafting and soil treatment | UAO, IPM facilitators and Tag BS. |
| 9    | Vegetative growth | 2nd session  
(4 hours) | - Field sampling, sorting and identification of pests and defenders  
- Set up DF and pruning study, gap filling of all crops. Setting insect zoos.  
- Sowing and transplanting all crops  
- Discussion: What is AESA? Introduction to concept of Vegetable agro-ecosystem.  
- Group dynamics exercise  
- Special Topic: Why IPM? What is IPM? Objectives and components of IPM: Conservation of defenders, Weed management. | IPM facilitators and Tag BS. |
| 10   | Vegetative growth | No session |         | |
| 11   | Vegetative growth | 3rd session  
(3 hours) | - Field sampling, sorting and identification of Pests and Defenders  
- Observation insect zoos  
- AESA-1 practice and presentation  
- Group dynamics exercise  
- Special Topic: Bad effect of pesticides or fertilizer and water management.  
- Augmentation and conservation of defenders.  
- Fusarium and bacterial wilt disease management  
- Cut worm management  
- Intercropping | IPM facilitators and Tag BS. Monitoring by UAO/PPS. |
<table>
<thead>
<tr>
<th>Session</th>
<th>Topic</th>
<th>Activities</th>
<th>IPM facilitators and Tag BS.</th>
<th>Monitoring by PPS.</th>
</tr>
</thead>
</table>
| 13      | Vegetative growth, bud initiation and flowering | 4th session (3 hours) | - Field sampling, sorting and identification of pests and defenders  
- Field work: Follow up AESA-1 decisions, management of all crop  
- Insect zoo observation.  
- AESA-2 practice and presentation  
- Group dynamics exercise  
- Special Topic: Management of white fly, mealy bug and nematodes.  
- Trap and inter cropping  
- Special Topic: Could our life be better? Could we help our selves by helping each other? (IPM club session 1) | IPM facilitators and Tag BS.  
- Monitoring by PPS. |
| 14      | Vegetative growth and flowering | 5th session (3 hours) | - Field sampling, sorting and identification of pests and defenders  
- Field work: Follow up AESA-2 decisions and management of all crop  
- Insect zoo observation.  
- AESA-3 practice and presentation  
- Group dynamics exercise  
- Special Topic: Management of early blight and late blight | IPM facilitators and Tag BS. |
| 15      | Fruit setting | 6th session (3 hours) | - Field sampling, sorting and identification of pests and defenders  
- Field work: Follow up AESA-3 decisions  
- Insect zoo observation.  
- AESA-4 practice and presentation  
- Group dynamics exercise  
- Special Topic: Management of virus diseases.  
- Nutrient deficiency symptoms  
- Food web and food chain. | IPM facilitators and Tag BS.  
- Monitoring by UAOPPS|
| 16      | Fruit bearing | 7th session (3 hours) | - Field sampling, sorting and identification of pests and defenders  
- Field work: Follow up AESA-4 decisions, monitoring of trails  
- Insect zoo observation.  
- AESA-5 practice and presentation  
- Group dynamics exercise/ ice breaking  
- Special Topic: Biological control: Predator and parasitoids. | IPM facilitators and Tag BS. |
| 17      | Fruit bearing and harvesting | 8th session (3 hours) | - Field sampling, sorting and identification of pests and defenders  
- Field work: Follow up AESA-5 decisions,  
- Insect zoo observation.  
- AESA-6 practice and presentation  
- Group dynamics exercise/ ice breaking  
- Special Topic: Safe handling of pesticides.  
- Special Topic: Fruit borer management | IPM facilitators and Tag BS. |
| 18      | Fruit bearing and harvesting | 9th session (3 hours) | - Field sampling, sorting and identification of pests and defenders  
- Field work: Follow up AESA-6 decisions,  
- Insect zoo observation.  
- AESA-7 practice and presentation  
- Group dynamics exercise / ice breaking  
- Special Topic: Aphids and its enemies, using yellow traps | IPM facilitators and Tag BS.  
- Monitoring by DD/AD|
| 19      | Fruit bearing and harvesting | 10th session (3 hours) | - Field sampling, sorting and identification of pests and defenders  
- Field work: Follow up AESA-7 decisions,  
- Insect zoo observation.  
- AESA-8 practice and presentation  
- Special Topic: Vertebrate pest management especially birds (shalik and | IPM facilitators and Tag BS. |
<table>
<thead>
<tr>
<th>Week</th>
<th>Activity</th>
<th>Session Duration</th>
<th>Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>Fruit bearing and harvesting</td>
<td>11th session</td>
<td>- Field sampling, sorting and identification of pests and defenders</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(3 hours)</td>
<td>- Field work: Follow up AESA-8 decisions,</td>
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<td></td>
<td></td>
<td></td>
<td>- Insect zoo observation,</td>
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<td></td>
<td>- AESA-9 practice and presentation</td>
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<td></td>
<td>- Group dynamics exercise/ ice breaking</td>
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<td></td>
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<td>- Special Topic: Brainstorming on possible activities during the first year of IPM club</td>
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<td>(IPM club session 3)</td>
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<tr>
<td>21</td>
<td>Fruit bearing and harvesting</td>
<td>12th session</td>
<td>- Registration and group formation (30 minutes)</td>
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<td>Field day</td>
<td>- Field visit through following 6 booths:</td>
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<td>(2 hours)</td>
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<tr>
<td></td>
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<td></td>
<td>a. IPM components</td>
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<td></td>
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<td></td>
<td>b. Pest and defenses of vegetables, insect zoo</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>c. Sampling of pest &amp; defenders and AESA</td>
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<td></td>
<td>d. Bad effect of pesticides</td>
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<td>e. All crop, augmentation &amp; conservation of defenders</td>
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<td></td>
<td>f. Ideas and one year plan for IPM club</td>
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<td></td>
<td></td>
<td></td>
<td>- Discussion session (1 hour)</td>
</tr>
<tr>
<td>22</td>
<td>Fruit bearing and harvesting</td>
<td>No session</td>
<td>--</td>
</tr>
<tr>
<td>23</td>
<td>Fruit bearing and harvesting</td>
<td>13th session</td>
<td>- Field sampling, sorting and identification of pests and defenders</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(3 hours)</td>
<td>- Field work: Follow up AESA-9 decisions,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Insect zoos observation</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>- AESA-10 practice and presentation</td>
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<td></td>
<td>- Group dynamics exercise/ ice breaking</td>
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<td></td>
<td></td>
<td>- Special topic: IPM club activities</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>- Special topic: Farmers to farmers training</td>
</tr>
<tr>
<td>24</td>
<td>Fruit bearing and harvesting</td>
<td>14th session</td>
<td>- Field observation: Trials and concluding field trial results</td>
</tr>
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<td></td>
<td></td>
<td>(3 hours)</td>
<td>- Post evaluation through Ballot box test</td>
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<td></td>
<td>- Closing ceremony. Certificate and prize distribution</td>
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<td></td>
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<td>- Special topic: Harvesting and post harvesting handling of fruits.</td>
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<td>- Analysis of yield, compare yield with that of untrained farmers.</td>
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<td>- Follow up survey.</td>
</tr>
<tr>
<td>25</td>
<td>Final harvesting</td>
<td>No session</td>
<td>- Compilation of all data</td>
</tr>
<tr>
<td></td>
<td></td>
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<td>- FFS form fill up</td>
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<td></td>
<td></td>
<td></td>
<td>- Preparation for the review and planning workshop.</td>
</tr>
</tbody>
</table>
7 Reporting and monitoring

This chapter deals with reporting of the FFS data to the component office. It is especially relevant for all persons involved in running Farmer Field Schools: AAOs/AEOs, PPIs and BSs, and persons involved in monitoring Farmer Field Schools: UAO, PPS, DTO/DD, AD.

It is very important constantly to monitor the quality and the impact of the training of farmers. Therefore, at regular intervals, data will be collected that can be used as indicators for the quality of training. The AEO play an important role in supervising and organizing the collection of these data. The UAO will make sure that the relevant forms are timely forwarded to the component office:

DAE-DANIDA Strengthening Plant Protection Services component phase II
401 - 404 Front Building, Khamar Bari
Farmgate
Dhaka 1215

A number of forms are used to collect various types of information. Please fill in these forms carefully. Please also be aware that the component office is now using a number of colored forms. This might be useful for you also, but is primarily meant to ease the handling of the large number of paper sheets now to be forwarded to the component office.

Besides being responsible for the entry of data in the various forms, the AEO is also responsible for maintaining records of all activities in the register book.

During the season, several of the component’s Master Trainers will be visiting FFSs to report on the quality of the training and to give feedback to the facilitators of the FFS. They will also check the FFS register, training materials and budget.

7.1 Indicators for the quality of the training in a FFS

Based on previous experiences (also in other IPM components), a few indicators have been selected that will be used to:

- compare farmers before and after the IPM training
- compare IPM farmers with their untrained neighbors

The following data will be used:

1. The number of pesticide applications in the entire season
2. The total amount of money spent on pesticides in the entire season (Taka per hectare)
3. Yield (Kilogram per hectare)
4. Number of pest insects counted on 20 plants.
5. Number of benefactors (beneficial insects) counted on 20 plants.

Only the first 3 figures will be collected for the season before the FFS (benchmark survey), while all 5 figures will be collected for the FFS season.

To collect the above information, a number of forms have been designed. An example of each form is included in the Annex. It is the responsibility of the AEO and UAO to make sure that these forms are timely completed and forwarded to the component office.
7.2 Identification of the FFS

At the beginning of a FFS, the component office requires some basic information to identify the FFS. Please be aware that the FFS-ID number is unique and gives some specific information about the FFS each FFS (see example below). The ID number contains four sets of information: Upazila-ID, serial number, season identification number and calendar year. Below is given an example with an explanation of the specific figures.

<table>
<thead>
<tr>
<th>0045-</th>
<th>2511-</th>
<th>2-1-</th>
<th>02</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upazila ID number</td>
<td>Serial number of your FFS</td>
<td>Crop and season identification number:</td>
<td>Calendar year</td>
</tr>
<tr>
<td>(001-200), which specifically identifies your Upazila. Please note your number, which may be used when you have contact regarding your FFS with the component office.</td>
<td>(0001-7600+)</td>
<td>1-1: Rice-spring (Boro)</td>
<td>(02-05) The SPPS II will run up to 2005. The number refers to the year, which the FFS has started.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1-2: Rice-autumn (T. Aman)</td>
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<tr>
<td></td>
<td></td>
<td>2-1: Vegetables-summer</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2-2: Vegetables-winter</td>
<td></td>
</tr>
</tbody>
</table>

To collect this information a form (FFS-1) will be supplied, which should be completed and returned to the component office together with the results of the Benchmark survey.

Form FFS-1 “Farmer Field School identification” contains a general description of the FFS. It includes information about:
- name of the FFS and location
- name of the person responsible for the FFS and his/her function (AAO/AEO/PPI/BS)
- the crop(s) in the FFS (there can be more than one crop)
- the day of the week that the FFS is organized
- start and end date of the FFS (give date of first session, estimate date of last session)
- date of the field day (estimate the date around 12th session)
- number of farmers (male, female)

The component office will assign a unique FFS number to each FFS. This number will later be placed on all documents and forms that refer to the same FFS.

*Note: If you do not know the FFS number, please leave the box blank.*

7.3 Benchmark survey

Before the start of a FFS, a Benchmark Survey will be organized. The objective of this benchmark survey is to obtain data on the farmer and on farm management in the previous season(s). For the benchmark survey, the facilitator will interview the 25 farmers who will be participating in the FFS. For interviewing each farmer, form FFS-A “Benchmark Survey (vegetables)” will be used. See Annex.

Often, the benchmark survey will be the first time that the facilitator contacts the FFS participants. Before interviewing the farmer, first explain clearly the objectives of the FFS and make sure the participants know what to expect of the training. In case female farmers will become participants in the FFS, it is recommended to also have a discussion about the FFS with the husband or father.
When interviewing a farmer it is recommended that the facilitator and the farmer sit at some distance away from the other farmers. In this way the answers will be more authentic and the farmer will not be influenced by comments of bystanders.

Start the interview by making sure the farmer is comfortable. Preferably sit in the shade under a tree near the fields. Start with some social talking to create a good atmosphere. Proceed by giving some background information on the purpose of the interview. Then finally, start asking the questions in the questionnaire.

The goal of the benchmark survey is to obtain some data on the crops grown in previous seasons. For each type of crop and for each season (Summer or Winter), the answers needed are:

1) the number of sprays and granular applications
2) the amount of money (Taka) spent to buy these chemicals
3) the yield in his/her land

*Please note that you have to note down the total yield. So if a farmer has 0.15 hectare of land, then record the yield from these 0.15 hectare in kilograms.*

After completing the form for all farmers, the total values and averages can be calculated. This will be done at the bottom of the same form. The calculated averages will then be copied to form FFS-2 ("FFS Performance") and also to the FFS register.

In a FFS there will be more than one vegetable crop. Therefore, two (or more) forms will have to be completed (one for each vegetable).

The questions about the previous crop of the farmer are important. Please note that these questions should refer to the same crop and the same season as those in the FFS. So, if the crop is Brinjal and the FFS will take place in the Winter 2000/2001 season, then the Benchmark survey should provide data on the Brinjal crop during the 1999/2000 Winter season.

At each FFS, the data of the benchmark survey will be also copied in the register book that is kept by the FFS facilitator. In this register book, the facilitator will also note down any additional information that came up during the interviews (for example if the farmer mentioned specific pest problems).

*After completing the Benchmark survey, the forms (FFS-1 and FFS-A) should be forwarded immediately to the component office.*

### 7.4 Progress reporting

Two times during the FFS season, the AEO will report the progress of all FFSs in the Upazila to the component. This will be done after the 4th session and after the 8th session. Form FFS-H ("Farmer Field School Progress") will be completed by the AEO and should be sent immediately to the component office. This will enable the component to respond quicker to any problems arising in the FFSs.

One form FFS-H is needed for up to 6 FFSs in each Upazila.

*Form FFS-H will be sent to the component office immediately after the 4th FFS session and after the 8th FFS session.*
7.5 Pests and defenders during the FFS season

During the FFS, the facilitators will collect data weekly on pests and defenders, by inspecting 20 plants in the IPM plot and 20 plants in the Farmers Practice plot. These data (total of 20 plants) are weekly entered in a special form (form FFS-C “Pests and Defenders”).

Each FFS will have 14 sessions. Therefore, the form has space for 14 weekly observations. In weeks when no data were recorded, the respective row can be left blank. At the end of the season calculate the total and average figures for the pests and for the defenders.

* Form FFS-C will be hand-carried to the component office at the review workshop, which will be organized at the end of each season.

7.6 Follow-up surveys

At the end of the FFS season, a follow-up survey will be conducted to obtain the data on pesticide use and yield both for the IPM plot (trained farmers) and for the Farmers Practice plot (untrained neighboring farmers).

This will be done by interviewing 50 farmers:
- 25 IPM farmers who were trained in the FFS
- 25 untrained neighboring farmers

For this purpose the form FFS-D “Follow-up surveys (vegetables)” will be used, which is very similar to the form (FFS-A) that was used in benchmark surveys. Please note that form FFS-D has to be completed two times: one for the 25 IPM farmers and one for the 25 untrained farmers. The calculated averages will then be copied to form FFS-2 (“FFS Performance”) and also to the FFS register. Completed forms will be forwarded to the component office where they will be processed.

* Forms FFS-D and FFS-2 will be hand-carried to the component office during the review workshop, which will be organized at the end of each season.

7.7 Monitoring the FFS

The FFS budget provides for 3 monitoring visits in each FFS. These visits will be organized by the Upazila Agriculture Officer (UAO). The monitoring visits will be carried out by:

- 1 visit by the UAO
- 1 visit by the FFS
- 1 visit by the DTO/DD/AD

The objective of these visits is to monitor the progress of the Farmer Field Schools. Form FFS-F “FFS Monitoring” will be used to collect the relevant information during these visits.

Notes:
1) These monitoring visits should monitor the regular FFS sessions. Visits during the opening day or during the field day do not count.

2) Also please note that the person who is monitoring the FFS should not “disturb” the ongoing session. He should not step in the place of the facilitator. He should just observe the ongoing program, the fields, the training materials used, etc. Based on this he will prepare the report. At the end of the session he may use a few minutes to discuss
the progress of the FFS with the farmers. Relevant comments should be written in the FFS register.

* Form FFS-F will be forwarded to the component office immediately after the monitoring visit.

7.8 General information about the forms

To facilitate the collection of data and reporting to the component, a number of forms have been designed, which were already mentioned in the previous paragraphs. The component will provide sufficient forms to each Upazila before the start of the FFS.

In each form, the FFS is identified by:
- **FFS#:** This is a FFS number, which will be given by the component office to identify each FFS. If you don't know this number, please leave this box blank.
- **FFS name:** This name should uniquely identify the FFS, usually you will put here the name of the village. If more Farmer Field Schools are organized in the same village, then another name should be chosen.
- **Upazila**
- **District**
- **FFS facilitator:** This is the name of the person responsible for running the FFS (AEO or PPI or BS).

7.9 FFS performance

At the component office, the forms that are received from the Farmer Field Schools will be processed. A separate file is kept for each Farmer Field Schools to collect all these forms. At the end of the season, a workshop will be organized to review the performance of each FFS and to plan for the next season.

Various forms are used for monitoring the efficiency of a FFS. To find out if the FFS has the desired impact on the farmers we will:
- compare results of FFS farmers during the FFS season with the data of the previous seasons.
- compare the results of FFS farmers during the FFS season with the results of their untrained neighbours.

Therefore we need 3 sets of surveys:
1) The benchmark survey form (FFS-A) provides data of the previous season.
2) The follow-up survey form (FFS-D) provides data of FFS farmers during the FFS season.
3) Another set of the follow-up survey forms (FFS-D) provides data of untrained farmers during the FFS season.

· **Note:** Indicate clearly on form FFS-D, if it is for the IPM-trained FFS farmers or for the untrained farmers.

Additional to this, pest and defenders are counted in the IPM plot and the farmers practice plot during the FFS season. This information is registered on form FFS-C.
### 7.10 Use of forms, summarized

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1</strong></td>
<td>Start by identifying the FFS</td>
<td>Complete form FFS-I and send it immediately to the component office.</td>
</tr>
<tr>
<td><strong>2</strong></td>
<td>Before the FFS begins, conduct a benchmark survey with the 25 FFS farmers</td>
<td>Complete form FFS-A and send it immediately to the component office.</td>
</tr>
<tr>
<td><strong>3</strong></td>
<td>During the FFS, count pests and defenders in IPM plot and Farmers Practice plot.</td>
<td>Keep data on pests and defenders in form FFS-C</td>
</tr>
<tr>
<td><strong>4</strong></td>
<td>Twice during the season report the progress of the FFSs to the component office</td>
<td>Complete form FFS-H after the 4th session and send it immediately to the component office. Complete form FFS-H again after the 8th session and send it immediately to the component office.</td>
</tr>
<tr>
<td><strong>5</strong></td>
<td>Also during the FFS, collect the forms completed during monitoring visits.</td>
<td>Collect at least 3 FFS-F forms from the monitoring person and forward these immediately to the component office.</td>
</tr>
<tr>
<td><strong>6</strong></td>
<td>At the end of the FFS, conduct the follow-up surveys with the 25 FFS farmers, plus with 25 untrained farmers.</td>
<td>Complete form FFS-D for the IPM trained farmers AND complete another form FFS-D for untrained farmers.</td>
</tr>
<tr>
<td><strong>7</strong></td>
<td>Prepare the financial statement.</td>
<td>Complete form FFS-G together with all voucher and balance money. Vouchers will be kept at the Upazila office with one copy of form FFS-G. Another copy of form FFS-G, together with the balance money, goes to the SPPS component main office.</td>
</tr>
<tr>
<td><strong>8</strong></td>
<td>Compile the results of the performance of the FFS.</td>
<td>Use the averages of the forms (FFS-A and FFS-D) and your FFS registry to complete form FFS-2.</td>
</tr>
<tr>
<td><strong>9</strong></td>
<td>Bring all forms and all other FFS information to the FFS review workshop, which will be conducted at the end of the season. Also bring the balance money (either cash or cheque).</td>
<td>Without all the completed forms you cannot attend the workshop!</td>
</tr>
</tbody>
</table>
8 Funding and accounting procedures for advance to Upazilas

This chapter deals with the accounting procedures for the advance provided to Upazilas for organizing Farmer Field Schools. It is especially relevant for UAOs.

The funding and accounting procedures for Farmer Field Schools in IPM must be followed strictly in order to facilitate a smooth component operation.

The budget for a Farmer Field School (FFS) is according to chapter 9. Based on this budget and the number of FFSs to be organized, the Upazila will receive advance funding in the form of a crossed cheque or demand draft before the start of the FFS.

The bank draft is given as an advance for each Upazila, with a maximum of Taka 15,000 for each FFS. However in many FFSs the actual expenses will be lower, as this depends on the honoraria paid to the facilitators. Any unspent money should be returned to the component at the end of the FFS season.

Example:
In most Upazilas, there will be 4 IPM-trained facilitators (1 AAO/AEO, 1 PPI and 2 BSs). These Upazilas will usually have 6 FFSs.
The budget for 3 of these FFSs will be 15,000 Taka (FFSs facilitated by the trained AAO/AEO, together with 1 trained BS and 1 untrained BS).
The budget for the other 3 FFSs will be 14,650 Taka (FFSs facilitated by the trained PPI, 1 trained BS and 1 untrained BS).

This example shows a "normal" situation. However, the component has also FFSs in Upazilas where the situation is different, for example with less than 4 trained facilitators or sometimes even with more trained facilitators.

In these Upazilas, the UAO in consultation with the trained facilitators will decide which facilitators will be running the FFS. The following points should be noted:

1. In each FFS there is honorarium for maximum three persons:
   - Two IPM-trained facilitators (trained in season-long ToT)
   - One untrained facilitator (local Block Supervisor)

2. The same person can receive honorarium from maximum 3 Farmer Field Schools in each season (even in exceptional cases where a trained facilitator would be involved in facilitating more FFSs)

3. All persons who were trained in a season-long IPM training can be engaged in facilitating FFSs. So this is not limited to facilitators who were trained in ToTs of the SPPS component but it includes also facilitators who were trained in ToTs of UNDP or FAO.
After receiving the funds, the Upazila Agriculture Officer (UAO) will place the full amount in his/her official bank account.

The UAO shall account for all input costs, signboards, training materials, allowances, field day, etc. in accordance with the budget.

Note that it is important that signboards and training materials are purchased timely (i.e. before the start of the FFS).

After completing the FFS, the UAO should send the following to the component office:
   1) Form FFS-G “Summary sheet of FFS expenses” fully completed
   2) Balance money

The above can be hand-carried by the AEO who is attending the FFS review workshop which is organized at the end of each season.

Balance money can be sent to the “Strengthening Plant Protection Services component” either in cash / by cheque or demand draft.

The original vouchers should be kept in the UAO’s office along with a copy of the Summary sheet (form FFS-G). In this connection there will be an annual audit by DANIDA in addition to an annual GOB audit. The auditors will examine the FFS related vouchers kept in the UAO’s office.

Form FFS-G “Summary sheet of FFS expenses” must be prepared in English, to allow for proper component accounting and Danish Embassy auditing. If more space is required, use extra forms.

Forwarding address:
   Senior Adviser
   DAE-DANIDA Strengthening Plant Protection Services component
   401-404 Front Building Khamar Bari
   Farmgate
   Dhaka-1215
   Tel: 9121847, Fax: 9131373

It is important to note that advance for running FFSs in the following season cannot be released unless proper accounting of the previous season was received and approved by the component.
9 Budget for running Farmer Field Schools

This chapter deals with the overall budget for the training of farmers in Farmer Field Schools. It is especially relevant for UAO's, AAOs and AEOs.

The overall budget frame for the running of FFS has been set through a formulation mission consisting of experts from Denmark in collaboration with officials from DAE and MOA. Although the amount per FFS has been slightly reduced, compared to SPPS I, the total input per Upazila during SPPS II period is much larger as the number of FFS has been increased significantly.

The actual budget for running Farmer Field Schools in Integrated Pest Management for the specific season is prepared by the SPPS component. The money must be collected from the component office (cheque / demand draft).

Please be aware that if any FFS is not completed or if the money received was not spent, it should be returned to the component office. This also applies to monitoring; if for some reason it is not possible to perform the full monitoring (one monitoring visit by UAO and two monitoring visits from district level) the money should be returned to the component office at the "end of season" workshop, which is arranged by SPPS II. Please make sure that no compromise is made on these principles.

9.1 Budget for FFS

Each FFS consists of 25 farmers, who receive training through 14 sessions (1 full day at first FFS session, 12 regular FFS sessions and 1 field day with 250 invited neighbouring farmers). The budget for the whole setup is made available to the Upazila Agriculture Officer (UAO) to run the Farmer Field Schools. The total budget for each FFS has the following break up:

Overall budget for running FFS

<table>
<thead>
<tr>
<th>Items</th>
<th>Cost per Item</th>
<th>Total Taka</th>
</tr>
</thead>
<tbody>
<tr>
<td>1  Refreshment for 1st session</td>
<td>20 Taka x 40 persons</td>
<td>800</td>
</tr>
<tr>
<td>2  Refreshment 12 regular sessions</td>
<td>10 Taka x 30 persons x 12 sessions</td>
<td>3,600</td>
</tr>
<tr>
<td>3  Field day preparation</td>
<td>1100 Taka</td>
<td>1,100</td>
</tr>
<tr>
<td>4  Field day refreshment</td>
<td>10 Taka x 300 persons</td>
<td>3,000</td>
</tr>
<tr>
<td>5  Honorarium for trained AAO/AEO or for trained PPI</td>
<td>125 Taka x 14 sessions or 100 Taka x 14 sessions</td>
<td>1,750 or 1,400</td>
</tr>
<tr>
<td>6  Honorarium for trained BS</td>
<td>100 Taka x 14 sessions</td>
<td>1,400</td>
</tr>
<tr>
<td>7  Honorarium for local, untrained, BS</td>
<td>50 Taka x 14 sessions</td>
<td>700</td>
</tr>
<tr>
<td>8  Monitoring, 3 visits in each FFS (1 visit by UAO, 1 visit by PPS and 1 visit by either DTO/DD or AD)</td>
<td>200 Taka x 3 visits</td>
<td>600</td>
</tr>
<tr>
<td>9  Training and other materials</td>
<td>1800 Taka</td>
<td>2050</td>
</tr>
<tr>
<td>Total budget for each FFS (with AEO, trained BS and untrained BS)</td>
<td>or</td>
<td>15,000</td>
</tr>
<tr>
<td>Total budget for each FFS (with PPI, trained BS and untrained BS)</td>
<td>or</td>
<td>14,650</td>
</tr>
</tbody>
</table>
10 List of FFS Training material

Following are two lists of materials, which are needed for running the Farmer Field Schools. Some items in the list of materials are marked “permanent” items. This means that after completion of the FFS, they will be kept at the Upazila office to be used again in other FFSs during the following seasons. Since each Upazila will have a maximum of 6 FFS simultaneously, maximum 6 sets of these items should be kept in each Upazila. Other items in the list will be used up during the FFS, or can be kept by the participants.

10.1 Training and other materials to be purchased in the Upazila

The following list shows the training materials that will be purchased locally in the Upazila with the budget available for training materials (1,805 Taka). The UAO will organize the purchase of these materials. Small, relevant changes (see below) to this list can be made according to the actual need of training materials.

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Items</th>
<th>Quantity (Pieces)</th>
<th>Unit Price (Tk.)</th>
<th>Total Amount (Tk.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Extra plastic pot (big size)</td>
<td>5</td>
<td>30.00</td>
<td>150.00</td>
</tr>
<tr>
<td>2</td>
<td>Extra plastic pot (small)</td>
<td>5</td>
<td>10.00</td>
<td>50.00</td>
</tr>
<tr>
<td>3</td>
<td>Plastic tube (to make aspirators)</td>
<td>10</td>
<td>3.00</td>
<td>30.00</td>
</tr>
<tr>
<td>4</td>
<td>Pots for pot cages</td>
<td>5</td>
<td>14.00</td>
<td>70.00</td>
</tr>
<tr>
<td>5</td>
<td>Sign board for trials (size-8”x12”)</td>
<td>10</td>
<td>20.00</td>
<td>200.00</td>
</tr>
<tr>
<td>6</td>
<td>Sign board for FFS (size 3’ x 2’)</td>
<td>1</td>
<td>250.00</td>
<td>250.00</td>
</tr>
<tr>
<td>7</td>
<td>Shelter facilities (either against sunlight or rain e.g. ‘Samiana’) at the training site</td>
<td>1</td>
<td>400.00</td>
<td>400.00</td>
</tr>
<tr>
<td>8</td>
<td>Seeds / seedlings, fertilizers, etc. (For Ail crops, intercrops and other trials)</td>
<td></td>
<td></td>
<td>350.00</td>
</tr>
<tr>
<td>9</td>
<td>Rewards (for the best Farmers)</td>
<td></td>
<td></td>
<td>300.00</td>
</tr>
<tr>
<td>10</td>
<td>Miscellaneous Expenses (for carrying bamboo sticks, GI wire, rope, nail, poly bags, photocopy, postal charges etc.)</td>
<td></td>
<td></td>
<td>250.00</td>
</tr>
</tbody>
</table>

Total = Tk. 2050.00

Note: The signboard of the FFS (item # 6) should be prepared and put in place preferably before the 1st session. The signboard measures 2 feet x 3 feet and will be written in Bangla. The top half will show the name of the FFS in white letters on a blue background. The bottom half will show the name of the component “DAE-DANIDA SPPS component” in black letters on a white background.

* The UAO will send the summary sheet (form FFS-G) of the FFS expenditures and balance money to the component office after completing the FFS (this can be hand-carried by the AEO attending the review workshop).