



2

Planning

Junior Farmer Field and Life School – Facilitator’s guide



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Module 2: Planning

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Module 2: Planning

INTRODUCTION

Any activity undertaken in the farm or in life in general should start with good planning. This way one can assure to get the maximum benefit out of certain activity. An important aspect of planning in agriculture is analysing field and soil conditions, choosing which crops to grow or which type of livestock to keep and thinking of how to ensure good agricultural practices. Apart from providing food, there are other reasons for growing crops, such as for example grow crops to sell on the market to get some income. The participants should realise understand early on that growing crops and raising animals are ways to make money.

In this module, the participants will first discuss analysing field and soil conditions, then identifying the type of enterprise to implement. They will also be introduced to principles of experimentation and Agroecosystem Analysis (AESA) which is an important tool for the daily monitoring of the field situation. Finally, in order to relate the field conditions to their own lives participants will begin to learn how to plan their lives by discussing family planning, analysing their daily activities and discussing decision making.

This module contains sample exercises for each of the learning activities, plus a number of sample energizers and cultural activities that can be used to keep the participants engaged and reinforce their learning. The provided activities should serve as samples to be modified and applied as appropriate. The important thing is that all main building blocks of a typical JFFLS session are included in each learning session.

By the end of this module participants should:

- Be able to analyse field and soil conditions;
- Know how to identify and plan agricultural enterprises;
- Have been introduced to the concept of AESA;
- Understand the important of team work and family planning.

OBJECTIVES

A TYPICAL JFFLS SESSION (3-4 HOURS):

-  **ENERGIZER AND FUN** (30 MIN)
-  **IN THE LEARNING FIELD** (45 MIN)
-  **AGRICULTURAL TOPIC** (45 MIN)
-  **MAKING THE LINK WITH LIFE** (30 MIN)
-  **CULTURAL ACTIVITIES (ART, DRAMA, SONG)** (30 MIN)
-  **ASSESSING PROGRESS**
-  **CLOSING ENERGIZER**



Exercises

➤ GETTING STARTED WITH “ENERGIZERS”

Some sample energizers that will also help to “break the ice” and make participants feel comfortable while at the same time introduce the module focus are provided below.

Energizer: Sport actions

OBJECTIVE:

To agree on learning mode and develop rules and norms for the group. Participants get to know one another.

STEPS:

1. Divide the big group into four smaller groups. Assign one sport activity/action each to each group. Use the following sports activities/actions:
 - Basketball, shoot
 - Volleyball, smash
 - Football, kick
 - Baseball, bat
2. Point to any one group to start the game. The group should say its sport and its corresponding action thrice before calling out the sport and corresponding action of the group it has chosen to respond. The group that is selected does the same, i.e., say its sport and its corresponding action thrice before calling out the sport and corresponding action of another group. For example the basketball group may say, “Basketball shoot, basketball shoot, basketball shoot to football kick”. The football group should answer, “Football kick, football kick, football kick to volleyball smash”, and so on.
3. Eliminate any group that makes a mistake in calling out or doing the actions of any of the sports activities. The group that not eliminated automatically wins.
4. When a winner has been identified, ask the winning group why they think they won over the rest (expect different answers). Ask the following questions: why did your group not make any mistake? How did you choose which group you were going to call out next? Did you have a leader? Did you plan? Accepting all answers will encourage participants to share in the discussion as well as give them the feeling of respect.
5. Emphasize the value of planning and coordination for successful teamwork.

Energizer: Newspaper run

OBJECTIVES:

- To demonstrate the need to make decisions;
- To promote team work.

MATERIALS:

Newspapers.

STEPS:

This is a competitive game, so the groups should all agree before you start, on the distance both groups have to cover (i.e. the distance of the race).

1. Divide the participants into teams of three.
2. Give each team two big sheets of newspaper. Tell them to place one sheet on the ground and for the whole team to stand on it in a row holding hands with each other.
3. Then have them place the second sheet of newspaper in front of them.
4. Explain to the participants that when you say “go” they have to cover the distance to the finish line by stepping from the sheet of paper onto the second sheet, which they have to place in front of them by bending backwards, picking it up and placing in front of them. They should repeat this process until they reach the finish line.
5. To make it more difficult you may want to tell the participants that they must continue holding hands, and they have to use their free hands to collect the piece of paper behind them.
6. The first team to reach the finishing line is the winner.
7. When the race is over, ask the participants what was difficult, what was easy and if they worked well as a team. Ask them to talk about whether one person was more coordinated than their movements, etc.
8. Once you have discussed the game in this way, explain that the game is a bit like life: we need to make decisions if we want to move forward. Sometimes we do this as individuals, sometimes as part of a team.



ANALYSING FIELD CONDITIONS

The conditions of a field i.e. the kind of soil, its fertility, availability of water, the weather patterns etc. makes a big difference in the way that a crop develops. Therefore it is important to understand these different field conditions in order to decide what kinds of crops will grow best in a given area. It is also important to understand what kind of agricultural practices will help to produce a healthy crop. In this topic, the participants will first discuss the resources available, characteristics they desire in a field to be able to grow a healthy crop and learn how to measure land gradient. They will also visit the JFFLS learning field to check out the conditions there.

🔄 exercise 1

RESOURCE INVENTORY

OBJECTIVE:

To identify and appreciate the available resources in the local surrounding.

TIME:

2 hours

MATERIALS:

Flip charts, marker pens, cards.

STEPS:

1. Open the discussions by asking the participants to identify the various resources they come across in the environment or farm during their day to day activities. Record all responses on a flip chart.
2. Divide the participants into two groups.
3. Ask one group to make a map of one of the participant's individual farm with enough detail to show the boundaries of the farm, homestead, the location of each crop and livestock enterprises, rivers or streams, trees, and other farm structures including buildings.
4. Ask the other group to make a map of the community. This map should include other local resources that are not directly on individual farms e.g trees, forest, and water point etc.
5. Ensure that most of the useful resources are identified and mapped on the drawings with the participation of everybody.
6. Discuss which resources can or can not be obtained in your local community.

🔄 exercise 2

CHARACTERISTIC OF AN AGRICULTURAL FIELD

OBJECTIVE:

To understand the desired characteristics of an agricultural field.

TIME:

About 20 minutes

MATERIALS:

Large sheets of paper and markers.

STEPS:

1. Introduce the topic of analysing field conditions. Ask the participants why they think it is important to analyse the condition of the field before planning the crops they will grow.
2. Ask the participants to mention all the important characteristics of an agricultural field that a farmer needs to know when he/she starts cultivating. List all characteristics mentioned on a large sheet of paper. If you think they have missed something, bring it up and discuss based on the checklist below.

- Go through each item on the list, asking the participants why it is important to know this item when a farmer starts cultivating his/her land.

Summarize the list of “important characteristics for a learning field” and ask the participants to copy the list in their notebook.

facilitators' notes 1

CHARACTERISTIC OF AN AGRICULTURAL FIELD

Checklist: Important characteristics of an agricultural field

- Soil type (texture: light-heavy, structure: compact-loose, organic matter: high-low).
- Soil depth (deep enough to support good root development).
- Slope of the land (danger of erosion, run-off water, problems for mechanisation).
- Drainage situation (depressions in the field, lowest point of the field).
- Presence of water sources (if irrigation is needed).
- Vegetation (is there heavy vegetation? Are there weeds?).
- History (what was cultivated in that field in the past gives information about condition of the field).
- What is going on in neighbouring fields (weeds, pest and diseases often enter from neighbouring field).

exercise 3

HOW TO ANALYSE FIELD CHARACTERISTICS

OBJECTIVE:

To analyse the condition of the JFFLS learning field and gain an understanding of its specific characteristics.

TIME:

About 1 hour

MATERIALS:

Learning field, large sheets of paper and markers.

STEPS:

- Go with the participants to the field that has been selected for the JFFLS learning field. Divide the participants into small groups.
- Ask each group to analyse the field, using the list of important characteristics that they have developed above, to identify what they are seeing.
- Bring the participants back together at the edge of the field and ask the groups to present the results of their field assessment.

4. Discuss the presentations. Ask the participants if it was difficult to assess some of the field characteristics of the learning field (for example, the soil characteristics).
5. Ask the participants to think of the results of their analysis and if they can see what kind of problems they might have when they start cultivating the crops they would like to grow in the learning field. Use the questions below to stimulate discussion.
6. Summarize the discussion and observations made in the field and discuss the following questions:
 - Is it possible to grow a crop in all different soil types?
 - What can the vegetation that is in the field tell us about the fertility of the soil?
 - Why is it important to know about the history of the field?
 - Is it always important to have a water source close to the field?
 - Where does the water flow to after a heavy rain shower?
 - Why is it important to check the soil depth at different locations in the field?

🔄 exercise 4

MEASURING THE LAND “GRADIENT”

OBJECTIVE:

To understand the concept of land “gradient” and relate it to the flow of water and movement of soil in a field.

TIME:

About 1 hour

MATERIALS:

A ball, a basin of water.

STEPS:

1. Hold a discussion where you begin by asking the participants what land gradient means, and why it is of important in agriculture. Make a list of the responses on flip charts and then break into sub-groups for discussion.
2. Go with the participants to a piece of bare ground – one that has no vegetation cover.
3. Ask one child to drop a ball on the bare ground from about a height of half a metre.
4. Tell the participants to observe the direction and the speed that the ball rolls.
5. Repeat steps 2 and 3 at different sites in the same area.
6. Discussion: Ask the participants what they observed about the direction and speed of the rolling ball at the three points. What do they think is the direction of the slope of the land? Ask them which of the directions is steeper. (The point where the ball runs fastest is the steeper slope of the land).

As an alternative:

1. Go with the participants to a piece of bare ground.
2. Pour a basin full of water on the ground.
3. Observe the direction and the speed that the water flows.

4. Repeat steps 2 and 3 at different sites in the same area.
5. Discussion: Ask the participants what they observed at the three different points. What was the speed of the water flow? Where does the land slope? (The faster the water flow, the steeper the land).

After the discussion, explain to the participants that land that is sloped can contribute to soil erosion. When it rains, the soil that is higher up can easily begin to wash away. Introduce the idea of building land gradient barriers to prevent erosion.

facilitators' notes 2

BUILDING LAND GRADIENT BARRIERS

Tips for building land gradient barriers

When the level curves are measured and marked, you can decide what you need to do to protect the soil from erosion and to try to control the flow of water. No matter which kind of barrier you are going to build, these tips should be of use to you.

- Prevention through planting trees or plants: it is always a good idea to plant trees or plants on the top of a hill. If the gradient is very steep, the trees will help prevent soil erosion. Plants and grass/shrub will also help to control water flow.
- Starting from the top (the water runs from the top to the bottom): if you start from the top you will automatically protect everything you have at the bottom which means that you can use smaller barriers at the bottom.
- Managing water flow but making sure it keeps moving: it is important to let the water run and not gather around the plants too much. Badly planned barriers can lead to the formation of stagnant water pools and bring malaria and other water-borne diseases to the area.
- Correcting problems as they arise: if a barrier or a terrace falls down, re-build it quickly, because it could cause serious erosion on the hillside.



ANALYSING SOIL CONDITIONS

The condition of the soil makes a very big difference for the health of plants or crops growing in it. When beginning to plant a field, one will need to learn how to analyse the soil to see if it is of good quality for growing crops. In this topic participants will learn simple tests to determine the condition of different types of soil. They will also begin to understand concepts such as soil colour, texture, fertility and structure and what they mean for growing healthy crops.

🔄 exercise 1

UNDERSTANDING THE SOIL

Soils in different fields or locations can be very different, in terms of color, type of particles it contains (texture) and the way that it holds together (structure). Knowing your soil is of high importance when growing crops since it has big implications on the fertility of the land and the ability of the soil to retain water.

OBJECTIVE:

To learn to understand the soil in the local area better.

TIME:

About 1 hour

MATERIALS:

Shovels, paper, pens.

STEPS:

1. Hold a group discussion on the idea of “soil fertility” and explain that this means the ability of the soil to give plants the nutrients and water they need as well as the right type of “bed” for the roots to develop.
2. In groups of 4-6 persons, walk to a piece of land; a cultivated field, grazing land or forest area.
3. Dig up one square block of soil for each subgroup, about two hands wide. Try not to disturb or break the block.
4. Ask each group to examine and describe their block of soil in terms of:
 - **Soil colour:** what soil colour do they see? Why is colour important? Does the top soil have a different colour than the rest of the soil, in such case why?
 - **Soil texture:** what kind of particles are the soil made up of? How big are they?
 - **Soil texture:** break of pieces of the block with your hands and study the shape and feeling of the pieces. Examine if the soil has a loose structure or if the particles are bound hard to each other. Look for channels and canals in the soil where water and air can pass through and look how the roots move in the soil?
5. Discuss the following concluding questions:
 - Is the examined soil a good soil for growing crops in, why or why not?
 - If there was a hard layer of soil, how do you think this would affect the way the roots develop?
 - How would you want your ideal soil to look like?

🔄 facilitators' notes 1

CHARACTERISTICS OF SOILS

Soil colour

- Dark colours: high organic content, which means better drainage and higher nutrient levels. Very good fertility.
- Red-brown and orange: good drainage, free movement of air and water. With enough water, good fertility.
- Dull yellow and blue: seasonal drainage problems.
- Grey: poor drainage, too much water and not enough air.

Soil texture

- Sand: relatively coarse and feels gritty when rubbed between the fingers.
- Silt: much finer than sand and feels smooth and floury. When wet, it feels smooth but not sticky.
- Clay: the finest particle, cannot be seen without a microscope. When wet, it is sticky.

Soil structure

- Single grains: soil with no lumps and when the soil (usually sandy) easily falls between the fingers.
- Crumbly: small soft porous lumps of irregular shapes and not closely fitted together. The lump easily breaks apart.
- Blocky: small soil blocks can be seen, usually with six irregular faces that easily fit together along vertical edges.
- Plate or columnar: less common are when the soil is arranged as thin horizontal flakes or as vertical columns or pillars.

Summary of an healthy and poor soil

Healthy soil	Poor soil
Litter or plant fragments on the surface.	Bare and compacted soil surface.
Darker colour because the soil has been.	Lighter colour because the soil is starved and weak soil structure (dense but breaks into particles).
An open structure with pore spaces and channels for air and water entry and drainage through the soil.	A compact soil with poor aeration and drainage (what happens to plants and animals if we shut them in an air-tight box?).
Lots of fine roots holding the soil together.	Few roots or roots of problem weeds such as couch grass (witch weed) which spreads underground by rhizomes.
Channels formed by earthworms and/or termites (termite galleries often have a fine-textured lining of soil).	Few channels and large pores.
More visible organisms and diverse species (and the different structures they make).	Few visible organisms, or sometimes many visible organisms of one or two species (low diversity), e.g. many white grubs.

🔄 exercise 2

WHAT IS THE SOIL MADE UP OF?¹

If you look closely at the soil, you can see that it is made up of many different kinds of particles. Some of them are soft, some are hard. Some are light coloured and some are darker. Some are powdery and some are stickier. This is called the “composition” of the soil. Most soils are a mixture of clay, silt and sand and organic matter (decomposed crop residues). The soil composition helps understand the kind of nutrients that the soil has to give to the crops. It also helps understand how well it will be able to hold water for the crops and how well it will be able to support the roots of crops as they grow. In this exercise we will look at three soils and examine what they are made up of.

OBJECTIVE:

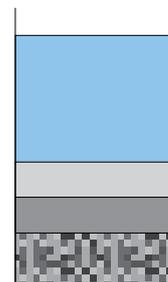
To look in detail on three soils and examine what they are made up of.

TIME:

2 hours

MATERIALS:

3 glasses, 3 soil samples, water, something to stir with.



STEPS:

1. Divide the participants into three sub-groups.
2. Ask each group to collect about two handfuls of soil; each group from one of the following three fields, from a valley, from top of a hill or from the side of a slope.
3. Ask the groups to look at, and touch the samples, making a guess of what the soil is made up of.
4. Each group fill 1/3 of a glass with their soil sample. Thereafter, ask them to fill the rest of the glass with water and stir the mixture well.
5. Let the mixture rest for 5 minutes, and then stir it well once again. Put it down and do not touch it for two hours.
6. After two hours look at the soil in the glasses. The soil has now dropped to the bottom of the glass and the water is clear. Several layers of soil have formed. The biggest particles, will be furthest down and the smallest particles higher up. At the bottom of the glass you will have a layer of sand, above that you will find a layer of silt and at the top there will be a layer of clay. If the water is not clear it is because there are still clay particles in the water. If waiting for a long time these particles would also settle down in the top layer. On top of the water you find pieces of leaves and roots floating.
7. Ask the participants to describe the different layers in their glass, the thickness of the layer, what kind of particles, is there any material floating on the surface etc. Which soil sample do they think would be the best soil for growing a crop and why?

¹ Adapted from: The soil, FAO, 1976.

🔄 exercise 3

HOW TO “FEEL” THE SOIL TEXTURE²

In the field soil texture can be determined by “feeling” the soil. This involves taking a small sample of soil and rubbing it between the thumb and the other fingers. Soil feels very different when touching it, depending on what kind of particles it is made of. In this exercise you will practice to “feel” the soil texture. Soils with a lot of sand will fall apart, while those with more clay can be worked into a very good ribbon. Silty soils feel very smooth. Loam soil is smooth but slightly sticky and has just a little feel of grit. Eventually, after much practice, you will be able to accurately assess the type of soil using this method.

OBJECTIVE:

To practice how to “feel” the texture of a soil.

TIME:

1 hour

MATERIALS:

Soil samples, water, measuring spoon, water container for hand washing.

STEPS:

1. Collect about 5 soil samples from different kinds of fields.
2. Remove stones, roots, leaves and seeds from the soil samples and break down hard particles.
3. Take a handful of soil; moisten it with water, a little at a time (drop by drop) until the soil begins to stick to your fingers. Work the soil in your hand until it's smooth and uniformly moist.
4. Try to first form a round ball and then a long ribbon by squeezing the soil between your thumb and forefinger. Follow the guidelines below in order to classify the soil sample.
 - Sandy loam: the soil contains enough silt and clay to become sticky, and can be given the shape of an easy-to-take-apart ball.
 - Silty loam: similarly to the sandy loam but the soil can be shaped rolling it with a small and short cylinder.
 - Loam: contains almost the same amount of sand, silt and clay. Can be rolled into a 6" long cylinder that breaks when bends.
 - Clayey loamy: similar to the loamy, although this one can be bent and be given an U shape (without forcing it) and does not break.
 - Fine clay: the soil can be given the shape of a circle, but shows some cracks.
 - Heavy clay: the soil can be shaped as a circle, without showing any crack.

² Adapted from: Guidelines and Reference material on Integrated Soil and Nutrient Management and Conservation for Farmer Field Schools, FAO, 2000.



5. Questions to discuss:

- What components are the different soil samples made up of?
- Which of the soils would you prefer to cultivate, and why?

Point at which the soil becomes malleable and can be hand-shaped, indicates its texture.

(Source: Agricultural Compendium for Rural Development in the Tropics and Subtropics).

☺ exercise 4

AIR IN THE SOIL?

Roots need air to breathe and space to spread out. This is provided by air spaces between each particle of soil and between the “clumps” of soil. It is in these air spaces that all of the “action” takes place – where air and water move.

OBJECTIVE:

To demonstrate the presence of air in the soil.

TIME:

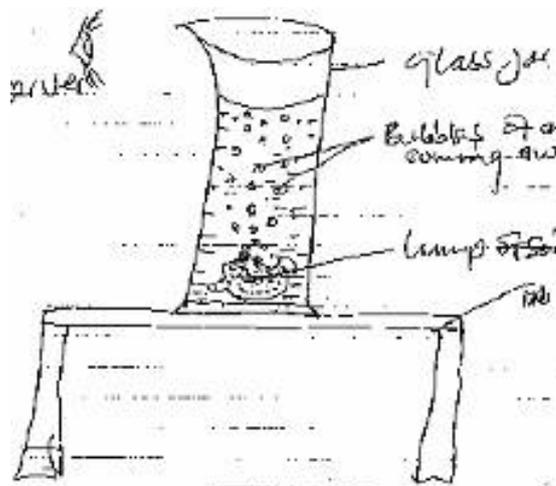
15 minutes

MATERIALS:

Lump of soil, water, glass, a table.

STEPS:

1. Place the glass on a table where it is visible for all.
2. Fill $\frac{3}{4}$ of the glass with water.
3. Place the lump of soil in the glass of water.
4. Observe and discuss what happens.
5. Conclude by explaining that the bubbles of air one can see coming from the lump and rising up to the water surface shows that there is air in the soil.





IDENTIFYING ENTERPRISES

When one has understood the basic conditions and qualities of the resources available one can start to plan which crops to grow or animals to keep. This includes selecting which crop species and variety to plant, what type or how many animal to keep. It also includes planning ones agricultural activities in more detail and organising ones farm operation in such way that labour requirements are spread out during the year. In these topic participants will start plan their enterprise selection in more detail.

☞ exercise 1

PLANNING SOURCES OF FOOD

OBJECTIVE:

To start planning the selection of farm enterprises based on food requirements.

TIME:

1.5 hour

MATERIALS:

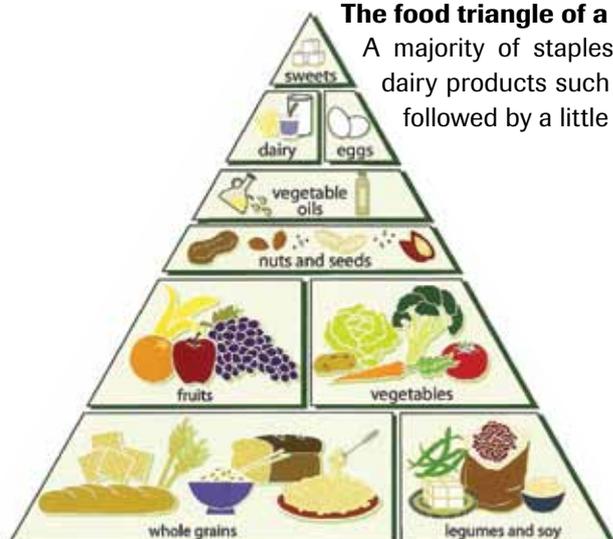
Flip chart paper and markers.

STEPS:

1. Ask the participants to list down the type of crops grown in the community.
2. Ask the participants why they grow the crops.
3. Ask them to identify the different elements of a balanced daily diet (cereals, vegetables, meat, fruit).
4. Divide the participants in small groups and ask the groups to discuss what crops they should grow and what animals they should keep in order to produce a balanced diet all year. Ask each group to list the different crops and animals on a large sheet of paper, along with the months when those crops would be eaten.
5. Ask the groups to present their list.
6. Discuss the presentations and identify the periods of the year when it will be difficult to produce one or more elements of a balanced diet.
7. Make a list of all the crops and animals that the participants presented and then ask them which of the crops they would like to grow in the learning field.
8. Discuss the following guiding questions:
 - How long can you store the produce of the different crops after harvesting?
 - How much do you need to grow to have enough food for yourself all year round?

The food triangle of a balanced diet.

A majority of staples such as maize, millet, porridge, bread and dairy products such as milk or cheese. Then vegetables and fruit followed by a little meat or fish products.



☞ exercise 2

PLANNING CROP ACTIVITIES

OBJECTIVE:

To understand what aspects to take into consideration when planning a crop enterprise.

TIME:

About 2 hours

MATERIALS:

Flipchart and marker pens.

STEPS:

1. Discuss in the group the following questions and keep a list of the answers on a flipchart:
 - What size is our learning field?
 - What is the best time to plant crops, given the climate and the market?
 - What other factors are important in deciding what crops to plant and when to plant them?
 - What crops do you think we should plant?
2. Move together with the group to the learning field and divide the participants into sub-groups of 4-5 persons.
3. Ask them to develop a plan that gives step-by-step ideas of what they have to do in order to produce a crop in the field. If the following aspects don't come up by themselves probe the discussion related to: crop selection, land clearing, land preparation, ploughing, seed bed establishment, manure/fertilizer application, weeding, watering, pest and disease control, harvesting etc.
4. Bring the participants back together and have them present their plans. Conclude the session by asking the following questions:
 - Is it a good idea to make a plan? Why or why not?
 - Was it easy or difficult to make a plan in a group?
 - What basic steps do we need to follow to make a plan?
 - Did everybody participate in the discussion? Why or why not?

☞ exercise 3

SELECTING LIVESTOCK ENTERPRISES

OBJECTIVE:

To reflect on the advantages and disadvantages of keeping different types of livestock.

TIME:

1.5 hour

MATERIALS:

Flipchart and marker pens.

STEPS:

1. Introduce the topic of livestock as part of the farming system.

2. Ask the participants what kinds of livestock/animals are kept by farmers in the area. Draw them down on a large sheet of paper. If needed, add the missing ones.
3. Discuss the different kinds of animals and ask the participants to indicate which of those animals are the most common.
4. Divide the participants in small groups and ask each group to select one of the most common kinds of livestock. Ask each group to discuss the advantages and disadvantages of keeping that particular animal and to present this on a large sheet of paper.
5. Ask the groups to present the results of their discussions.
6. Discuss the presentations of the small groups.
7. Ask the participants:
 - What do they think is the most suitable type of livestock to be kept?
 - What are the advantages of integrating livestock with crop production?
 - Do you need a lot of space for keeping livestock?
 - What do you need to do to protect livestock?
 - What kind of feeding arrangements are needed for keeping livestock?
8. Discuss the possibilities of keeping some (small) livestock with the JFFLS in order for the participants to learn to take care of (small) livestock.

🔄 exercise 4

PLACING CROPS/LIVESTOCK ACTIVITIES INTO AN AGRICULTURAL CALENDAR

OBJECTIVE:

To learn how to prepare an agricultural calendar including planned crop and livestock activities and understand how this relates to food availability and labour requirement.

TIME:

About 2 hours

MATERIALS:

Flipchart and marker pens.

STEPS

1. Ask the participants to name all crops and livestock that they would like to grow or keep in their fields, both in the group learning field and on their own farms.
2. Then ask them to complete the following table as well as they can, indicating the start end of each crop/livestock cycle.
3. Discuss the concept of short-cycle, medium-cycle and long-cycle crops and advantages/disadvantages of each.
4. Review the final calendar discuss the following questions:
 - Are there some month of the year where you will have more food to eat than others?
 - Any ideas of how to get a better distribution of harvests across the year?
 - Are there some months of the year where you will have more work on the farm to do than others times? Is this a problem for you?

- Thinking of the different roles of men and women (boys and girls) on the farm, what conclusions can you draw in term of benefits/challenges with this crop calendar.

Example of an agricultural calendar

Crop	OCT	NOV	DEC	JAN	FEB	ETC
Cereals						
Food crops						
Cash crops						
Livestock						
Medicinal plants						



INTRODUCTION TO EXPERIMENTATION AND THE “AGROECOSYSTEM ANALYSIS” (AESAs)

Learning in JFFLS is often taking place through comparison. For faire comparison it is important to be aware of some basic principles of experimentation. One also needs to have a process in place for how to monitor and evaluate the various options compared, in order to be able to make a final conclusion. Thus when planning field activities, the participants need to define the kind of comparative studies they will put in place and a process for how to regularly analyse the situation in their fields. The AESA is an effectively tool for doing this, as well as for sharing knowledge. AESA provides a structure for how to observe, analyse and discuss the field situation so that they can make the right decisions about how to manage the crops they are growing. It involves regular observations of crops during their various stages of growth in order to make decisions on solving problems that may arise. It also promotes “learning through discovery”. The main aims of this topic is thus to introduce the concept of learning through comparison and introduce the monitoring tool AESA.

exercise 1

TABLE PRINCIPLES OF EXPERIMENTATION³

Farmers usually learn by trying out new things and ideas on their farms. Experimentation does not need to be complicated or risky and anybody can do it. However in order to fairly be able to compare different options experimented on some basic principles of experimentation are important to avoid making wrong conclusions.

OBJECTIVE:

To learn some basic principles of experimentation.

TIME:

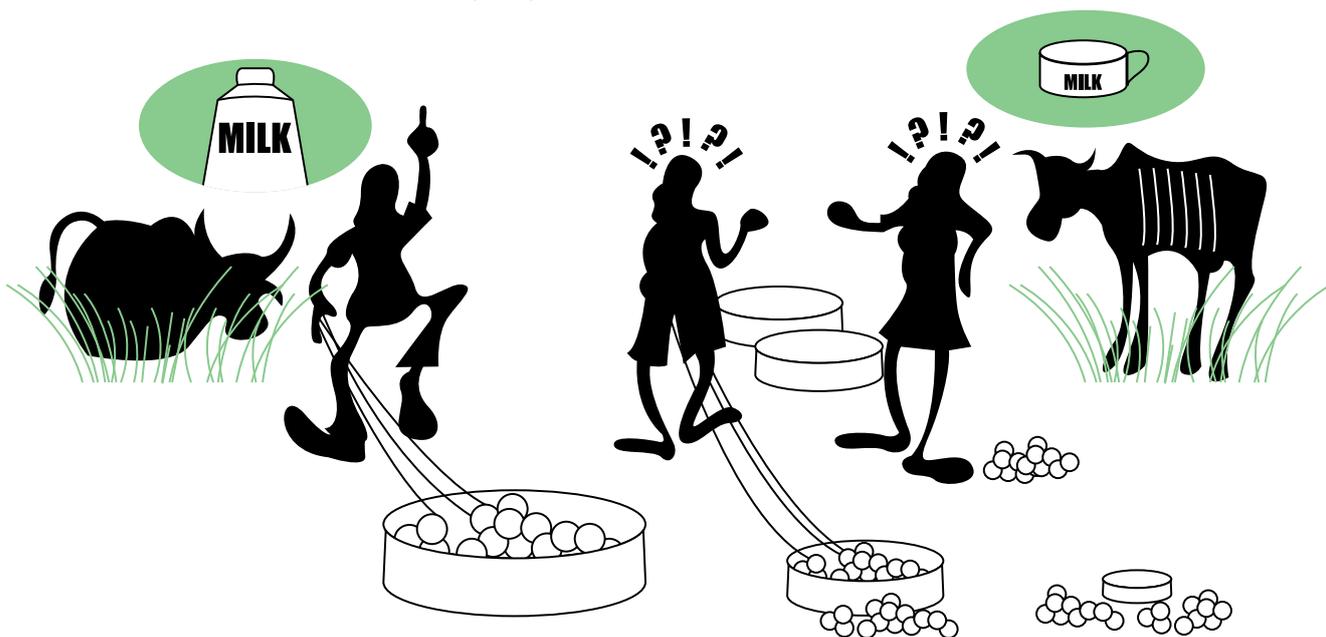
1.5 hour

MATERIALS:

Five buckets (three of the same size, two of different sizes), 30 stones, flip charts and markers.

STEPS:

1. Ask for three volunteers and explain that these people represent three things you want to compare (see Table below for the corresponding key steps in experimentation and throwing stone exercise). Explain to the group that the objective is to find out who is the best at throwing stones into a bucket. Each person is given 10 stones and the one who gets the most stones in the bucket will be the winner.
2. Ask the rest of the group to vote on who do they think is going to win.
3. Place the three different sized buckets, one in front of each volunteer so that they are all the same distance from the buckets, and give them each 10 stones. Ask them to throw as many stones as they can into their bucket. Count the number of stones in each bucket. Give participants the “results” and ask them who they think is the winner. Then ask: “Was this a fair competition?” Of course it wasn’t fair, because it is much easier to get the stones into the biggest bucket. Ask how the game can be made fairer. It can be made fairer to provide a uniform situation i.e. everybody has the same size bucket.



³ Adapted from Livestock Farmer Field Schools, Guidelines for Facilitation and Technical Manual (Groeneweg et. al., 2006).

4. Play the game again, give the results and ask again who the winner is. This time the results seem fair – but now ask the participants whether they think the same person will win if they play more times? Play the game once or twice more – enough times to show that people don't always have the same scores. This demonstrates the importance of repeating treatments to make sure your results are reliable. Work out the average score for each person and then declare the winner.
5. Ask the three volunteers to pick the bucket and stones of their choice and explain how they made that choice. People are not always objective and may be biased without knowing. This can influence the results; therefore it is important to give the treatments and the location of the experiment an equal chance of being chosen (randomisation).
6. Ask some of the participants who did not play the game: "Did they vote for the right person?" Ask if it was difficult to guess who would win, since they had never seen these people throwing stones before. Then ask the same participants: "Do they consider themselves better or worse at throwing stones?" Everybody must have an idea on how to scale themselves or maybe a good friend. If you have someone participating in the game of which you know his/her capacity of throwing stones you have a point of reference (also called control) to value the scores of the others.
7. Explain that to set up a good experiment you need to think about: the objective, uniformity, replication, randomisation and common practice/control to make sure you have a good quality experiment. Every field comparative experiment should consider these elements.

Principles of experimentation: how the throwing game relates to key steps in experimentation

Key steps in experimentation	"Throwing stones' exercise"
Subject	Three volunteers.
Objective	To find out which of the three volunteers is the best at throwing stones.
Uniform situation	Buckets are of the same size. Distances from the volunteers to the buckets are similar (If there are not three buckets of the same size, the volunteers can play the game three times, changing buckets each time so that they throw into each of the three sizes).
Replication	Repeat game to give the volunteers another chance to win because the volunteers did not always have the same score.
Randomisation	Account for bias (the volunteers did not decide on the bucket but were given a bucket randomly).
Point of reference: i.e. control or normal local practice	Ensure participation of yourself or someone whose skills in throwing stones you know.

☞ exercise 2

THE CONCEPT OF AN ECOSYSTEM⁴

When comparing various farming practices it is important to understand that each crop or animal is interacting in a complicated ecosystem where many aspects depend on each other. In the AESA exercise observation of the ecosystem forms the basis for monitoring of crops or animals. This exercise introduces the concept of an ecosystem.

OBJECTIVE:

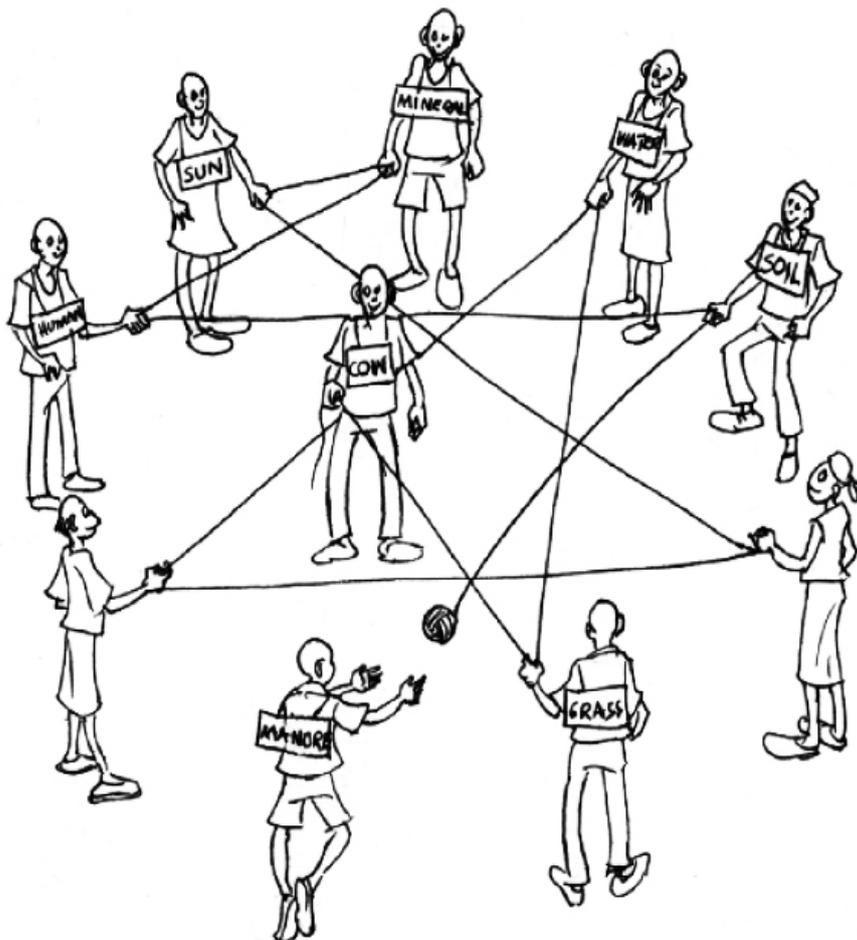
To understand what the concept of an ecosystem is.

TIME:

1 hour

MATERIALS:

A ball of wool or string, cards, masking tape, marker pens.



⁴ Adapted from Livestock Farmer Field Schools, Guidelines for Facilitation and Technical Manual (Groeneweg et. al., 2006).

STEPS:

1. The facilitator should prepare the exercise by taking the same number of cards as there are participants and writing the name of a component of the ecosystem on each card (e.g. cow, grass, water, soil, sun etc.).
2. The participants form a circle and pick one card each. Each participant fixes the card on his/her body so all can see it.
3. The participant who picked the card showing “cow” stands in the middle of the circle holding the ball of wool or string.
4. The participant who represents the cow says: “I am a cow and I relate to X because of Y” (e.g. “I relate to grass because I eat it and it gives me energy”). The “cow”, keeping hold of the end of the string, then throws the ball to the person with the “grass” card.
5. The person receiving the ball does the same and this is repeated until all participants are connected. Each card or person can be visited more than once.
6. The participants are asked why they are connected, what they can learn from the exercise, and what happens if one element is removed from the system.
7. The facilitator then introduces the concept of an ecosystem.

🔄 exercise 3

INTRODUCING THE AESA FORMAT

OBJECTIVE:

To understand what the concept of an ecosystem is.

TIME:

1 hour

MATERIALS:

Pen/pencils, markers, flip charts.

STEPS:

1. The facilitator reminds the group about the defined focal activity of the JFFLS and planned comparative trials.
2. Ask the participants what needs to be observed and what kind of information needs to be collected to measure performance e.g. and to be able to compare the various options against each other.
3. Based on this information, the AESA format is developed by the group asking participants what they need to know to enable appropriate management decisions to be taken.
4. The parameters identified should be categorised into those that need to be captured only once e.g. date of planting (general information), and those that need periodic updating e.g. height of the crop (agronomic parameters).
5. An AESA format is then developed on a flipchart including the defined information and including a drawing of the study subject. See an example below of a crop AESA format.

A typical format of crop AESA Sheet

Name of JFFLS:		
AESA NO: GROUP NO: PLOT NO: PROBLEM ADDRESSED:	DATE: WEEK NO:	
General information	Parameters	
Variety: Date planted: Age of crop: Spacing: Fertilizer: Weather: Time of observation: Plant population: Germination %:	Length of leaves; Width of leaves: No of leaves: No of diseased leaves: No of dead leaves: Length of plant: No of pods:	
Insect pest	Plant drawing	Natural enemies
Pest observed:		Natural enemies observed:
Observations	Recommendations	
Soil moisture: Diseases: Insect pests: Plant health: Deficiency: Weeds: Predators:	What management practices should be applied:	



THE IMPORTANCE OF PLANNING AND TEAM WORK

This topic provides a “link to life”, following the learning that participants have undertaken on agricultural planning in the field and learning sessions. Here participants will begin to learn how to plan their life by analysing their daily activities, and think of how to better share the daily workload. They will also begin to understand the different activities that men/boys and women/girls do and how the division of household labour often means that women and girls have more work to do for the well being of the household than men. This will therefore strengthen their sense of team work.

exercise 1

ANALYSING AND SHARING DAILY TASKS

OBJECTIVE:

To reflect on the differences in daily activities among girls and boys.

TIME:

2 hours

MATERIALS:

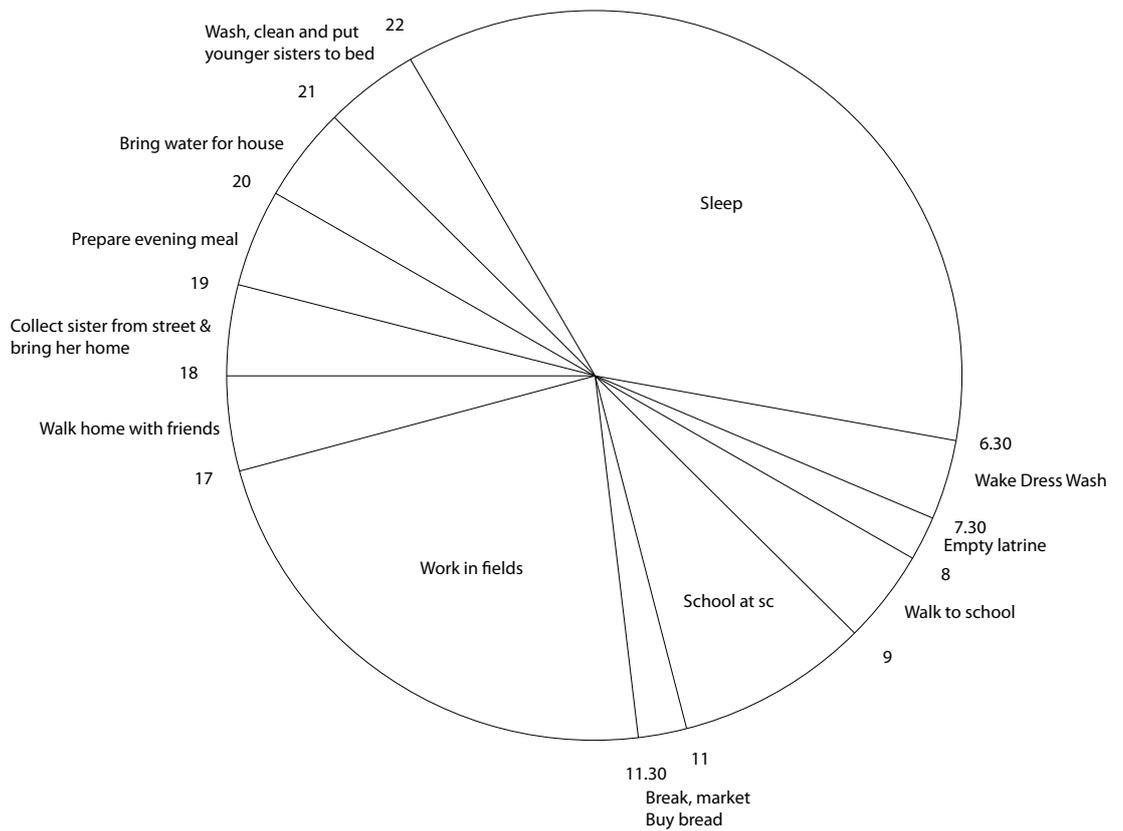
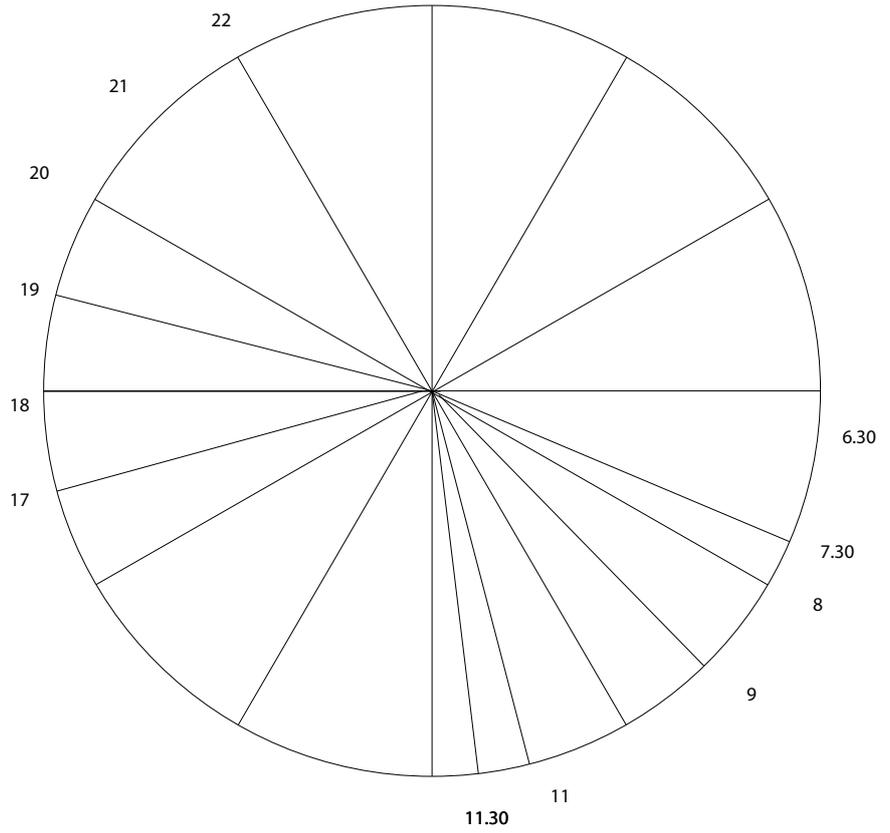
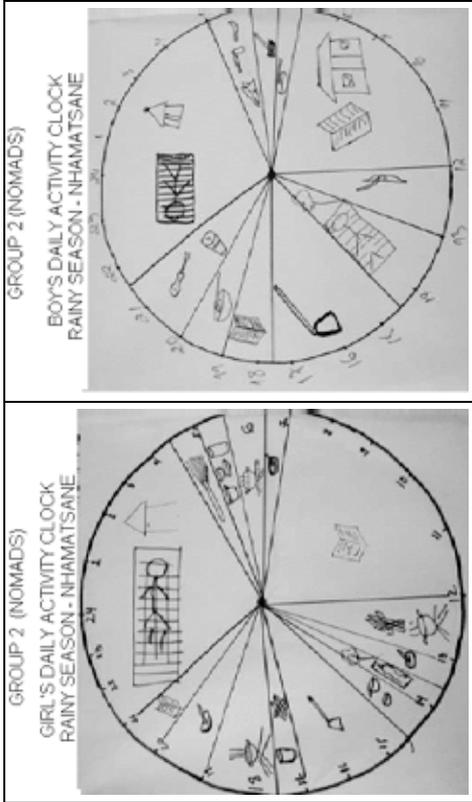
Flipchart and markers.

STEPS:

1. Start explaining that it is interesting to look at what happens during a typical day for girls and boys in the community and how tasks are shared between them.
2. Then, working in small groups (boys and girls separate), ask the groups with girls in to draw a Daily Activity Clock for a girl and the opposite for the boys group. Explain that the half of the groups will draw a clock showing what that person (girl or boy) does on a typical day in the rainy season and the others will do the same for a girl or boy showing what that person does on a typical day in the dry season.
3. Show the participants how to draw a Daily Activity Clock (see illustration). Ask the groups to draw a large circle on the ground or on a piece of paper that looks like a clock. Explain that the circle represents a 24 hour clock and that the participants will mark each activity on the circle according to when it is done. If there are some activities that are done at the same time, like child care and gardening, they should both be mentioned in the same time slot. Explain that they will have to use images to represent the different activities, so that the clock is clear for everybody.
4. They should also describe the characteristics of the boy/girl that they use as example (age and type of household they live in, if the head of the house is old, a woman, a man or a child etc.).

Examples of a daily activity clock

5. Have each group present their clocks.
6. Ask the groups to compare the typical day of a boy with that of a girl, the different kinds of activities (work and leisure) The following questions can help you in facilitating the discussions:
 - How is the time divided in the clocks?
 - How much time is dedicated to activities that bring in cash?
 - How much time is dedicated to activities for food production?
 - How much time is dedicated to domestic activities and who does most of this work?
 - Are there any activities done for the community?
 - What about free time?
 - How much time is there for sleep? How much does this change in the different seasons of the year?
 - In what ways can the clocks be compared for girls and boys? Do they do different things? How much time do they give to each activity?
 - Will their workload affect their attendance at the JFFLS? How?
 - What can we do to ensure that even the busiest girls / boys can participate in school and in the JFFLS?



exercise 2

MAKING DECISIONS

OBJECTIVE:

To start to understand the need for making informed decisions.

TIME:

About 1.5 hour

MATERIALS:

Flipchart and markers.

STEPS

1. Tell the participants a story or describe a situation in which a child must make a decision (for example, a child wants to play with her friends, but her mother needs her to help clean up the house; or another child has parents who tell him that he must become an accountant driver, but he want to become a driver).
2. Ask the participants all of the possible decisions that could be made in the situation and write them down.
3. Divide the participants into small mixed groups (boys and girls). Ask them to prepare a role play in which they act out the two main options:
 - The child who follows the desire of his/her parents;
 - The child who follows his/her own dreams.
4. Ask each group to act out their play in front of the others.
5. Bring the Participants back together and ask them what the different advantages and disadvantages of the options are. Also ask them how they made their decision.



6. Show the participants the concept and phases of the decision-making process (show the figure on the following page). Ask the participants what they think each phase means
 - Receive/observe the information
 - Analyse the information
 - Experiment with different options
 - Observe and analyse the results
 - Make a decision (share/decide)

🔄 exercise 3

INTRODUCTION TO FAMILY PLANNING

OBJECTIVE:

To understand the importance of family planning.

TIME:

1 hour

MATERIALS:

Flip charts and marker pens.

STEPS:

Just as crops need enough room to grow healthy, people also need enough “space” to become healthy adults. It is important that the participants make this “link to life” so that they begin to think about child spacing.

1. Refer to the earlier exercise where the space required for a crop to spread its leaves and roots was discussed. Ask what connections can be drawn to humans and the space that people require.
2. Ask the participants to give examples of what happens when people don't have enough space, for example in their house or when competing for natural resources or water.
3. Divide the participants into two groups. One group is a family with many children (6, 7, 8, 9, 10, 11, 12, and 18 years old) and the other group is a family with four children (5, 8, 12, and 15 years old).
4. Ask each group to discuss about child spacing in a family.
5. Ask them to discuss the advantages and disadvantages of having a big family.
6. Have the two groups present their results in front of everyone.
7. Discuss the following questions:
 - What are the main advantages to having a large family? A small family?
 - What are the main disadvantages to having a large family? A small family?
 - What is the advantage of spacing children?
8. Summarize the presentations and make the link to spacing of crops in a field.



CULTURAL ACTIVITIES

The following activities will help the participants to reflect on what they have done or learned by a creative outlet for expressing it such as singing, drawing, poetry, drama. Of course, you can also use cultural activities of your own choice or you may want to ask the participants if they have any activities of their own that they enjoy!

ACTIVITY 1. Planning for our future

STEPS:

1. Divide the participants into groups of eight or less.
2. Ask each group to think of a story (or a story told through song) about the importance of planning for the future in agriculture and life. It should include lots of detail about the people, places and situations involved. Encourage them to use speaking, singing and/or acting to communicate their story.
3. Ask each group to present their story. Encourage them to listen carefully to the other stories.
4. Ask them to comment on each story. For example, is it realistic? How does it make them feel? What are the strongest things that came out of it?
5. When the participants are finished making their comments, encourage them to reflect on what they saw. Some helpful questions are:
 - What did the stories show about relationships between people in the community?
 - What did they show about people's attitudes?
 - What did they show about the biggest challenges facing the community?
 - (If applicable, what did they show about how HIV/AIDS affects the community?)

Note: As an alternative, you or one of the participants can start with the first two to three sentences of a story. Then ask a volunteer to suggest the next two to three lines. Then ask another volunteer to suggest the next two to three lines. Keep going until the story reaches an end or has covered several important points.

ACTIVITY 2. Understanding the ecosystem

STEPS:

1. Divide the group into 4 subgroups.
2. Ask group 1 to go into a maize farm, group 2 a banana plantation, group 3 a rabbit pen and group 4 the JFFLS learning site. Allow them to mark an appreciable area preferably not more than 20 square metres.
3. For each group ask them to identify both living and non living things found there and list them.
4. Ask them to identify and describe ant relationship between them in the form of a relationship web.
5. Ask each group to make a presentation and encourage discussions.
6. Ask them what will happen if any of the components in the ecosystem are removed.
7. Summarize by emphasizing on what an ecosystem is, what the components are and the relationship that exists between them.

ACTIVITY 3. Show me how you look when you feel...

It is important for the participants to be able to recognize what they are feeling. Part of understanding feelings is also being able to recognize the messages given to us by body language. Persons who understand their own feelings can also understand how others are feeling too. This activity helps people to get to know their own feelings and understand how our bodies can express emotions that we are experiencing.

OBJECTIVE:

This activity helps people to get to know their own feelings and understand how our bodies can express emotions that we are experiencing.

MATERIALS:

A ball or similar object that the participants can throw to each other without hurting anyone.

STEPS:

1. Ask the participants to stand in a circle.
2. Give the ball to one of the participants.
3. The child passes or throws the ball to another girl or boy and says: "Show me how you look when you feel... (sad, happy, angry, jealous, frustrated, etc.)"
4. The child who catches the ball has to act out the feeling with her/his body. If the child seems to have difficulty, maybe you can say: "Show us what you do when you are... (sad, happy, angry, etc.)"
5. Some participants find it difficult to act out a feeling. The other participants can help by saying: "The last time I felt jealous was when....".
6. It may be slow at first – sometimes the participants cannot get in touch with their feelings immediately. You can help them by saying: "Think of the last time you felt angry/sad/happy. Can you remember how it felt? Try to put yourself back there in your mind".
7. You do not have to make sure that each child gets a chance; the game should be short and can be repeated in other sessions. Use your judgement for how long you want it to last. The first time you use it, the activity may be longer as the participants begin to understand what you are trying to do with them.



ASSESSING PROGRESS

INTRODUCTION TO PM&E - HOW GOOD ARE WE AT OBSERVING?

In order to monitor the activities undertaken in JFFLS and assess whether they are contributing to the established goal of participants, one needs to “observe” what is going on. Observation forms the basis for all monitoring and evaluation activities and is also a key element in exercises such as the AESA. Good observation skills can be enhanced and improved upon. This exercise makes it clear to participants that observation does not happen by itself but one has to make an effort to observe well.

OBJECTIVES:

- To learn the value of being a good observer;
- To become aware how good observation is an essential element of farm management.

STEPS:

1. One volunteer is asked to leave the group and remain out of sight for 10 minutes.
2. The remaining participants form into small subgroups of about 6 people each.
3. Each group discusses amongst themselves exactly what the missing person looked like: what was he/she wearing, how tall was he/she, what did the hair look like etc.
4. After discussing this for a few minutes, each group selects a volunteer to draw an image of the missing person, including as much detail as possible.
5. The missing person is then invited back and each group in turn compares their drawings with him/her. How accurate were the drawings? Did each group remember the same details? How good were the groups at observing?
6. The facilitator then broadens the discussion: how important is it to carefully observe our farm and animals? How can we improve our observational skills?



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