AGROFORESTRY

EXTENSION TRAINING SOURCEBOOK

INTRODUCTION

MODULE 1
Beginning Agroforestry Extension Training

MODULE 2
Introduction to Agroforestry

MODULE 3
Project Approach to Agroforestry Extension

PN-ABK-138

AGROFORESTRY EXTENSION TRAINING SOURCEBOOK

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Louise Buck
Nairobi, Kenya.

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INTRODUCTION

The Agroforestry Extension Training Sourcebook is a guide for training agroforestry project staff to work effectively with farmers and other rural people. It is designed to help build individual and group knowledge and skills, and to generate the type of attitudes necessary to help rural communities develop and use agroforestry to improve their lives. The SOURCEBOOK will help trainers structure the teaching and learning necessary to achieve this purpose.

The ten Modules of the SOURCEBOOK are organized to guide a systematic learning process. Effective use of the materials depends on a teaching approach that promotes enquiry, dialog and participation from trainees. This approach is key to a successful training program and essential to effective agroforestry extension work.

Each Module contains several lessons. Users of the SOURCEBOOK will need to examine and adjust the lessons to the level of his or her group and to the circumstances of the project and training environment.

The training Modules are accompanied by a collection of background information refered to as SOURCEBOOK SUPPORT MATERIALS. These are reproductions of papers, sections of books, or pages from manuals and pamphlets pertaining to specific lesson topics. References to materials on a particular topic are provided in the lessons.

SOURCEBOOK SUPPORT MATERIALS may be used first to help trainers prepare and conduct lessons. Trainers can then judge which of these to reproduce for trainees. The collection of SUPPORT MATERIALS can be modified to suit each training program's needs and resources by replacing or adding to the material provided.

The SOURCEBOOK originated from an agroforestry extension project supported by CARE International in Kenya. The project is based on a participatory approach that involves farmers in designing and adapting a variety of agroforestry techniques to address their problems and needs.

The Agroforestry Extension Project aims to develop local organizational capacity to manage agroforestry activities over the long term. Progress toward this goal has depended on interactive learning between staff and farmers about traditional and modern agroforestry practices. It is also dependent on farmers raising and planting their own trees without direct compensation. The staff training program used to support extension activities which promote these aims is represented in the SOURCEBOOK.

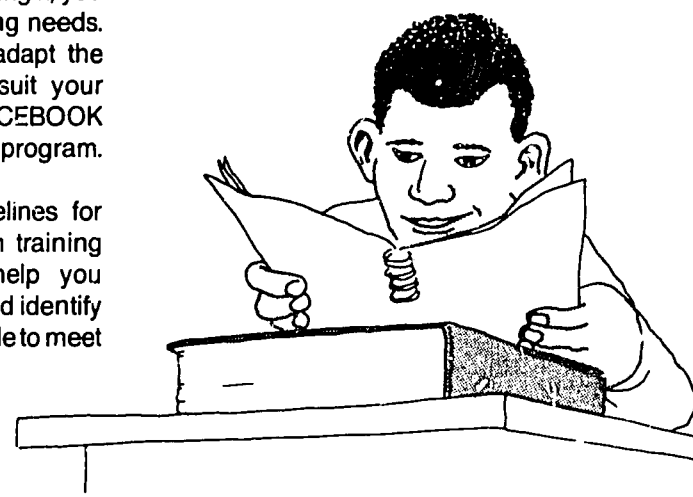
The SOURCEBOOK begins with guidelines for planning your agroforestry extension training program. The guidelines suggest how to use the SOURCEBOOK to plan as well as implement your project's training activities. Read the guidelines, then assess your project's training needs and the potential use you can make of the SOURCEBOOK before you begin training.

Training is a tool for improving agroforestry extension. Your enthusiastic attitude toward learning about and an extension approach which will promote sustainable development efforts will have very important effect on your staff's interest and motivation to become good extension workers. Extension staff training is an excellent opportunity to build a sense of team work and purpose. Appreciate and enjoy your leadership role in this exciting learning and development process!

GUIDELINES FOR PLANNING AN AGROFORESTRY EXTENSION TRAINING PROGRAM

The SOURCEBOOK is a tool for planning and conducting an effective agroforestry extension training program. Before you begin using it, you need to consider your specific training needs. This will enable you to select and adapt the material in the SOURCEBOOK to suit your unique training situation. The SOURCEBOOK alone does not constitute your training program.

This section provides general guidelines for planning your agroforestry extension training program. Use the guidelines to help you characterize your training situation and identify the most appropriate resouces available to meet your needs.

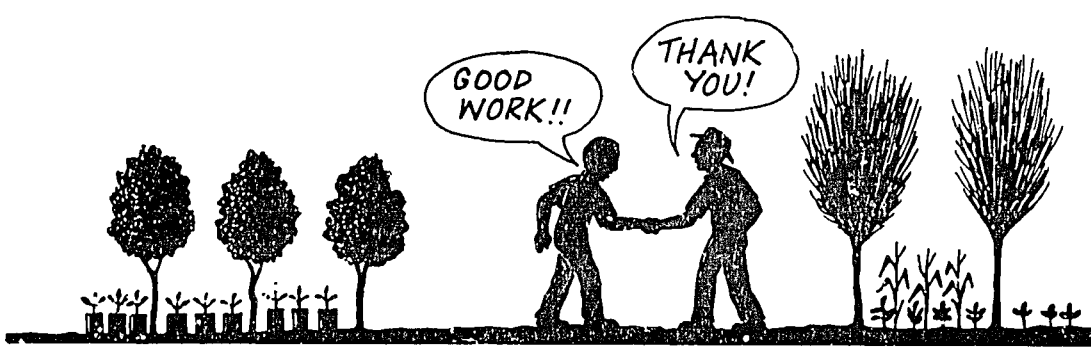


Identifying A Project Approach

Agroforestry extension projects are a relatively new form of rural intervention. There is however, enough project experience to suggest certain characteristics that are important to successful extension efforts. The type of training experience which the SOURCEBOOK is designed to generate should favor the following project characteristics and extension approach.

PARTICIPATION

Project participants, or people who should benefit from project supported activities, should be involved in planning, managing and evaluating them. A participatory project approach requires project staff to work with a variety of different people on a partnership basis. Respect for project participants, their opinions, their experience and their situation is key to building partnerships and to building knowledge which will lead to better agroforestry systems.

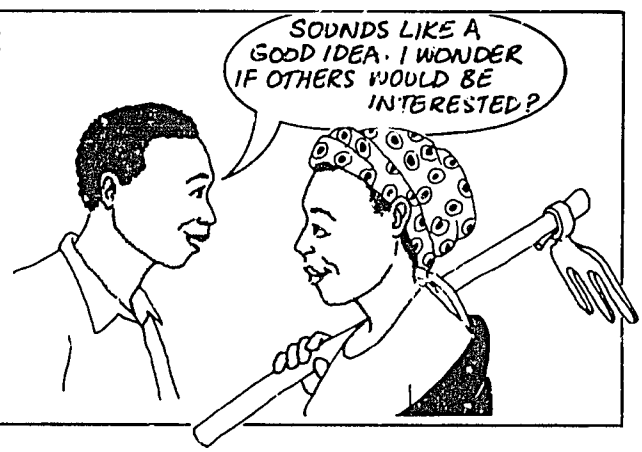


PROBLEM-SOLVING AND LEARNING

Although agroforestry has been a traditional practice for many years, modern agroforestry represents fewer tried and proven techniques. As agroforesters we need to learn how to build on traditional practices to make them more productive and useful. We need an attitude and an approach with farmers that is open to learning from them and to cooperative problem-solving. Each agroforestry project is unique in that people, trees, land, politics, climate, participation and other elements vary. Staff training should guide the development of Extension Worker knowledge, attitudes and skills which will generate appropriate solutions to project-specific problems.

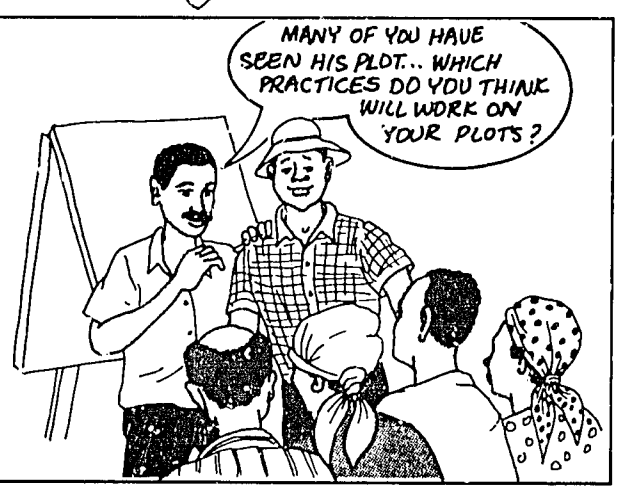
LOCAL KNOWLEDGE AND EXPERIENCE

Farmers' knowledge and experience are the best foundation for new or improved agroforestry practices. By respecting and using this resource farmers can contribute to both the practice and the science of modern agroforestry. Training should teach and encourage staff to identify and respect farmer practices and skills. These will form the foundation for their extension efforts.



REWARDING INNOVATION

Agroforestry project staff should identify farmers who have practiced **innovative** agroforestry prior to the project. Often these innovative practices form the basis for widely acceptable agroforestry designs. Innovative farmers should be recognized and encouraged in their efforts. They should be assisted to share their experiences with other farmers. If project staff learn from the experience and practices of innovative individuals, they can promote these elsewhere.



Identifying Staff Roles

Agroforestry extension staff form the link between a project and farmers. Although they are often employed and work on behalf of the project, they are the most important project resource for the farmer as well. They play many different roles in the project, such as: facilitator, communicator, teacher, friend, advisor, technician, researcher, monitor, evaluator, planner, and others. They need training and support to fill all these roles.

Basic skills required of participatory agroforestry extension project staff include:

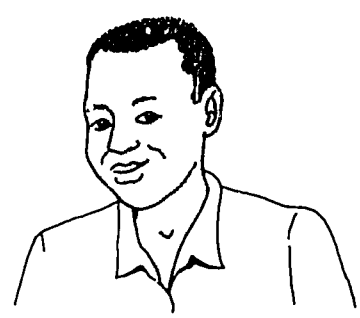
Teaching, Communication and Motivation Skills
Planning and Monitoring Skills
Problem-solving and Agroforestry Design Skills
Technical Skills in Plant Production, and Natural Resource Conservation

Organizing an Extension Staff

Many agroforestry projects have discovered the advantages of structuring the extension staff on two different levels.

These are the staff members who have daily contact with farmers and are directly responsible for communicating farmer experience, knowledge and concerns to senior staff. Often refered to as Field Workers, it is best to select and train people who are native to the project area. They should be able to read and write. They should speak the local language and be familiar with the local politics, social organization, cultures, geography and economy. Although it's not always possible, we should try to select people with these skills and knowledge.

Extension Worker Supervisors, sometimes known as Field Officers, are responsible for a number of Extension Workers and often have a higher level of education and training. Supervisors also should have a good knowledge of the project area and local language, though this is not always possible. They play important roles in planning, monitoring and evaluation of the project efforts as well as managing staff and activities.



Extension Workers and Supervisors should be selected to complement one another, and trained to work together as a team. Their ability to share tasks with mutual respect and confidence is an important asset to the project. Effective teamwork will help in identifying and working with key people in the community, and in promoting the variety of local skills needed to develop and sustain agroforestry.

Assessing Training Needs

Your project approach and the organization and responsibilities of your extension staff are important factors in establishing training needs. The SOURCEBOOK is designed to address the training requirements of agroforestry staff involved in participatory development projects who have been selected for their potential to relate well to the project community and to work on a team basis.

Beyond these important factors trainers need additional information to plan a training program for their extension staff. The following steps will help you further assess your staff training needs so you may take best advantage of the SOURCEBOOK and other training resources.

1. Consider Project Objectives
Trainers need to understand the objectives of the project, including what long term change is desired and what intermediate achievements will be sought to bring about the planned change. This understanding, along with identification of your project approach will help you guage the extent and rate that attitudes, knowledge and skills need to change or develop.

2. Identify Knowledge and Skill Requirements
Identify a list of specific skills which staff need to fulfill their roles in the project. Be specific. Try to identify knowledge and skill areas common to all project staff. Then identify areas that are specific to individual roles and responsibilities. These can be modified later, once relationships with project partners such as farmers, women's groups and government agencies have been established. Finally, try to arrange staff knowledge and skill requirements successively. List those needed at the beginning of the project first, followed by those which can develop as the project progresses.

3. Identify Existing Attitudes, Knowledge and Skills
Next you need to assess your project staff's existing knowledge and skills. Identify your staff's educational background and work history. This will help you discover which skills, information and knowledge staff already have, and how and where they acquired these.

This may have been done to some extent during hiring interviews. Once staff become part of the project however, they may be more "realistic" about how well prepared they are for their jobs. It is possible also that staff are assigned to the project by a collaborating government agency, and you know little about them before they report to work.

Use both individual and group interviews with staff to determine their attitudes toward local people and problems. How sensitive and concerned are they? What is their commitment to development? How do they view agroforestry in terms of development? What is their commitment to the objectives and approach of the project?

Use interviews also to determine what staff know about existing farming practices in the project area and how they express this knowledge. Are they able to classify, to quantify, to generalize? At what level and about what topics?

If time and conditions permit use a demonstration approach to test for specific technical skills related to soil or water conservation, and plant production.

4. Determine Additional Knowledge and Skill Requirements
Compare your project staff knowledge and skill requirements with your information about existing education and skill levels, as well as staff attitudes and sensitivity to people and problems in the project area.

Planning Your Training Program

You are ready now to plan your training program, based on your assessment of project staff skills, additional training needs and your project approach and organizational structure.

As you plan your training program, consider:

1. What are the objectives of your extension training program? What do you want the result to be? (**Who** will know and be able to do **what** at the end of it?)

2. How much time will you have for intensive, focused training before trainees are responsible for other project activities?

3. What resources are available for developing training materials?

4. What other agroforestry, agriculture or natural resource projects are close by, which you can draw on for training input?

5. What is the content area you want to cover in your training program?

6. What is the best progression of training topics and how should you schedule these most efficiently?

7. How should you select and schedule training methods to make the program as interesting and stimulating as possible for trainees?

8. How will you monitor and evaluate your training program?

9. After your initial training activities, will you offer additional follow-up or refresher courses?

10. How do you expect to see results of your training in the project area?

SUGGESTIONS FOR IMPLEMENTING AN EFFECTIVE TRAINING PROGRAM

Keep your trainees informed about the training program. Let them know about training schedules and all training activities. Trainees will be better able to prepare and participate in training activities when they know what to expect.

Encourage participation from trainees in each lesson. Teach them to question and investigate answers to common and individual problems.

Encourage learning by example. Demonstrate your own eagerness to learn and methods of learning through investigation and sharing.

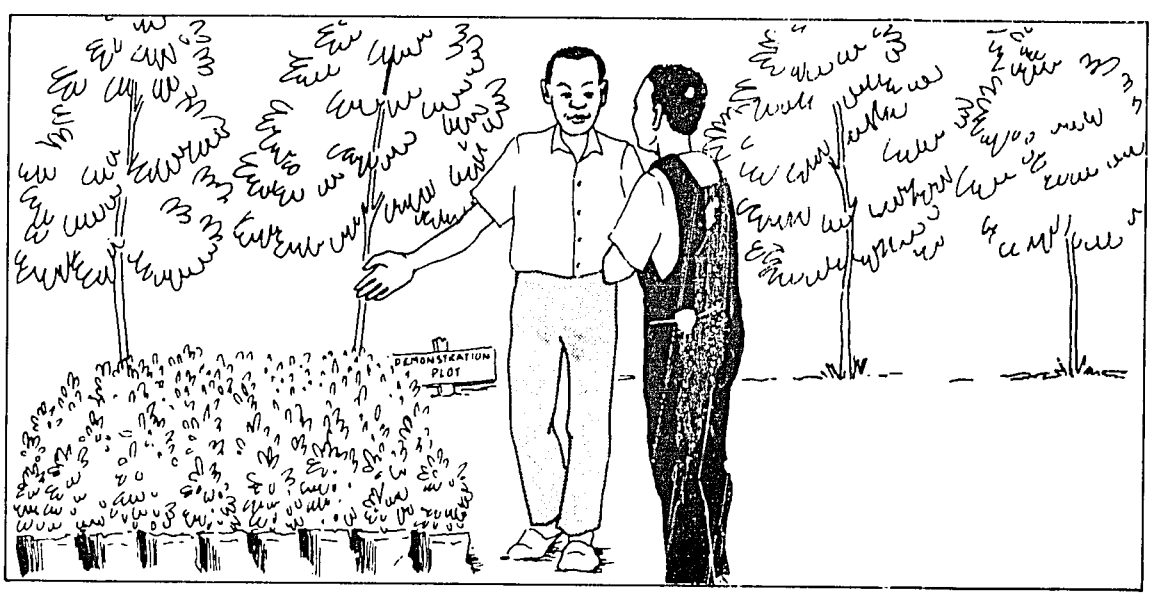
Offer variety in your training activities. Use different training techniques and materials to keep the program interesting and trainees alert. Alter the pace and duration of your activities. Consider different venues for your training activities.

Use language that is easily understood by trainees. Ask them regularly if your vocabulary and use of language is understood. If you use assigned readings as part of your training program, make sure they are aimed at the reading level of your trainees.

Agroforestry concepts are more easily understood if practical and relevant local examples are used to illustrate them. Become as familiar as possible with land use and agroforesry in your project environment to make training activities relevant, and easier for you to conduct.

Encourage trainees to understand the links among different training topics and activities. Point out how training activities are linked to project activities.

Use Supervisors or Extension Workers who are already trained by the project (if any) to assist you in training. Their skills, knowledge and practical experience can add to the effectiveness of your training program. New trainees will also enjoy learning from their peers.



Using the SOURCEBOOK to Plan and Implement Your Training Program

Each Module of the SOURCEBOOK consists of two components. The first describes what the module is about. It states why the topic is included in the SOURCEBOOK and how it will prepare the field team for its project responsibilities.

The second component is a series of Lessons. The number of Lessons per Module varies depending on the depth and breadth of exposure and experience required to become adept in each skills area.

Each Lesson consists of three components. First is the training Objective, or expectation about what trainees will be able to do after completing the Lesson.

Second, is an Example of how the Objective may be met. The Example contains guidelines for conducting the Lesson. You should read through the guidelines and prepare for the Lesson before involving trainees in the activity.

Many Lessons contain LEARNING NOTES as well as references to SOURCEBOOK SUPPORT MATERIALS. These are resource materials included to complement respective Lessons.

LEARNING NOTES are contained within the text of the Lessons. These provide the main content for a number of training activities. They should be used as background material for trainer facilitated discussion or presentations. Afterward, a copy of the NOTES should be given to each trainee for immediate review and later reference. Trainees should keep copies of LEARNING NOTES in a ring binder, organized by topic or Lesson together with notes they take during training activities. These Training Workbooks will provide an important source of information to trainees in their work.

SOURCEBOOK SUPPORT MATERIALS are collections of papers, notes, guidelines and illustrations for the trainer to use in understanding and teaching the topics concerned. SOURCEBOOK SUPPORT MATERIALS are referenced within respective Lessons, but are contained in a separate volume. You should critically review and substitute or supplement the content of the SOURCEBOOK SUPPORT MATERIAL volume according to your training circumstances and needs. The MATERIALS provided are just the beginning of your agroforestry extension training library.

Lesson Planning

Once you decide on the general content of your training program and how you will schedule your Lessons, it is useful to prepare a daily activity program. The worksheet on the following page may help you. It will also form part of your training record for evaluation of the training program.

LESSON PLANNING WORKSHEET

DATE _____

TRAINING GROUP _____

PROGRAM

TIME	TOPIC/ACTIVITY	PERSONS RESPONSIBLE

NOTES: (GUIDELINES, LEARNING NOTES, SOURCEBOOK SUPPORT MATERIALS, FIELD TRIP PREPARATIONS, etc.)

TRAINING MODULE 1 BEGINNING AGROFORESTRY EXTENSION TRAINING

INTRODUCTION

How do we get started? This Module is designed to help you introduce agroforestry extension to a new group of trainees. It is important to start your Extension Training in a manner which will put your trainees at ease, increase familiarity among them and create a sense of eagerness, curiosity and participation.

As a trainer, you will be establishing a relationship with your trainees that will last throughout the formal training period, as well as into day-to-day project activities. Your enthusiasm and responsiveness will be important to guiding trainees through the training.

CONTENTS

There are three lessons in this Module.

Lesson 1 is designed to create a greater degree of familiarity among your trainees. It uses what is commonly referred to as an "Ice-breaking" exercise. Ice-breaking exercises help the group get acquainted and encourage them to talk with one another.

Lesson 2 presents ideas on orienting your trainees to your project. It is designed to build a common sense of purpose among the trainees. They should begin to identify as a group, working towards common goals, with an understanding of the project and how it will operate.

Lesson 3 is designed to give trainees a better idea of what the training program will consist of and what tools and skills will be used to support training lessons and exercises. The LEARNING NOTES in this lesson provide an overview of the training program. Use them to give trainees a better understanding of what will unfold as the training develops.

Allocate one and one half to two days to cover the lessons in this Module depending on the size of your training group.

Lesson 1 GETTING ACQUAINTED

OBJECTIVE

Trainees will know much more about each other, each person's background and expectations of the training.

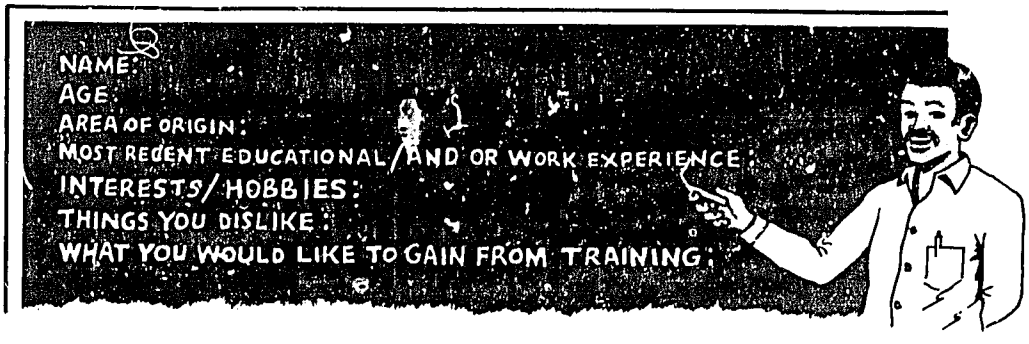
METHOD

This lesson makes use of an "Ice-breaking" exercise. There are other Ice-breaking exercises suggested in SOURCEBOOK SUPPORT MATERIALS (1-1). Choose and adapt them as necessary. They are all designed to help groups get better acquainted.

EXAMPLE

Prepare

Write the following list on a chalkboard or newsprint.



STEP 1

Divide your group into pairs of trainees and have each person interview the other person using the list of questions above. Include trainers. Allocate 15-20 minutes for this exercise.

STEP 2

After interviews are complete, ask each person to introduce his/her partner to the entire group.

Summarize

Ask trainees what they thought about the exercise. There may be concern that they cannot remember all the information about everyone. Let them know this is just a beginning. Soon we will know a lot more about who we are and why we are together.

Lesson 2 ORIENTING TRAINEES TO THE PROJECT AND THEIR ROLES IN IT

OBJECTIVE

At the end of this lesson, trainees will be able to describe:

Reasons for the project
Where the project will take place
Who the project is for
What is hoped to be accomplished
How the project hopes to accomplish its objectives (whom it will work with)
Roles of the field staff

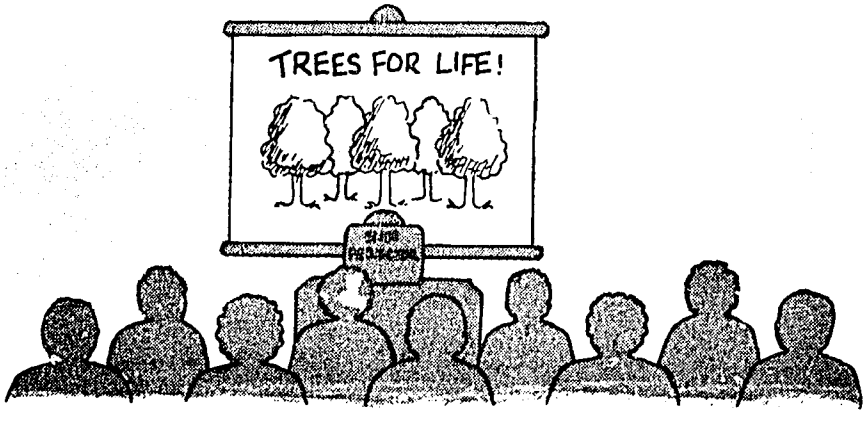
METHOD

This lesson uses training/teaching techniques which are common throughout the SOURCEBOOK. Presentations, questions and searching for answers, brainstorming and facilitated discussion are all methods of encouraging the group to respond to topics and issues raised in each lesson. Your role will be to guide discussions without dictating them and to encourage the group to inquire and reason effectively.

EXAMPLE

Prepare

Trainers should prepare a presentation which describes the project's background, objectives and approach, in simple terms. The presentation should answer the first five questions listed in the lesson's Objective above. Do not focus at this point on project activities. If your presentation benefits from the use of slides, pictures, video, flip charts etc.,use them. See SOURCEBOOK SUPPORT MATERIALS (4-2), **A Guide for Planning Communication Support for Your Agroforestry Extension Project**.



Facilitate

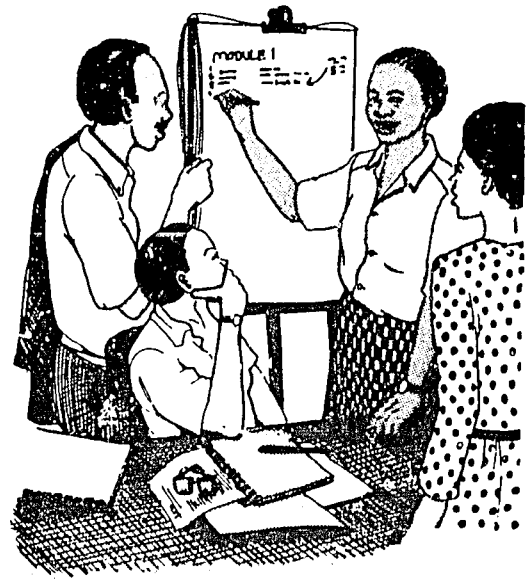
Deliver the presentation. Try to keep it less than 25 minutes long.

Following the presentation, ask trainees to answer the following question:

What do you think your roles should be in this project?

Everyone in the group should be encouraged to contribute ideas. Record the group's responses on newsprint. Trainees are contributing to the identification of their **roles** in the project.

Once the brainstorming exercise is done, ask trainees to examine the list and select the roles they think are **most important** to the project.



Discussion should now focus on the reasons why the group feels certain roles are most important. You should record key reasons on newsprint without contributing your own ideas to the list.

Summarize

When discussion has finished, use the two lists generated by the group to summarize the points raised by them. Focus on points of general agreement, as well as points where the group disagrees.

These lists will be helpful to other lessons in the SOURCEBOOK. Save them for reference when conducting Lesson 3, in Module 3.

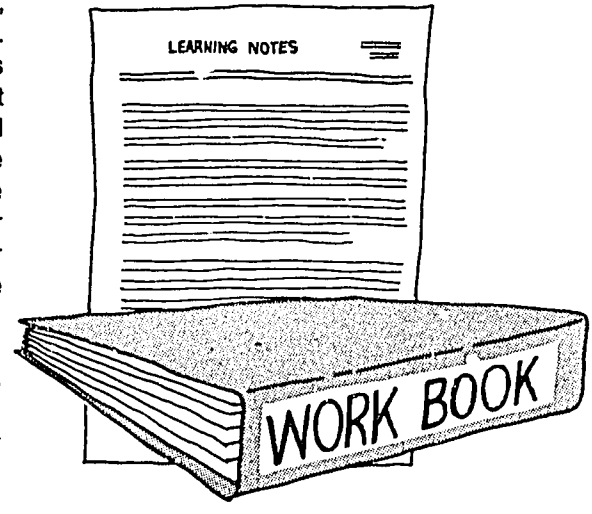
Lesson 3 UNDERSTANDING THE TRAINING PROGRAM

OBJECTIVE

Trainees will be able to describe the contents of the Extension Training program and relate it to their expectations of what they need to fulfill their roles as Extension Workers.

METHOD

This lesson again uses a presentation, brainstorming and facilitated discussion. LEARNING NOTES are provided with this lesson. LEARNING NOTES are important information which are commonly found throughout the SOURCEBOOK. They are provided as background information to the lesson and as notes to be given to trainees for reference. You should use them as the basis for preparing presentations and then reproduce them for each trainee.

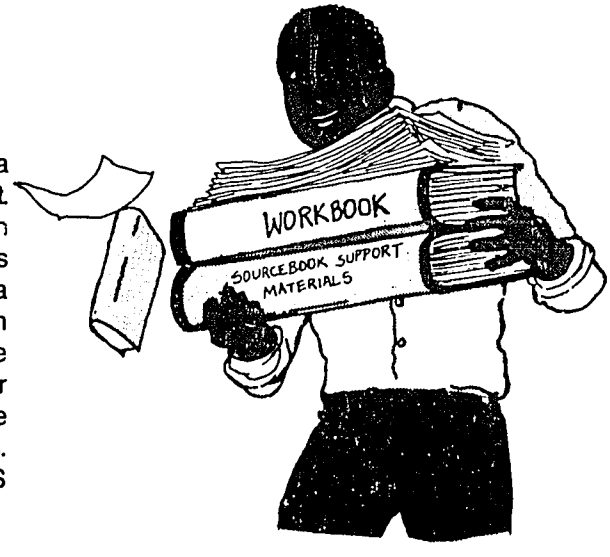


You will also be introducing Training Workbooks and their use. Each trainee should be provided with a binder to use as a Workbook for his/her copy of the LEARNING NOTES and for personal notes.

EXAMPLE

Prepare

Review the LEARNING NOTES and prepare a presentation on the Training Program's content. Presentations should include a brief description of each Module and what information it is designed to address. If you have prepared a training schedule, it should be shared with trainees as well. You might also explain the SOURCEBOOK SUPPORT MATERIALS, their use and their availability to trainees. Explain the Training Workbooks and their use to trainees. Give each a binder. The LEARNING NOTES from this Lesson will be their first entry.



Facilitate

Begin by asking trainees:

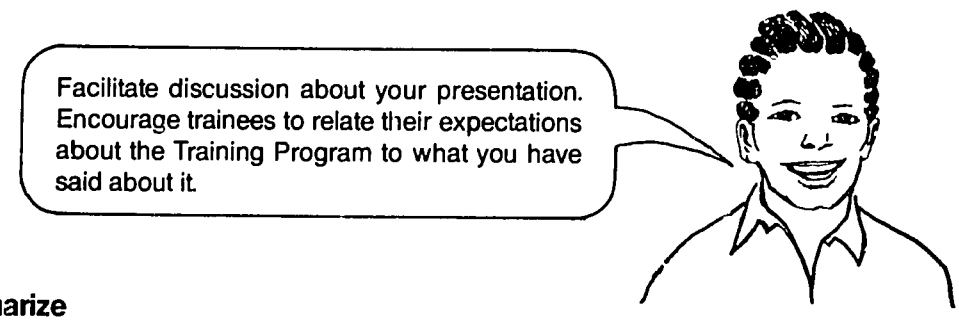
> **What do you think you will need to know (or want to know) to fulfill your roles as agroforestry Extension Workers?**

Record their responses on newsprint. Then ask them:

> **Why do you need knowledge or skills in each area you have identified?**

Record these responses as well.

Deliver your presentation about the Training Program's content. Try to keep it about 20-30 minutes long.



Summarize

Help the group reconcile their expectations with yours. Explain that these expectations will be **guidelines** for both you and them as the training progresses. Both of you will be better able to adjust the content and the length of time spent on each lesson and Module, knowing what the group's expectations are.

LEARNING NOTES

CONTENT OF OUR AGROFORESTRY EXTENSION TRAINING PROGRAM

Ten Training Modules are provided as a basis for structuring your training program. Each Module contains several lessons. Each lesson addresses questions that should be answered by trainees during the training program. Modules are designed to help trainees answer the following questions:

Module 1. Beginning Agroforestry Training

Who are we?

What is the project doing here?

What are we (trainees) expecting to do within the project?

Module 2. Introduction to Agroforestry

What is agroforestry?

What problems can agroforestry address?

What are roles of trees in agroforestry?

What makes agroforestry so promising?

What different types of agroforestry are there?

What are possible disadvantages to agroforestry?

What are possible constraints to agroforestry development?

Module 3. Project Approach to Agroforestry Extension

Why does our project focus on the small farmer?

Why does our project stress the importance of farmer participation at all stages of the project's development?

Why is our project stressing the importance of both men's and women's participation in the project?

Why does the approach our project uses help to develop technologies which are important and appropriate locally?

What is the role of an Extension Worker in an agroforestry project that emphasizes small-farmer participation?

What are the characteristics and skills of good Extension Workers in such a project?

Module 4. Agroforestry Extension Communication

How do Extension Workers both teach and learn most effectively in an Agroforestry Extension Project?

What types of communication best support development and agroforestry extension?

What are the principles of good communication?

What blocks good communication?

What are good communication techniques and materials for better learning and teaching in an agroforestry extension project, among staff and with the many possible types of agroforestry extension project participants?

Module 5. Land Use Diagnosis for Agroforestry

What do we mean by "production systems", especially at the level of small-scale farmers?

What small-scale farmer (or household) production systems are assisted by having trees in the landscape?

Are farmers aware of a positive relationship between trees on their land and the productivity of their land?

What is a good method for determining small scale farm production problems?

How are these production problems related, and what are the causes of these problems?

How do the views of different members of a farming household affect our "diagnosis" of production problems?

How is agroforestry being practiced already by farmers?

Module 6. Agroforestry Design

What are the principles of good agroforestry design for small scale farms?

What are "components" of an agroforestry design for small scale farms?

What are good strategies for combining agroforestry components on local small scale farms, or on the landscape?

How do we know if our agroforestry extension project has developed and promoted the best agroforestry design?

What can we learn from farmers and farming practices about agroforestry principles?

What can we learn from farming households about designing and evaluating agroforestry practices?

Module 7. Planning, Monitoring and Evaluating Agroforestry Extension Activities

Why do we need to plan, monitor and evaluate agroforestry extension activities and practices?

What specific agroforestry extension activities and practices do we need to plan, monitor and evaluate?

Who should plan, monitor and evaluate agroforestry extension activities?

When should these activities and practices be evaluated?

How do we plan, monitor and evaluate agroforestry extension activities and practices?

Module 8. Seed Supply

What is our plan for making enough good quality agroforestry tree seeds available for our project area?

How do we identify good quality seed?

How do we collect good quality seed?

What is the best way for storing our seed?

What is the best way for making sure seed produces good, healthy tree seedlings?

Module 9. Nursery Management

How will our project raise enough appropriate agroforestry tree seedlings to fulfill the demand for them created by our project?

What techniques will we use to raise tree seedlings in the project?

How will we teach the best nursery techniques for raising these seedlings to farmers?

How will our project keep "nursery records"?

Module 10. Tree Planting, Protection and Management

What are the best methods for planting trees where rainfall is low, and where it is high?

What are the best methods for planting trees on slopes to prevent soil erosion and promote soil conservation?

What are the best methods for protecting trees from animals, people or weather that might damage them?

What are the best methods for conserving and using water to establish trees when planting out?

How can we best share these different methods with farmers?

What are the best methods for managing and harvesting trees in each of the agroforestry designs we are promoting?

How can we learn from farmers about tree management for agroforestry?

TRAINING MODULE 2 INTRODUCTION TO AGROFORESTRY

INTRODUCTION

The lessons in this Module will introduce trainees to the subject of agroforestry.

The lessons are designed to motivate trainees to learn more about agroforestry and to participate in its development. This Module stresses agroforestry as a relevant and practical response to a wide range of national, community and household level land use issues.

This Module emphasizes the key role Extension Staff play in increasing knowledge about agroforestry and making it work to solve a variety of problems.

These lessons are aimed at providing trainees with a background in developing problem-solving skills for agroforestry.

Finally, the lessons expose trainees to a variety of teaching methods. Visual media and teaching by facilitation are techniques they will use in their work. As a trainer, it is hoped that you will gain insight into how trainees respond to readings, to discussions and to summarizing information in written form. This information will help you in planning future training activities.

Plan about two and one half to three days to cover the lessons in this Module. This assumes you will conduct lessons for no more than six hours per day.

CONTENTS

The following lessons are contained in the Module:

Lesson 1 Creating Awareness about the Need for Agroforestry

Lesson 2 What is Agroforestry?

Lesson 3 Agroforestry: Understanding What it is and How it Relates to Development

Lesson 4 Deepening our Understanding of Agroforestry Concepts and Potential

Lesson 5 Analyzing the Potential for Agroforestry

Lesson 1 CREATING AWARENESS ABOUT THE NEED FOR AGROFORESTRY

OBJECTIVE

Trainees will be able to express awareness about tropical agriculture and natural resource problems. They should also be able to link these problems to the well-being of people living in tropical areas, especially the rural poor.

METHODS

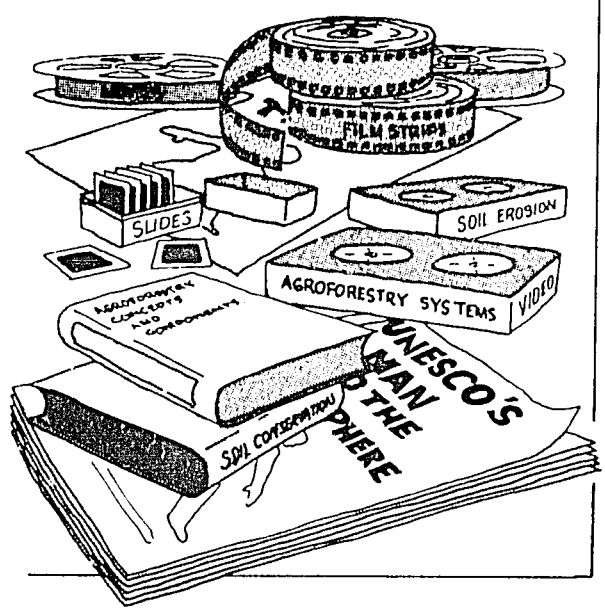
Use visual media and scripts or captions as a basis for stimulating discussion about agriculture and natural resource issues pertinent to your project. The Lesson should take two to three hours and may be spread over several days.

EXAMPLE

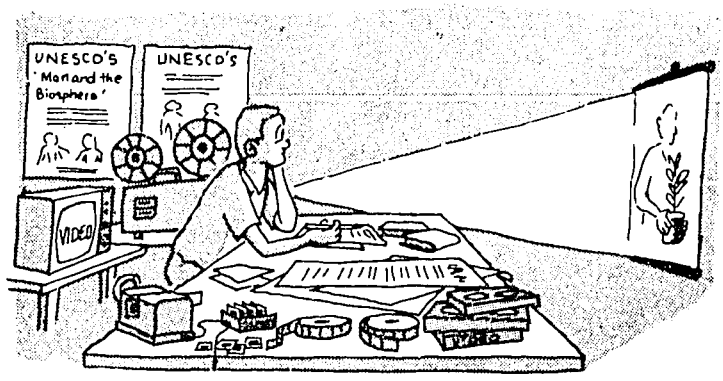
Prepare

Try and obtain materials on agriculture and natural resource problems in the tropics and how these problems affect the lives and livelihoods of the rural poor. Select materials which deal with topics of deforestation, soil erosion, small holder agricultural production problems, etc. Materials can take the form of slides, movies, film strips, posters and video. Good sources for these materials are listed in SOURCEBOOK SUPPORT MATERIALS (2-1).

For simple verbal descriptions of key resource issues related to agroforestry see SOURCEBOOK SUPPORT MATERIALS 2-1 through 2-3. These may help you guide discussion about issues raised by the visual materials you are able to obtain.

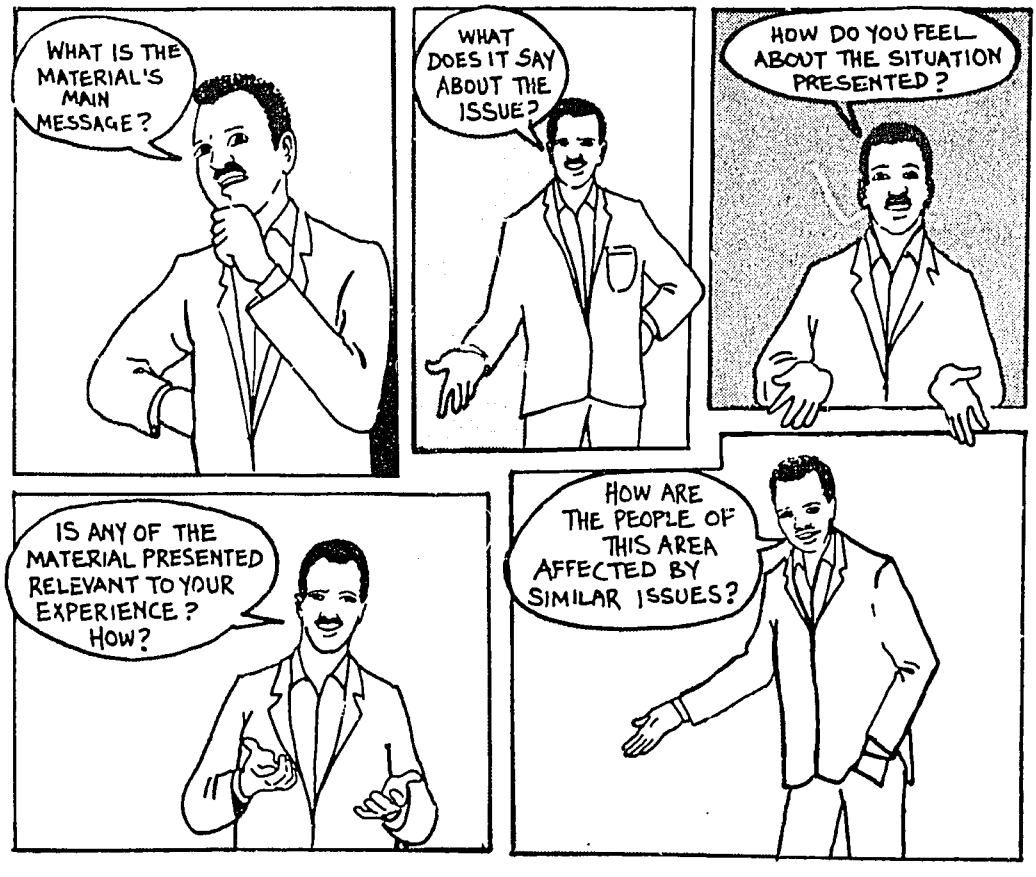


View the materials yourself, before using them with trainees. This will help you get a good idea of topics and issues used in each. Two or three different presentations are a good way to introduce the topic of global or regional agriculture and natural resource issues. Remember to leave time between presentations for discussion.



Facilitate

You can help stimulate discussion by trying some of these questions with trainees:



Lesson 2 WHAT IS AGROFORESTRY?

OBJECTIVE

Trainees will be able to describe functions and uses of trees in their home areas, and to describe how these relate to agroforestry.

METHOD

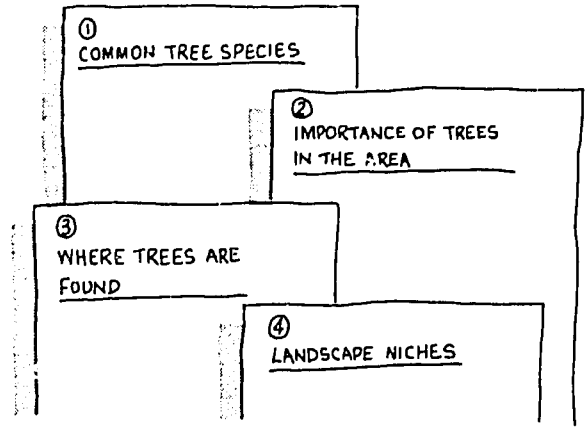
The lesson consists of a facilitated discussion. Use flip charts and markers to record responses to key questions.

EXAMPLE

Prepare

You will be leading this lesson in an effort to create awareness and discovery among trainees about the presence of agroforestry in their project area. Your role will be to facilitate trainees' awareness about trees and the role they play, as well as to encourage information sharing among the group. The techniques you use will be similar to the ones that your group will use with either the next group of extension trainees or farmers. Flipcharts are a helpful tool for this lesson.

Before you lead this lesson, read through the questions recommended below. Label the top of your newsprint with questions corresponding to those below. You will be using four sheets to record the group's response to the questions. Save the newsprint sheets as a record of the group's answers and a reference for later use.



Gather the trainees into an informal group. Everyone should be able to see the flipchart stand.

Facilitate

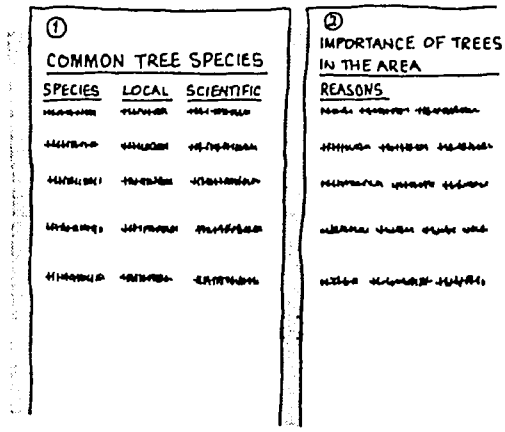
Begin by asking the group:

> **What are names of two or three of the most common and important tree species found in your home areas?**
>
> **Do you know the scientific or common name for each?**

If only the local names of trees are known, try and assist trainees with a common name for each species. On the left hand side of your first newsprint list all names mentioned. Then on the right hand side develop a single list of all species mentioned. Leave plenty of space between each species list. Then ask:

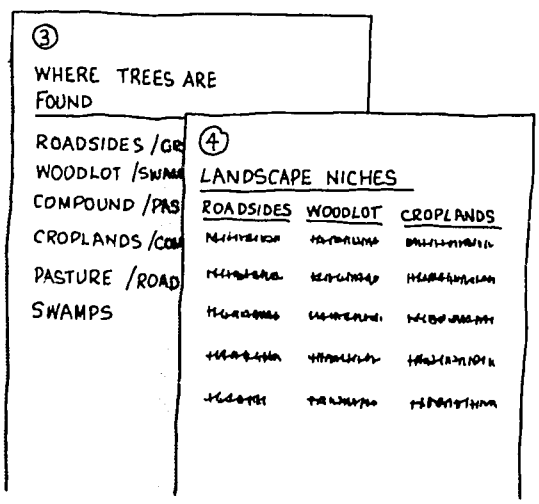
Why are these species important to your area?

Line up your second sheet of newsprint with the species list on the right-hand column of the first sheet. List the reasons next to the name of each species. Ask the group to add any additional functions or uses of these trees. Add to the list yourself. Try and get agreement from the group on tree uses. Then ask:



Where do we find these species growing?

List on your third sheet of newsprint places in the landscape where each species can be found. Again, add your comments or observations as appropriate. Consider swamps, roadsides, pasture, grazing area, around the homes, steep slopes, on borders between farms, in croplands of different homesteads, etc.



Help the group note that the same species is often found growing in different areas, which is often related to how it is used. Ask the group to give examples of this. Help them with an example, if necessary.

On a fourth sheet of newsprint, list across the top, **landscape niches**, or places in the farming environment where trees are found. Put each species name under the landscape headings where they belong. Some species will occur under more than one heading.

Now ask the group to identify the subject they have been talking about. It's AGROFORESTRY.

Explain to the group the following about agroforestry:

> Trees, their uses and their location are of major interest to agroforestry. The aim of the project is to get the best species of trees to meet farmers' needs, into the landscape where they will grow best and where they will do the most good. One of the best ways to do this is to use species that are already present, are well adapted to local conditions, and can serve a variety of different uses. Trees which serve a variety of different uses or functions are often called multi-purpose trees (MPTs).

Then ask:

How many MPTs do we have in our area?

Discuss, using the list generated during this lesson. Expand the original list as more species are thought of during the discussion. It is important to emphasize that:

Agroforestry is something many farmers already do. Practicing agroforestry is really nothing new. It is our job, along with other professionals such as foresters, agronomists, land use planners, etc. to learn more about it and help farmers to improve agroforestry practices.

Finally, ask the group to consider one very important aspect of agroforestry - trees planted directly in farmers' fields among the crops.

Can you think of examples which have not been mentioned yet, where trees are grown with food crops?

List and discuss the location, uses, effects and characteristics of trees and crops grown together.

Summarize

Conclude this lesson by summarizing the group's lists, as follows:

Common/important tree species found in their areas, and uses of these trees

Where useful trees grow

Numbers of MPTs in our area

Aspects of growing trees and crops directly together

Emphasize again that:

The purpose of our training is to learn more about how we can help farmers make better use of trees to meet the needs of their family and their community. Agroforestry involves using trees to support agriculture.

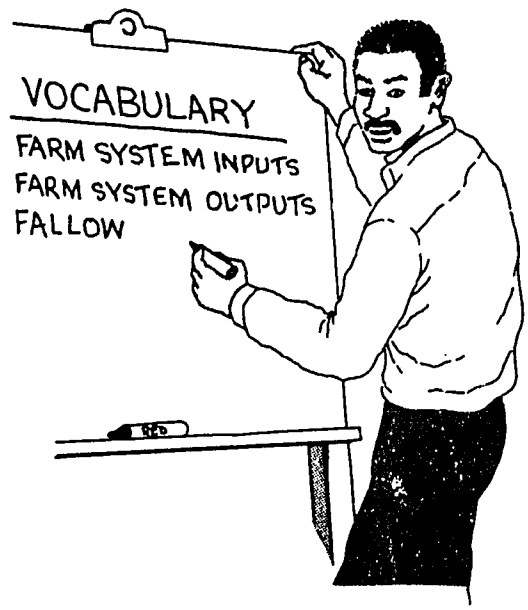
Lesson 3 AGROFORESTRY: UNDERSTANDING WHAT IT IS AND HOW IT RELATES TO DEVELOPMENT

OBJECTIVE

Trainees will be able to use your presentation and the LEARNING NOTES in this lesson to describe agroforestry and its role in development.

METHOD

This lesson makes use of fairly complex readings. The LEARNING NOTES are designed to give trainees a better understanding of basic concepts supporting the use of agroforestry as a development strategy. The group may not have adequate language skills to understand the material. In this case, you will have to present the material. Use newsprint and markers to record important ideas and new vocabulary important to concepts about agroforestry. If the LEARNING NOTES are too complex, develop your own handouts on the material. The LEARNING NOTES, or your handouts, should be put into their Training Workbooks for reference.



EXAMPLE

Prepare

Familiarize yourself with the LEARNING NOTES. If you think that trainees will be able to read and understand the NOTES, reproduce them for your group. If not, prepare a presentation based on the materials.

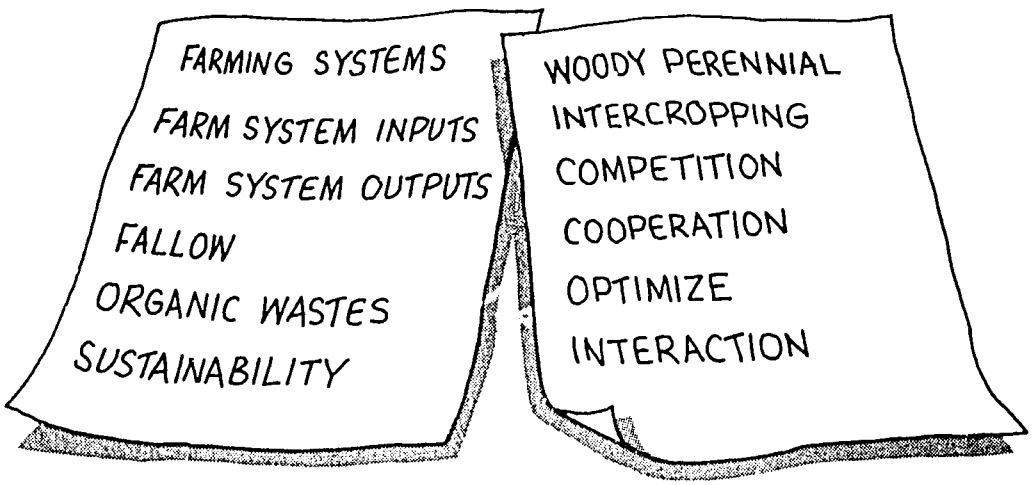
You may wish to choose additional materials from those within the SOURCEBOOK SUPPORT MATERIALS, (SSM 2-2 through 2-3). These can be used to supplement the readings provided in the LEARNING NOTES for this Module.

Give each trainee a copy of the LEARNING NOTES. Ask them to read the NOTES carefully. They should summarize the key points in the material and note any questions they might have. Give the group a day or some evenings to complete the assigned readings.

Facilitate

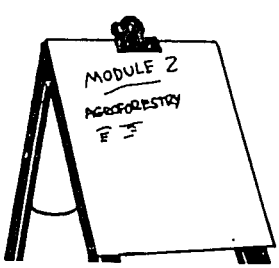
After the reading assignment has been completed, give trainees time to ask questions they have noted down. Try and clarify questions they have.

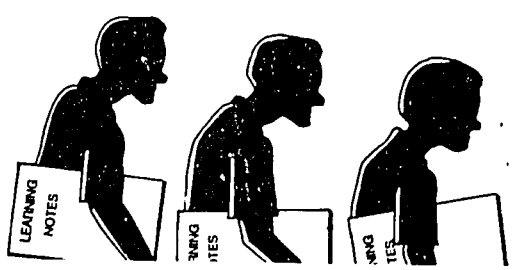
Next, ask the group to summarize the important points from the readings. Record these points on newsprint. Include the following words or concepts in your review:



As a final exercise, the group should consider a good working definition of agroforestry which can be used for your project. This definition is important, as it will help your Extension Staff better communicate what agroforestry means, to farmers. Record group definitions on newsprint, but do not worry if you cannot develop an agroforestry definition which everyone agrees on. Return to the definition exercise after a few more lessons to see if a more satisfactory one emerges.

It is important that trainees keep their LEARNING NOTES, and any additional notes they have taken, in their Training Workbooks. They will use them for reference later in the training.





LEARNING NOTES

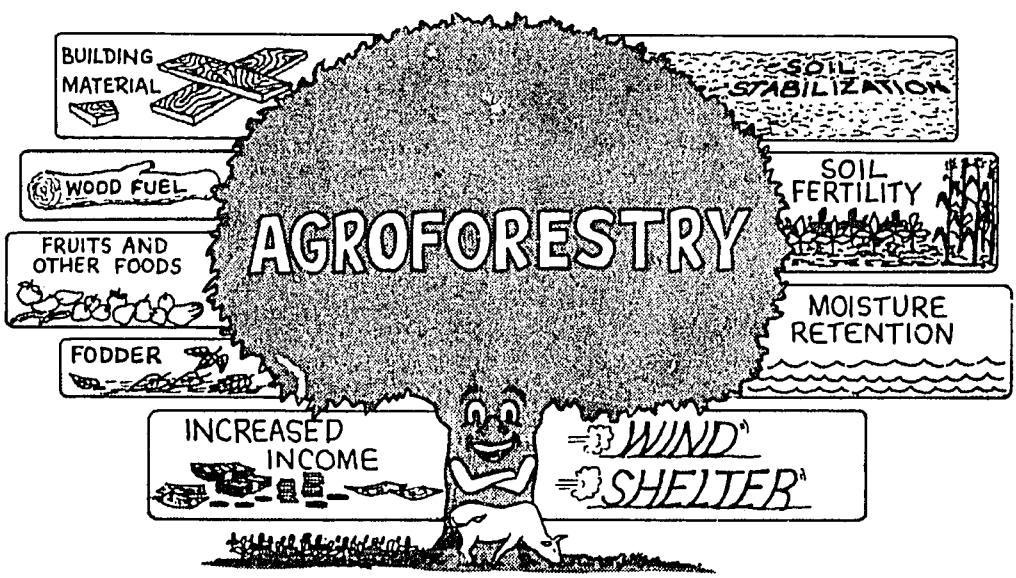
AGROFORESTRY: WHAT IT IS AND HOW IT RELATES TO DEVELOPMENT

INTRODUCTION

Agroforestry is receiving more and more attention from governments and development organizations around the world. These groups are finding that agroforestry has the potential to address several environmental and development problems at the same time. Developing countries are finding that agroforestry may be one important way of dealing with problems affecting their citizens.

Agroforestry is a way of managing land. Agroforestry is a term used to describe the deliberate growing of trees and shrubs together with agricultural crops or livestock. Agroforestry is known as a strategy which attempts to reduce land use conflict and increase what the land can produce (land productivity).

Agroforestry can be used to provide the following benefits:



Agroforestry emphasizes the role that trees/shrubs can have on farmers' land. Trees produce outputs, or things which are of benefit to the farmer and his/her land. These are listed above.

Our approach to agroforestry is aimed at encouraging farmers to practice agroforestry on their lands so that the benefits (outputs) are directly related to their needs and lives.

Let us examine agroforestry and the role it can play in farmers' lives.

PART 1

AGROFORESTRY - HOW IT RELATES TO DEVELOPMENT

A major problem facing many countries in their efforts to develop is their growing population and the demands people make on resources of all kinds. We see the results of a growing population reflected in changes in the land.

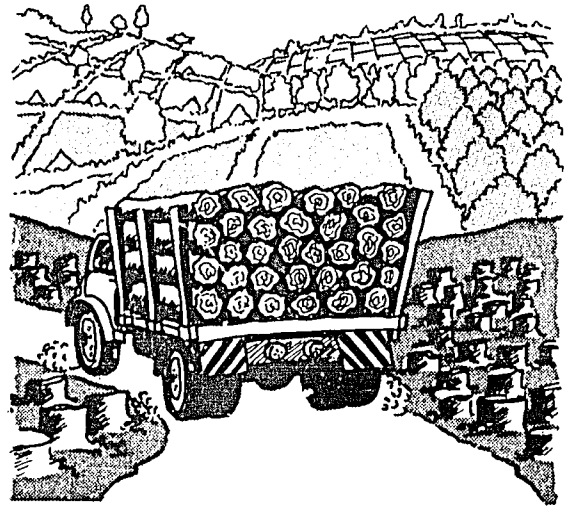
Forests are cleared to make more land available for growing crops and livestock.

People are forced to move from "high-potential", good agricultural areas, to areas which are less suited for agriculture.

Good agricultural areas, "high-potential" areas, are being sub-divided into smaller and smaller plots of land. Farming practices are forced to change or the land will not produce enough food.

Forests and woodlands are being "poached" for fuel, building materials and other forest products.

Forests and woodlands are being harvested for industry and commercial purposes.

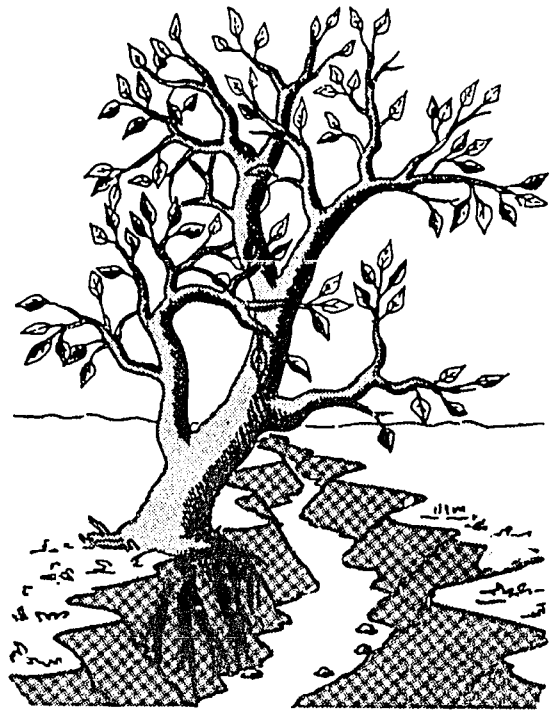


As urban populations increase, the demand for energy increases as well. Most of the energy in developing countries is provided by wood. Most wood energy is used in the form of charcoal in cities and towns, because it is easier to transport. But changing wood into charcoal is most often inefficient. A lot of energy is lost in conversion. In Africa, for example, as much as 90% of the original energy in wood is lost in the preparation of charcoal.

All these activities result in serious negative effects for people who practice farming or livestock grazing as a livelihood.

The improper cutting of trees, forests, woodlands, shrubs, etc. results in what is known as deforestation - or the loss of forests and trees. When areas of land are deforested, the following can happen...

SOIL EROSION



Soil erosion results when trees, forests, woodland and shrubs are removed from the land and no trees, etc. are planted in their place. Soil erosion also results from bad agricultural practices - where people cultivate on steep slopes or they practice poor agricultural techniques. When grass, trees and shrubs are destroyed in order to make room for other practices, there is a good chance that soil erosion will occur, unless the land is properly managed.

Some soils are more likely to become eroded than others; when it rains, the force of gravity causes the water to carry soil, which is unprotected by trees, shrubs, grass or good agricultural practices, down the slope. This results in loss of good soils and often dramatic changes in the quality, shape and appearance of the land.

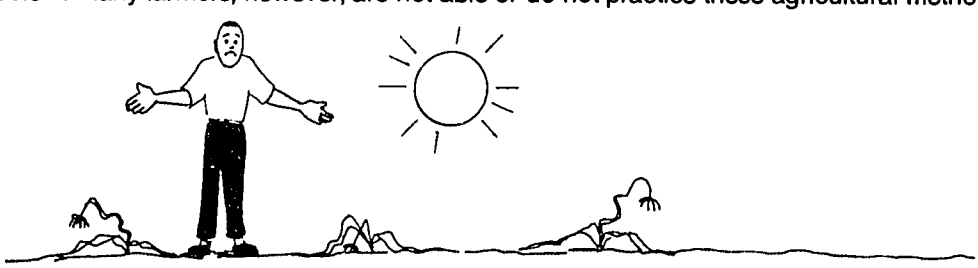
In drier areas, soil erosion results when livestock have overgrazed the land or when poor agricultural methods have been used. Wind and water remove good soils, leaving the land less productive. Many traditional livestock keepers move their livestock each season in order to protect the land and not over-use it, but this practice is changing.

Population growth and poor agricultural and livestock practices are increasing soil erosion around the world.

SOIL INFERTILITY

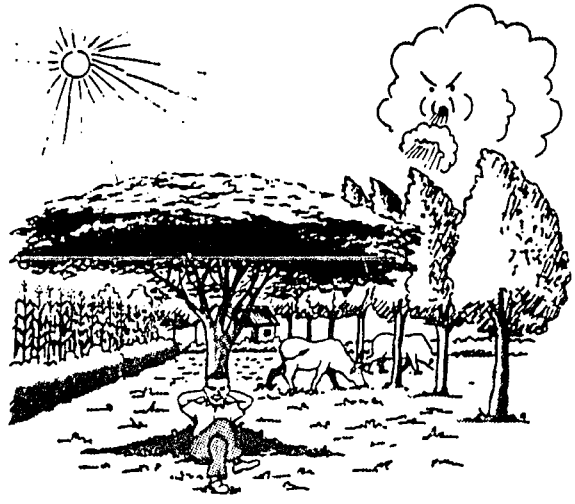
When people are crowded on farming lands, or settle in areas where land is poorly suited to farming, the result can be soil infertility. Soil infertility is the result of pressure on the land to grow a continuous cycle of crops or grasses without allowing it to rest. Land which is not allowed to rest, or lie fallow, loses many of its important organic nutrients and becomes less productive. Many countries use expensive fertilizers in order to restore the nutrients in the soil, but for many farmers, this is not practical or possible.

Composting, crop rotation, and allowing lands to be fallow are ways of avoiding the soil infertility problem. Many farmers, however, are not able or do not practice these agricultural methods.



CLIMATE AND NATURAL DISASTERS

Too much water or periods of drought also have a negative effect on land, especially where trees, shrubs, grasses, etc. have been destroyed or removed. Natural vegetation and well-managed land cannot solve the climate problems of drought or flooding, but it can help reduce the effects of these natural occurrences on the land. Trees protect us, animals and crops from too much sun and wind.



CROPS AND LIVESTOCK - FOOD PRODUCTION PROBLEM

Soil erosion, over-grazing, soil infertility and climate, all these problems can have negative effects on the production of food. As these problems increase, food production decreases. Low food production is particularly a problem in marginal areas, or "low-potential" areas, where farmers have been forced to move by population growth.

NUTRITION PROBLEMS

When food production is low and people do not get enough of the right food, the result is often nutrition problems. Low or inadequate food production affects the health of the population.

As you can see, all these problems are related. The extent of these problems varies from area to area and country to country. You will however, have an important role to play in your project as you gather information about such problems and how they relate to the lives and well-being of the people in your project area. Therefore, it is important to understand:

The reasons for the increasing loss of trees and decreasing quality of land in the developing world.

The effects the loss of trees and soil quality is having on the productivity and sustainability of farming and livestock systems around the world.

WOODFUEL SCARCITY

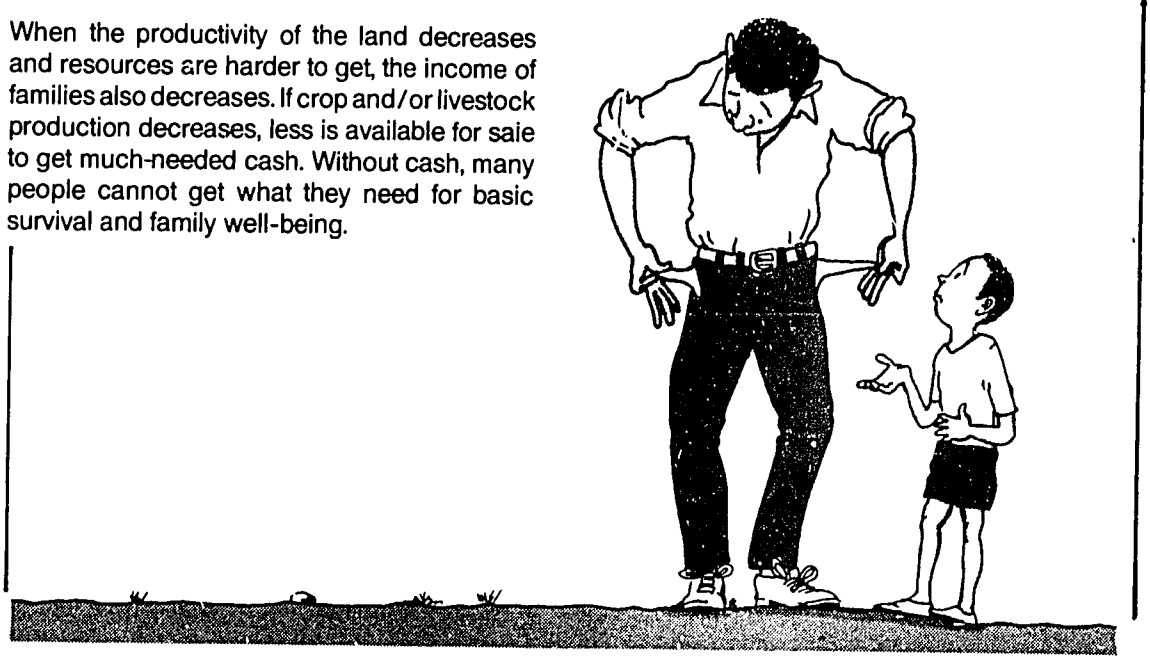
When forests are cut and cleared, woodlands are destroyed for agricultural purposes, timber is cut for industrial and commercial purposes, charcoal is produced and taken to towns, and population growth increases faster than the resources of a country can provide, **one result** for many people is the **loss of woodfuel**. When woodfuel supplies become more difficult to get, people are forced to use poor quality woods or other alternatives. Woodfuel becomes more expensive. Some people burn the remains of crops or dung, taking away potentially valuable nutrients from the soil. In addition, many people are forced to walk many kilometers for fuel, using a major part of the day and a lot of their own energy.

BUILDING MATERIAL SCARCITY

A rapid loss of trees means fewer materials for building. Poles and timber are hard to get and become more and more expensive to buy.

INCOME (CASH) SCARCITY

When the productivity of the land decreases and resources are harder to get, the income of families also decreases. If crop and/or livestock production decreases, less is available for sale to get much-needed cash. Without cash, many people cannot get what they need for basic survival and family well-being.



PART 2

WHAT IS AGROFORESTRY?

Agroforestry is a name given to practices of using agricultural and pastoral lands where trees are included. People define it in different ways, and you will probably see many definitions in other readings you are assigned.

For our purposes, let us use this definition:

> Agroforestry is a name for a land use system where trees/shrubs (also known as woody perrenials) are actively and deliberately managed as part of the agricultural and/or livestock activities, on the same land.

Characteristics of an agroforestry system include:

> Trees and shrubs which are grown and managed in certain, specific arrangements on the land, over time
>
> They have both environmental (ecological) and economic benefits
>
> Agroforestry systems involve two or more species of plants (or plants and animals) of which one species, at least, is a tree or shrub (woody perennial)
>
> Agroforestry systems involve more than one crop cycle - they are always more than one year long
>
> An agroforestry system always has two or more outputs (products)
>
> Agroforestry systems are more complex than single crop or single animal systems

The important thing to remember about agroforestry is that all good agroforestry systems are based on knowledge and experience of many traditional land use systems and practices. Agroforestry is really nothing new. Modern agroforestry, however, focuses on the **improved management** and **organization of traditional agroforestry practices** to give better results.

Agroforestry can be intensively practiced, just like intensive agriculture, on good, fertile lands. We are focusing our agroforestry efforts, however, on lands where the following problems are shared by many people:

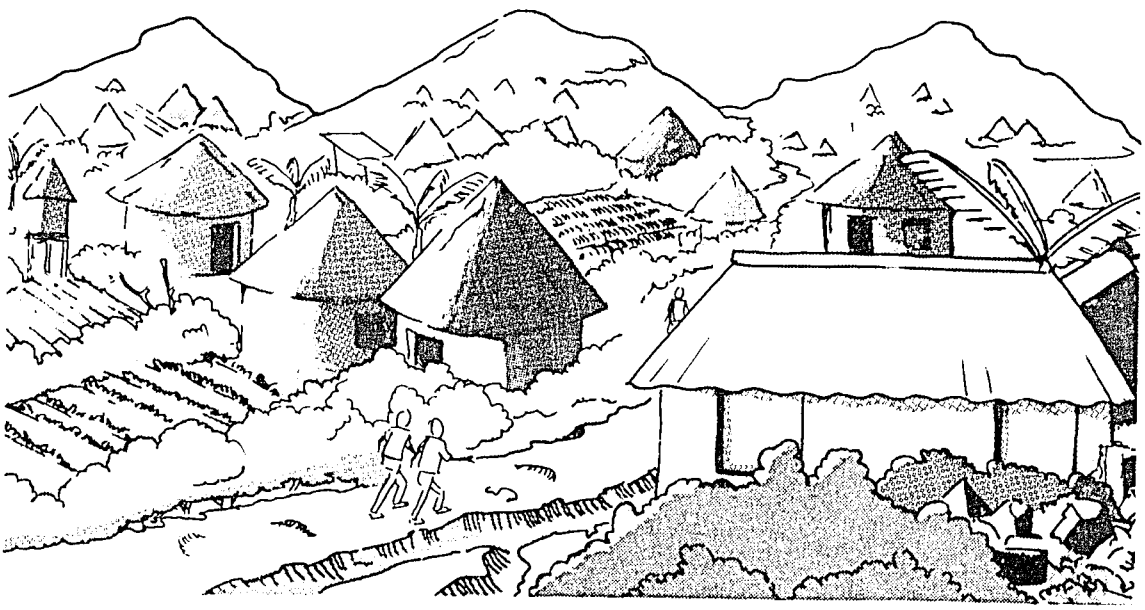
Lack of fuel ● Soil infertility

Inadequate food production

Soil erosion ● Poverty ● Poor nutrition

Lack of building material

Inadequate extension services



Our project area probably has people who must produce their basic needs of food, fuel, fodder and shelter and cannot afford to buy most of these.

Agroforestry is a system which is designed to help farmers improve traditional farming systems, to make them more productive. It is most readily applied to farming systems in the tropics.

Traditional farming systems used in tropical countries were developed, primarily, to reduce the risk of crop failure. These traditional systems are not productive enough, in many cases, to meet the needs of the rapidly growing population in the tropics. Thus, our use of agroforestry is an attempt to combine knowledge about traditional farming (or land-use) systems, together with modern ideas and research findings about how to improve these systems, to develop better practices. Better practices must be more productive in both the short and the long terms. Agroforestry practices should help make land use systems more **sustainable**. Sustainable increases in land productivity is the main objective of agroforestry.

Different professions are interested in different aspects of agroforestry. Foresters, agronomists, livestock specialists, land-use planners, etc. have different ways of looking at it. Most interpretations of agroforestry do have the following principles in common:

COMPONENT Agroforestry systems are made up of different **components**, or species of plants and animals.

INTERACTION All agroforestry systems involve an **interaction** between these components and between the components and the environment. The benefits of an agroforestry system stem from this **interaction**.

VARIABILITY Agroforestry systems are **variable**. Components and their interaction can vary a lot, as can the interaction between components and their environments/areas.

COMPETITION Components of an agroforestry system can also **compete** for resources such as water, light and nutrients. This competition between components can be reduced if components are chosen wisely and managed well.

COOPERATION When agroforestry components are selected wisely and are managed well, they should complement each other. When we have reduced the competition between components, we can say that the components are **cooperating** for the best possible effect. Cooperation between components should yield higher **outputs**.

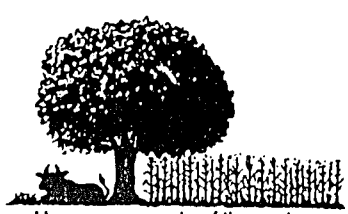
Many new agroforestry practices are still experimental. These experiments continue to be based on traditional practices and knowledge, but again with a view towards improving the agroforestry systems' **output**. Your role in the project will be to both encourage the adoption of new, improved agroforestry practices and work closely with farmers to help ensure that the benefits are **needed** and **sustainable**. There is still a lot of research and experimentation to be done. Your project can help to contribute to the growing body of knowledge on modern agroforestry and its success.

CLASSIFYING AGROFORESTRY SYSTEMS

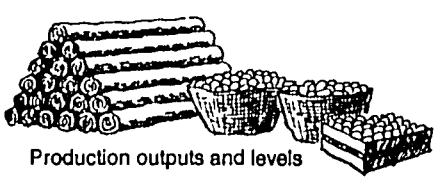
Agroforestry Systems can be classified according to:

Physical appearance and structure

Social and economic characteristics/benefits


How components of the system interact over time

Importance and role of components


Production outputs and levels

Most agroforestry systems are classified in terms of what the system is designed to produce and how successful the production output is.

Here are some terms most often used to describe agroforestry systems.

Agro-silviculture system. The management of land for the production of agricultural crops and forest products.

Silvo-pastoral system. The management of forests for the production of wood and for raising domestic livestock.

Agro-silvo-pastoral system. The management of land for the production of agricultural crops, forest products and domestic animals.

Lesson 4 DEEPENING OUR UNDERSTANDING OF AGROFORESTRY CONCEPTS AND POTENTIAL

OBJECTIVE

Trainees will be able to use the LEARNING NOTES and your presentations in Lesson 3 as a review and background to describing the role of agroforestry in development.

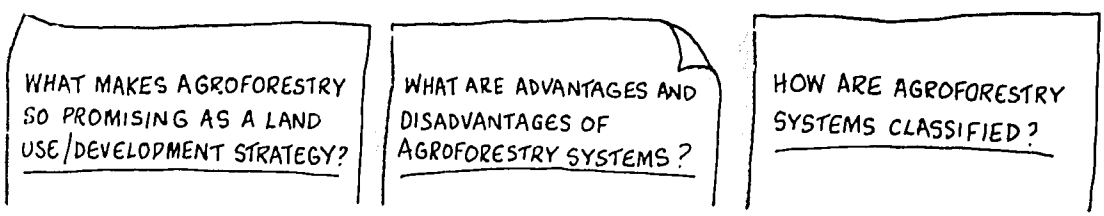
METHOD

This lesson is designed as a review lesson to help reinforce the ideas presented in Lesson 3. You will want to use newsprint and markers to record important points from group discussion and to help in the review.

EXAMPLE

Prepare

Prepare a series of newsprint sheets with the following headings:



Organize the group into a relaxed, informal setting and begin to ask questions related to the LEARNING NOTES of Lesson 3. Start by asking each trainee:

What do you find most interesting about agroforestry?

Encourage the group to draw on personal experiences and their knowledge of the area, as well as the readings. Help lead the discussions to answer the questions listed on the newsprint sheets.

Summarize

Help to summarize the discussion by reviewing the groups' response to the three main questions. Encourage them to view agroforestry not as an aim in itself, but as a practice which helps farmers gain better control over, and improve, their lives.

Lesson 5 ANALYZING THE POTENTIAL FOR AGROFORESTRY

OBJECTIVE

Trainees will be able to describe relationships among land use practices and production problems that may benefit from agroforestry. They will also be able to list problems, describe their causes, and rank them.

METHOD

This lesson uses plenty of newsprint. The lesson is designed to help trainees see the relationships between land use and production problems. It should also begin to highlight possibilities for agroforestry and some of its possible solutions to these problems. Discussion and question-and-answer style is the most effective way to get group input into this lesson.

EXAMPLE

Prepare

Read through the lesson. Prepare newsprint with headings that correspond to the guideline questions included.

Facilitate

Ask the group to identify the problems in their country and project area which might benefit from the practice of agroforestry.

List their answers on at least three newsprint sheets, so that answers are spread out across the pages like this:

1 [illegible]	5 [illegible]	9 [illegible]
2 [illegible]	6 [illegible]	10 [illegible]
3 [illegible]	7 [illegible]	11 [illegible]
4 [illegible]	8 [illegible]	

Leave sufficient space between each group-identified problem you write down, so that answers are not crowded. Watch for repetition, but allow all reasonable answers to be included.

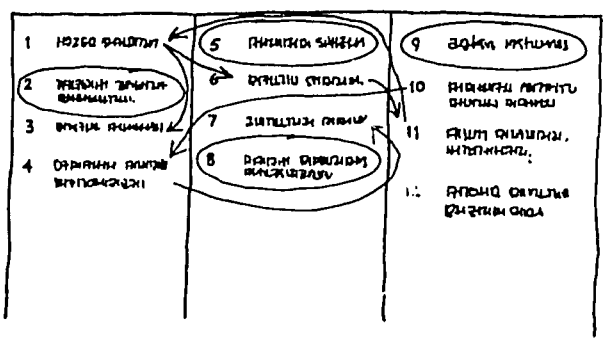
Ask the group to review the list when it is finished. Ask them to think about relationships between problems in terms of cause and effect.

Beginning with the first item, ask the group to decide which of the following applies to its relationship with each other item on the list:

Is it a cause?
Is it an effect?
Is there no cause or effect relationship?

This can be a difficult exercise, but is worth the lively discussions which result from this sort of review. Political, wealth, poverty, and social class issues usually result from this sort of examination.

If the group decides there is no cause and effect relationship between problems, circle the item.



If the group decides there is a relationship between cause and effect items, draw a line between the two, with an arrow showing the relationship. The paper will soon be filled with many arrows.

At the end of the exercise, count the number of arrows pointing to each item. Take another piece of newsprint, and now list each item, ranking each item in terms of the largest numbers of arrows down to the fewest arrows.

Summarize

Explain that the group has begun to identify and appreciate the relationships between problems, their causes and effects. They have also begun to rank problems in terms of importance. Environmental problems are very complex; so are the relationships among them.

When we examine problems carefully, it is possible to better understand the relationships among them. We can also understand how the cause of problems can result in a variety of different effects. When we understand what causes a problem, we are better able to address it - and not just work on repairing its effects. Careful examination of problems also allows us to rank them. This sometimes helps us determine where to put our energy, resources and time first.

Agroforestry is able to address some problems directly, and others, indirectly. As problems are related, so are solutions. Our job will be to continue this sort of problem, cause and effect identification throughout our project.

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TRAINING MODULE 3 PROJECT APPROACH TO AGROFORESTRY EXTENSION

INTRODUCTION

The activities in this Module will help trainees understand and appreciate their project's approach to agroforestry extension. The activities will help them understand their roles as facilitators of agroforestry development.

Trainees should understand that there are different approaches used in development projects. Various approaches probably are represented by projects operating in your area or nearby.

Trainees should learn about strategies used by other projects to meet objectives similar to their own, so that differences, and reasons for them, are appreciated. They will learn that each project approach has advantages and disadvantages. Visiting other projects should also provide opportunities for collaboration and mutual support.

Trainees should understand that their project approach aims to be participatory. This approach is based on experience and a belief that sustainable development requires local participation in project decision-making. It stems also from the reality that the science of agroforestry requires participation by the farming community, in developing appropriate agroforestry techniques.

Trainees will appreciate the special roles of Extension Staff in making the project approach work. They will better understand the type of staff training required to prepare them for these roles.

CONTENTS

The following lessons are contained in the Module:

Lesson 1 Defining our Project Approach

Lesson 2 Assessing Existing Rural Forestry Activities

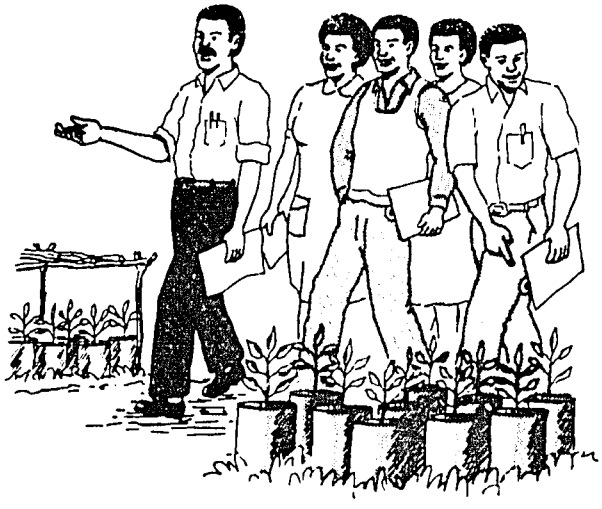
Lesson 3 Project Inputs, Outputs and Owners

Lesson 4 Characteristics of the Small Scale Farmer and An Effective Extension Staff

TRAINING METHODS

This Module encourages the use of reading, brainstorming and facilitated discussion. The lessons depend also on field trips, and directed observation using Observation Guidelines.

Together, the lessons should require about four to eight days to conduct, depending on the duration of your field trips and whether you assign trainees report writing tasks. Considerable additional time is required to prepare for these lessons.



Field Trips

An excellent way for trainees to understand their own project approach and Extension Staff roles is to visit other projects and compare them to their own. Field trips to other projects broaden trainee perspective about how different development approaches can be used to accomplish similar objectives.

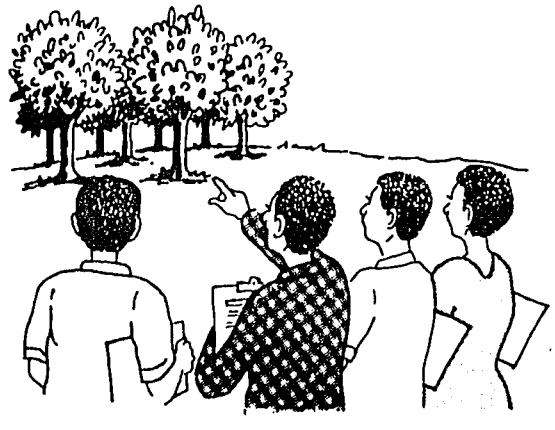
To understand a project, it is important to know its environmental and social context. Field trips to other projects allow trainees to see how they operate and in what context. They provide opportunities for your staff to talk with other project staff about why and how the project does its work, and how effective it is.

Seeing other projects will help trainees generate ideas about activities and techniques which can be applied to their own project. Field trips also have the advantage of meeting several objectives in Agroforestry Extension Training.

Field trips organized to increase understanding about project approaches are most beneficial if conducted early in the training program.

Directed Observation

Observation techniques are systematic ways of looking at something. Although there are a variety of observation techniques, a directed approach is best. Directed observation allows staff to look at key aspects of a project in a short time. Directed observation involves specially prepared guidelines or questions during observation.



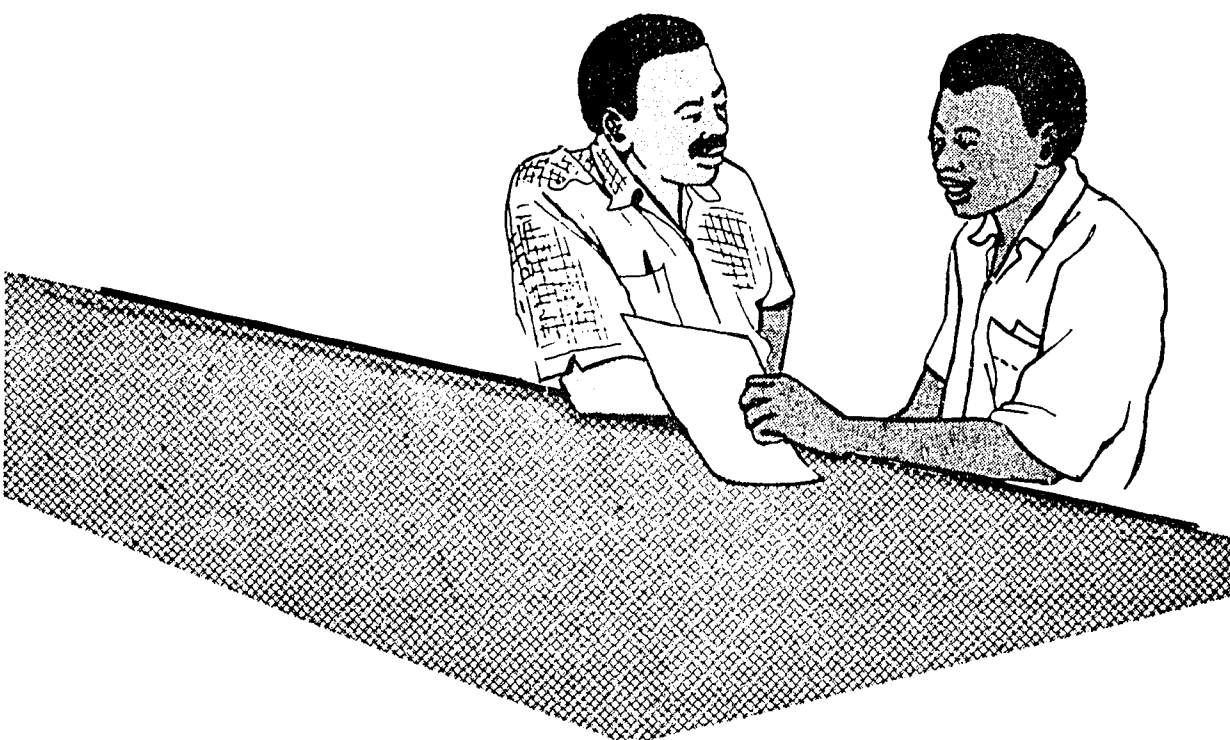
Observation Guidelines

Observation Guidelines are important training tools used to help focus observation. They are prepared by the trainer and used during field trips to guide trainees' observations and questions. They should be developed to help trainees explore and critically assess different project approaches and activities, and to share this information.

Several learning objectives can be addressed using well structured Observation Guidelines. The Guidelines should not become too lengthy or complicated. The primary aim of these guidelines is to answer: What can we learn from other development efforts that will benefit our own project?

Trainees will need to report on their field trip. Reports produced using Observation Guidelines should give you a good basis for assessing your trainees' ability to observe, question, assess their findings and report. Review their reports for accuracy, clarity of presentation, interpretation and creativity.

Review each report with trainees, individually. Remember to compliment the writer for positive qualities of the presentation, and indicate where there is room for improvement. Use your best judgement. This type of reporting, and your critique, may be new to most trainees.



Lesson 1 DEFINING OUR PROJECT APPROACH

OBJECTIVE

Trainees will be able to describe relevant aspects of their project approach, as planned and/or implemented. They will be able to discuss and present extension principles and strategies that complement their project's approach to development.

METHOD

The lesson encourages trainees to share expectations about how the project will operate, and their roles in promoting an appropriate project approach. This is accomplished through brainstorming, facilitated discussion and suggested readings. This lesson requires you to prepare an Overview paper about the project. Plan about two hours for brainstorming and discussion.

EXAMPLE

Prepare

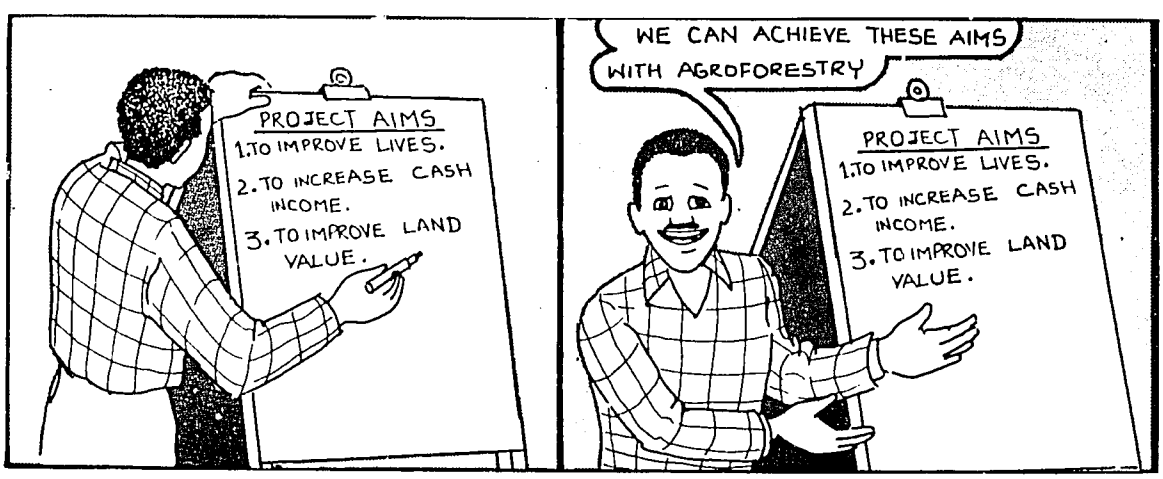
Write a Project Overview that summarizes what your project intends to do, and how it intends to do it. It should be about five to ten pages long. Write the Overview in simple language.

Address the following questions in your Overview paper:

1 **WHAT ARE OUR PROJECT OBJECTIVES?**

What do we aim to achieve?

How will the project address people's problems or improve their lives?



2 WHO ARE OUR PROJECT'S PRINCIPAL DEVELOPMENT PARTNERS, AND HOW WILL WE INTERACT WITH THEM?

Who are we working with?

What are their roles and what is our role?

Will we build on existing structures, try to establish new ones, or both?

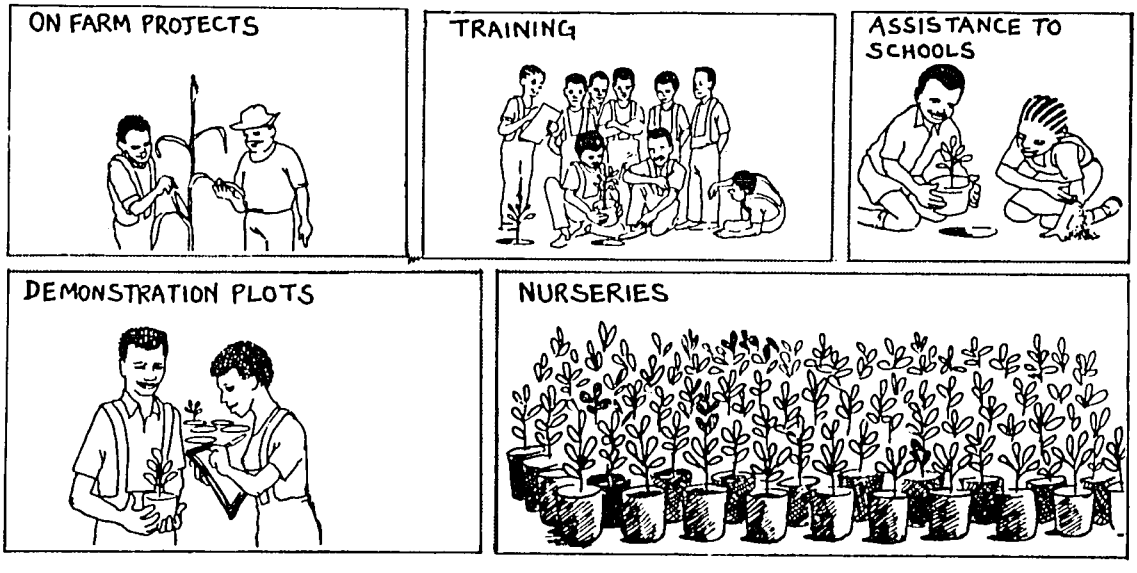
What local organizations will we work with? Will they be formal, politically-based groups? Social support groups?

How will we reach women? Will circumstances require us to establish a parallel and independent extension approach to reach them? Or can we reach them through our community extension efforts?

What will the incentives be for people to participate, in raising trees and in decision-making about project activities? Will we pay community members? How will we encourage voluntary participation?

3 WHAT ACTIVITIES WILL OUR PROJECT INITIATE AND/OR ASSIST?

List key project activities that your Extension Staff will be involved in implementing.



4 WHAT TEACHING AND COMMUNICATION METHODS WILL BE USED

Emphasize the importance of interaction and participation with project partners as key to your approach. Extension Staff are teachers who assist and facilitate.

Emphasize Extension Staff training and farmer training focusing on problem solving as well as technical skills. Emphasize voluntary, long term participation in decision-making. Sustainability of project activities depends on these.

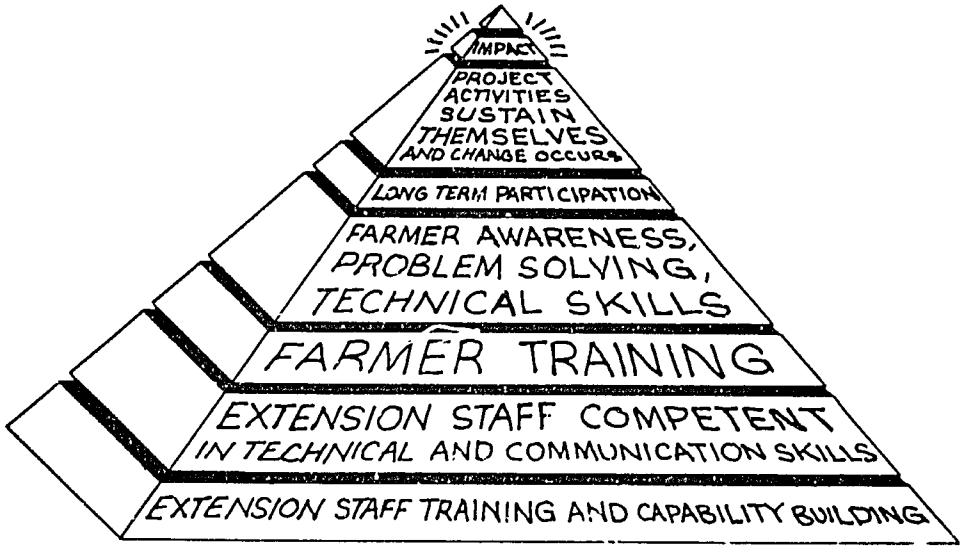
5 WHO ARE PROJECT STAFF AND WHAT ARE THEIR ROLES?

What characteristics and skills should Extension Staff have?

Describe the Extension Staff structure. Emphasize the importance of staff participation in project decision-making. Indicate that Extension Staff have the responsibility to be well informed and confident of their judgments.

6 SUMMARIZE BY SHOWING A PYRAMID OF CONDITIONS WHICH THE PROJECT IS TRYING TO ACHIEVE

Sample: Pyramid of Conditions the Project is trying to achieve.



Your organization probably has a development philosophy about who is to be assisted. It probably also has a strategy for how assistance will be provided. Use these materials and your project's proposal or implementation document, for your Project Overview.

Use SOURCEBOOK SUPPORT MATERIALS 3-1, **Identifying Strategies for Communal and Farm Forestry,** for additional assistance.

Facilitate

Facilitate a discussion about your project's approach by asking trainees the questions suggested in the Project Overview outline, above. Brainstorm answers to the questions with your trainees. Use newsprint and markers to record responses.

Facilitate a discussion that leads trainees to an understanding of key characteristics of your project approach. Focus on their critical role (as shown at the base of the pyramid) in making it work.

Readings

Provide trainees a copy of your Project Overview. This will provide an immediate review, and a helpful reference document.

Assign the following readings from SOURCEBOOK SUPPORT MATERIALS 3-2:

The Small Scale Farmer,

Five Ways to Succeed in Extension Work,

The Ideal Bwana Shamba,

Some Principles of Agricultural Extension.

Suggest trainees read these before or during the field trips. Ask them to list questions and issues that come to mind as they read. The readings should be discussed following the field trips.

Lesson 2 ASSESSING EXISTING RURAL FORESTRY ACTIVITIES

OBJECTIVE

Trainees should be able to describe and assess key characteristics of externally-assisted development projects and government soil conservation or rural forestry programs.

METHOD

Use field trips and Observation Guidelines to expose trainees to other projects. Compare your project approach to others. Also prepare a brief Overview Paper on each project visited to use in Lesson 3. Trainees will be expected to prepare brief reports that address each topic in the Observation Guidelines. If writing reports is not feasible they should be prepared to discuss answers to the questions upon their return. Plan two to four days for your field trip and another day or two to write reports.

EXAMPLE

Prepare

Trainers should visit soil conservation, natural resource development and/or small scale agricultural projects in your area. These could include projects sponsored or managed by churches or other local NGOs, government agencies, bi-lateral assistance organizations or international PVO's. Inform them of your visit beforehand.

Ideally, you want to arrange field trips for your trainees, to cover the following range of "development situations":

A self-motivated individual who has organized and motivated an organization to participate in raising trees, or engage in soil conservation practices without outside financial assistance. (e.g. a school, church, clinic or self-help group.)

A local organization who receives modest outside financial assistance for a development activity, but who relies on voluntary labor and management to make the activity productive.

A government and/or bi-laterally assisted project where labor inputs are paid for and operations are handled on a large scale and centralized basis.

If these types of projects do not exist in your area, plan a long distance field trip to find some.

Learn about the objectives, activities and accomplishments of each project. Describe the purpose of your visit to their project management, and prepare them for a visit by your trainees.

Prepare a summary of key characteristics of each project visited. Make it similar to your Project Overview, but briefer. Use these summaries as a basis for developing Observation Guidelines. You may also use it as a basis for facilitating discussion about the field trips. (see Lesson 3).

Prepare 'Observation Guidelines' for each project the trainees will visit. See SOURCEBOOK SUPPORT MATERIALS 3-3, for examples of Observation Guidelines.

Conduct Field Trips

Give trainees the Observation Guidelines for each project before your visit. Pairing trainees for collecting information and filling in the Guidelines, especially for initial trips, often works well.

Accompany the trainees on the field trips. Encourage them to ask most of the questions, and make their own discoveries. Help them with questions and interpretation of the answers when it appears important points are being missed, or insufficiently explored.

Following each trip, inform trainees when you will collect their reports. Try to collect them within a day or two of the field trip.

Lesson 3 PROJECT INPUTS, OUTPUTS AND OWNERS

OBJECTIVE

Trainees will be able to describe key characteristics of different project approaches, and judge their advantages and disadvantages. They will be able to express the reasons why your project has chosen the approach it has.

They will generate ideas about how their project may benefit from the activities of other projects. They will be able to outline skills and information needed to be effective Extension Workers given the approach of their project.

METHOD

Brainstorming and facilitated discussion are used to compare and analyze the information and ideas obtained from the project visits. Plan a day for this Lesson.

EXAMPLE

Prepare

Review and return the trainees' written trip reports, completed after the previous lesson.

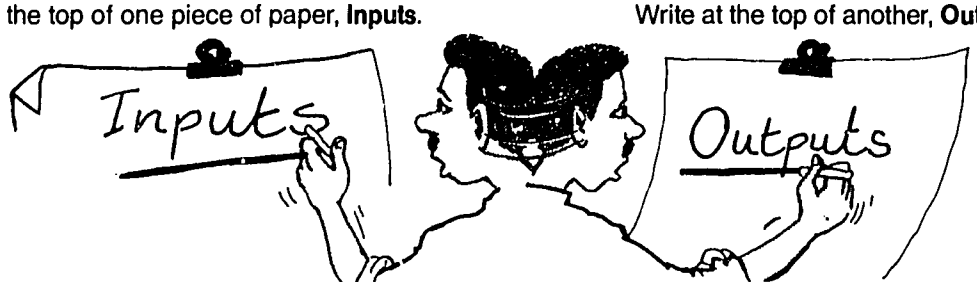
Read through the facilitation steps suggested below and decide which categories of **Inputs, Outputs** and **Project Owners** to list.

Your responsibility is to guide the trainees in comparing different project approaches observed during the field trips.

Facilitate

Step 1. Prepare Newsprint paper

Write on the top of one piece of paper, **Inputs**. Write at the top of another, **Outputs**.



Write at the top of a duplicate set of newsprint sheets, **Projects**. Make a column for each project visited, plus your own. If necessary, write abbreviations for each project at the top of each column.

Step 2. Brainstorm and List Inputs and Outputs

Have the trainees brainstorm a list of **Inputs** and **Outputs** that cover all the projects being considered.

Inputs might include labor, land, water, seed, materials (specify to extent possible) technical assistance, management.

List **Inputs** in a column, leaving a space between each entry.

INPUTS
LABOR
SEED
POLY BAGS

Outputs might include knowledge/skills, nurseries operating, water, trees, hectares restored, crop yields improved, practices changed.

List **Outputs** in a column, leaving a space between each entry.

OUTPUTS
TRAINED NURSERY WORKERS
NURSERIES
SEEDLINGS

Step 3. Brainstorm Owners

Brainstorm a list of potential "owners" of project inputs and outputs. Considering all the projects on your list, who controls each project and its activities? Which group has the most interest in each? Which group has the most interest in seeing each project succeed?

Consider the following categories and abbreviations, or make up your own:

ism	individual small scale farmer (men)
ifw	individual small scale farmer (women)
ssg	social support groups of farmers... specify
ffo	formal farmer organizations
lsf	individual large scale (relatively affluent) farmer
abc	agri-business community
gea	government extension agency
ps	project staff
pa	project assistance agency
pd	donor.

Step 4. Develop and Fill Matrix

Hang up one project list, with the list of **Inputs** to the left.

Below this, hang up the duplicate project list with the list of **Outputs** to the left.

Beginning with **Inputs**, indicate in the project columns, who is primarily responsible for, or has control over each input. Use the abbreviations you have chosen for the list of owners. If land, water, labor or other resources are paid for by the project, they are controlled by it. Where more than one group applies, list them all, **according to priority.**

Do the same for each project **Output**.

Encourage discussion at each step. Ownership is not always clear. Focus on the importance of **how people view ownership**, especially from the small scale farmer's perspective.

Encourage trainees to think about the focus of project ownership and control...and to realize that this is primarily what is meant by different project approaches. Project ownership and control of **Inputs** and **Outputs** often determines different project approaches.

Step 5. Assess Matrix

After completing the matrix, see if patterns emerge among projects regarding ownership of **Inputs** and **Outputs**. Discuss these.

Focus discussion on advantages and disadvantages of different project approaches.

Consider the following:

There is a possibility that trainees will remain convinced that large scale, centrally planned projects with permanent and/or highly paid staff are preferred over locally oriented projects that focus on indigenous knowledge and expertise.

Reasons may include project visibility and prestige, how quickly one can see results, staff promotion possibilities, and others. Such impressions may not be easily changed, particularly if staff feel they personally gain more by being involved in this type of project.

Do not insist that a low technical input, local ownership approach is the best. If appropriate to the outcome of the previous exercise, raise the following points in summarizing the discussion.

The poor are likely to lose out on such an approach.

Farmer dependence on project inputs may develop, which will negatively affect long term sustainability of certain activities. The long term is especially important in agroforestry.

Information and knowledge, as well as other resources developed through centrally controlled projects, tend to remain concentrated among relatively few people. They remain outside the control of the small scale farmer, who is the most important decision-maker about agroforestry.

Step 6. Extension Staff Roles

The final stage of the discussion focuses on roles and characteristics of Extension Staff.

Ask the group to summarize what they learned about other projects and how they compare to their own. Ask them to consider:

field staff size,
technical assistance capability,
salary levels,
their roles in the rural development change process.

Consider the following points as you summarize responses.

1 Your project Extension Staff will **not** assume the role most commonly given to Extension Workers: "the link between researchers and farmers".

(Most liberal definitions of Extension Workers refer to them as people who "take the farmers'problems to the researchers, and bring the researchers' solutions to the farmers".)

2 Your project Extension Staff are **change agents** in the rural community. They aim to promote awareness among the people they work with about:

feasibility of change.

Impact of change on livelihood.

Appropriate means for achieving positive long lasting change.

Accordingly, they must be skilled in:

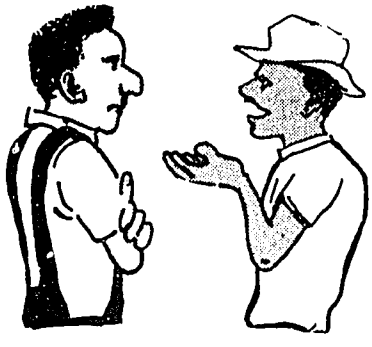
teaching farmers to identify their own problems and develop their own solutions to them,

using indigenous knowledge as a basis for designing land use improvements,

testing technology with select farmers to assure their appropriateness before promoting or encouraging adoption by a larger population.

TO ACCOMPLISH ALL THIS, EXTENSION STAFF MUST

BE TRUSTED BY FARMERS.



UNDERSTAND THE FARMERS WITH WHOM THEY WORK

FEEL COMPASSION FOR FARMERS.

Lesson 4 CHARACTERISTICS OF THE SMALL SCALE FARMER AND AN EFFECTIVE EXTENSION STAFF

OBJECTIVE

Trainees will be able to describe: (1) important characteristics common to small scale farmers; (2) the small scale farmer's outlook toward agriculture; (3) conditions under which farmers will consider changes in their farming practices; (4) resources they bring to bear on problems of agricultural production; (5) limitations in solving their problems.

They also will be able to describe: (1) principles of good extension, and (2) characteristics important for the Extension Staff to possess.

METHOD

Use facilitated discussion to review the readings assigned in Lesson 1. Have trainees relate the readings to what we know about conditions in the project area. Use newsprint and markers to focus discussion. Plan about two hours for the discussion.

Prepare

A day or two before this discussion, assign trainees to review the handouts they were given in Lesson 1 of this Module. These are:

The Small Scale Farmer
Five Ways to Succeed in Extension Work
Some Principles of Agricultural Extension
The Ideal Bwana Shamba
How Farm People Accept New Ideas

Write headings on newsprint that correspond to the objectives of this lesson (see above).

Facilitate

Begin with the first sheet of newsprint. Ask trainees:

What are key characteristics of the small scale farmer?

Encourage them to contribute items they remember from the readings, and what they know.

Do these characteristics apply to farmers in our project area?

How do they know farmers have these characteristics?

Do they feel certain or do they feel they need further information? From where will they get this information?

On another sheet of newsprint, keep a list of items that the trainees feel the project should learn more about. The list will be referred to in later lessons and will be especially useful when we focus on farming system diagnosis (see Module 5).

Continue by asking questions that pertain to the question at the top of each sheet of newsprint. In each case, ask:

> **How do they know?**
> **How sure are they?**

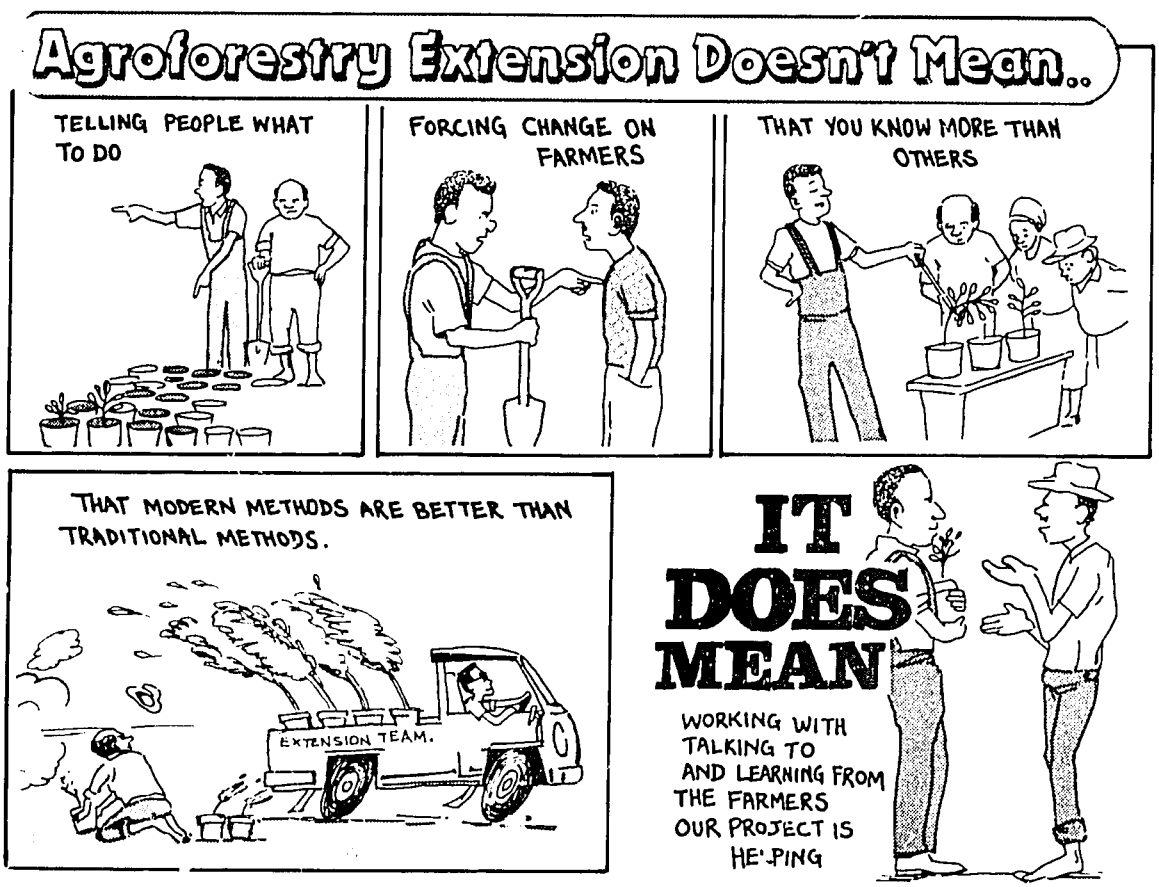
Summarize

Summarize by suggesting:

> It is useful to assume that the farmer is slow to change. We cannot expect farmers to change to a great degree, although they may. Therefore our own characteristics and behavior should be more responsive to change if we want to work with them.

We should ask ourselves this question:

> **What can and should be done about becoming the kind of Extension Staff that can interact effectively with the small-scale farming community?**



AGROFORESTRY

EXTENSION TRAINING SOURCEBOOK

MODULE 4

Agroforestry Extension Communication

CARE

TRAINING MODULE 4 AGROFORESTRY EXTENSION COMMUNICATION

INTRODUCTION

The material in this Module will help agroforestry Extension Staff members become effective communicators. Through the activities described, characteristics of positive, **"development-generating communication"** are explored. Trainees will learn about differences between effective and ineffective communication. Opportunities are provided to practice the skills needed to become good communicators.

The Sourcebook's Introduction, and Module 3 on Project Approach to Agroforestry Extension, emphasize qualities that are important for an Extension Staff to have. Extension communication training should improve upon the basic qualities you looked for when selecting your staff. It will help an Extension Staff to:

develop understanding and trust among its members

become more sensitive to the small scale farmer

improve self-confidence about interacting with community groups and individual farmers

improve skills that promote sharing of ideas, information and techniques between the Extension Staff and farming community.

CONTENTS

The Module consists of three lessons on interpersonal communication. The fourth lesson concerns media that support interpersonal communication.

Lesson 1 is about approaches to introducing groups of people to the idea of agroforestry. Through role plays and facilitated discussions trainees will learn how different teaching approaches affect a group's interest in something new or unfamiliar, and thus their desire to participate and learn about it.

Lesson 2 consists of a presentation and group discussion about adult learning theory. This provides trainees with a basic understanding of non-formal education and extension communication.

Lesson 3 provides material for conducting a workshop on building effective interpersonal communication skills. Trainees will learn to identify factors that can inhibit effective communication and will practice techniques to overcome these.

Lesson 4 provides guidelines for a discussion about the selection and use of Communication Support Techniques and Materials **(CSTM)** to complement person-to-person communication in your agroforestry training and extension program.

APPROACH

The Sourcebook promotes an extension approach that relies most importantly on person-to-person contact between farmers and Extension Staff. The ultimate aim in using this approach is to promote agroforestry through direct farmer-to-farmer communication. Interpersonal communication is the most effective way to promote mutual learning and problem-solving.

The focus of communication training therefore, is on improving the quality of person-to-person interaction.

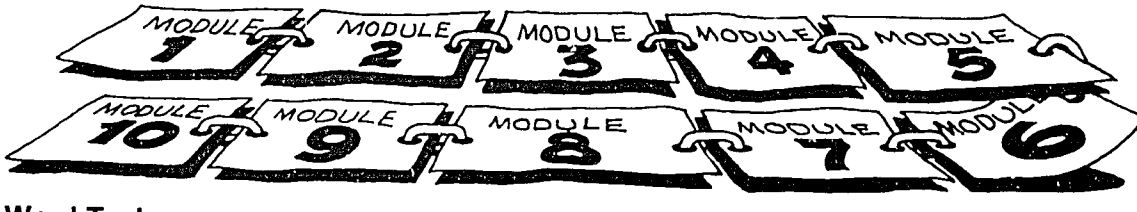
Visual and printed communication materials also play an important role in sharing information and motivating people to participate in agroforestry development. These are treated as complementary and supportive of person-to-person communication.

TECHNIQUES

The most effective method to stimulate learning about person-to-person communication is to create learning situations where trainees are better able to appreciate and understand what happens when people try to relate to one another. This understanding is assisted by the use of several training techniques such as **Word Tools** and **Role Play**.

Learning about communication, like most topics, is assisted also when trainees are directly involved in developing the learning situation through the contribution of their own ideas. **Brainstorming** and **Facilitation** are training techniques that promote trainee input into the learning situation. Trainees' inputs also enrich the body of training material.

Linking information in these lessons with other pertinent Modules in the Sourcebook can make communication principles and techniques more relevant. If the material is directly relevant to the trainees' experience, it will be easier to understand and apply.



Word Tools

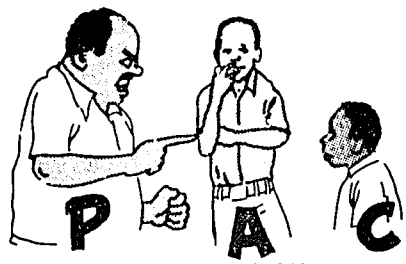
Word Tools are labels for identifying and characterizing different aspects of how people interact. They help us remember communication concepts. They help form a common vocabulary among trainees that promotes a sense of Extension Staff identity.

Look out for the following **Word Tools** in this Module:

REAL COMMUNICATION

DEVELOPMENT GENERATING COMMUNICATION

ACTIVE LISTENING



COMMUNICATION

Record additional **Word Tools** as the training experience generates them.

Role Play is the technique of acting out a real life situation to help us understand other's viewpoints, or to experience a situation we have not been in before. It is a teaching technique used throughout this Module and others.

Learning by **role play** involves three steps:

1 Prepare for the **role play** by imagining the situation you want to create, and verbally "setting the stage" for it. Describe the situation and assign roles to different characters;

2 Enact the **role play**, allowing it to unfold as the characters "feel out" their roles;

3 Analyze the **role play** by discussing immediately afterwards, what the actors and the audience (if any) thought was happening, and why.

The most creative and educational use of **role play** involves minimum role and script definition by the trainer. Allow the actors to play their roles freely based on the general situation and character types described to them.

Once trainees are familiar with **role play** it is extremely valuable to have them create, act out and interpret their own.

Role Play is used extensively in Lesson 3 of this Module. Use **role plays** frequently throughout your training program for learning value and for fun!

Brainstorming

Brainstorming is the technique of encouraging spontaneous contributions from all members of a group to generate ideas or solve problems. It is a means of generating many ideas about a particular question or issue.

The trainer's role in **brainstorming** is simply to:

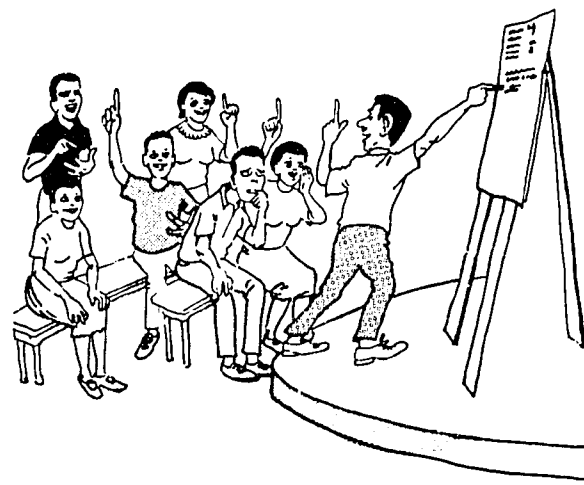
Ask a question or pose an issue,

Write the question on newsprint or chalkboard for all to see,

Actively encourage trainees to give their ideas,

Write their responses on newsprint or on the board, under the question,

Verbally synthesize the responses, pointing out differences and similarities.



Trainees' participation in **brainstorming** sessions should help them think openly and creatively. Open and creative Extension Staff should contribute to a better extension program.

Facilitation

Facilitation is the technique of bringing people's ideas forward for group members to consider and discuss. It also involves helping the group reach a deeper understanding or resolution of information or issues that interest the members. It is a non-directive way of encouraging learning.

Good **facilitation** involves:

Listening for the meaning behind people's words,

Finding relationships among different ideas,

Synthesizing information and ideas,

Clearly presenting the synthesis to the group.

Facilitation is suggested throughout the Sourcebook as a training technique. In this Module, trainees will have the opportunity to assess the technique as a communication aid. They will begin developing facilitation skills to use in interacting with their agroforestry communities.

For more about **facilitation**, review the Learning Notes in Lesson 2. Examine the SOURCEBOOK SUPPORT MATERIALS (SSM 4-1) on this topic entitled **Leader as Facilitator**.

Communication Support Techniques and Materials

Direct person-to-person contact as a method of influencing people's ideas and practices, can be very effectively complemented by using **Communication Support Techniques and Materials (CSTM)**. SOURCEBOOK SUPPORT MATERIALS for this Module (SSM 4-2) provide detailed guidelines and suggestions about how to select, develop and use communication support media that can be appropriate for your project.

Communication support can be provided through a wide variety of media and methods. The objective of **CSTM** is to promote communication, discussion and learning among project staff and project participants. They should not overwhelm, disguise or distort the ideas you want to promote.

Communication Support Techniques and Materials require considerable planning and creativity to ensure they are used effectively. The results of your effort can be well worth it. Use SSM 4-2, Sections I, II, and IV as your planning guide for communication support in training your extension staff. Use Sections I, III and IV in planning communication support for community extension.

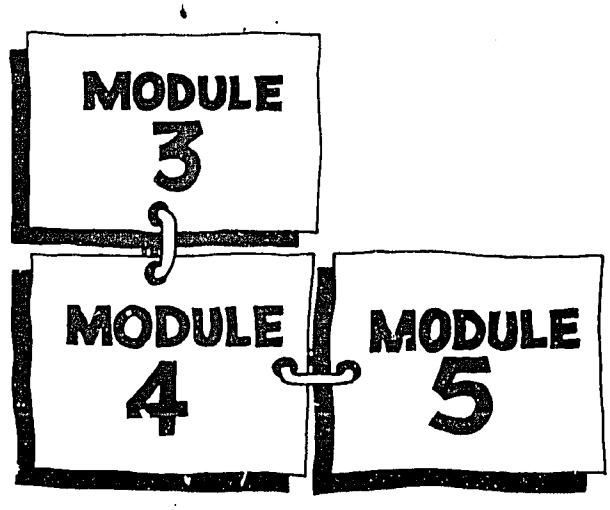
Linking Modules

Effective communication and communication training is based on a good understanding of who your Extension Staff are interacting with, and the kind of information that is shared. It is therefore important to link the training material in this module with the modules that focus on these aspects of your agroforestry project.

Module 3 of the Sourcebook (**Project Approach to Agroforestry Extension**) is concerned with identifying and characterizing the people in your project area, your project Extension Staff and how your project can promote the best interaction between them.

These qualities are especially important to bear in mind as you guide your trainees in communication training and extension.

Module 5 (**Agroforestry Diagnosis**) provides the best opportunity to practice the skills gained in this Module. Diagnosis depends heavily on good communication skills and techniques for gathering, using and sharing information about your project environment.



Literature

The field of development communication is vast and informative. You will find it useful to explore communication theory for ideas about designing and guiding your project's training and extension component.

In addition to development communication theory, there is a growing number of useful training and field manuals on development worker communication. These can expand your ideas about how to achieve **development-generating communication** in your project area. Consider the titles indicated below.

A HANDBOOK FOR FACILITATORS
by Joyce Stanley, Kathryn Rick and Freddie Zufferey, 1983

Applied Research Unit
Ministry of Local Government and Lands
Botswana

WOMEN WORKING TOGETHER FOR PERSONAL, ECONOMIC, AND COMMUNITY DEVELOPMENT
by Suzanne Kindervatter, 1983

Overseas Education Fund
Washington D.C.

TRAINING ACTIVITIES FOR GROUP BUILDING, HEALTH AND INCOME GENERATION
by Dian Seslar Svendsen and Sujatha Wijetilleke, 1983

Women's Bureau of Sri Lanka
Overseas Education Fund

COMMUNICATION GUIDE FOR EXTENSION WORKERS
by an Editorial Committee and Consulting Editor Dr. J. Wang'ombe, 1984

Rural Services Coordination and Training Unit
Ministry of Finance and Planning
P.O. Box 59426 Nairobi,
Kenya

HELPING HEALTH WORKERS LEARN
by David Werner, and Bill Bower, 1984

Hesperian Research Foundation
P.O. Box 1692
Palo Alto, California 94302

TRAINING FOR TRANSFORMATION: A HANDBOOK FOR COMMUNITY WORKERS
by Ann Hope and Sally Timmel, 1985

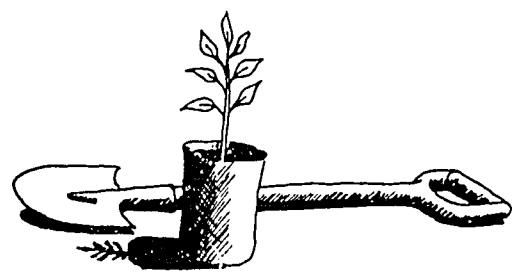
Mambo Press
Gweru, P.O. Box 779
Zimbabwe

MANUAL FOR FIELD WORKERS
UNICEF/UNFPA, 1985

Kathmandu, Nepal

COMMUNITY DEVELOPMENT-WORKER TRAINING SERIES
UNICEF/ESARO, 1986

Paris, France



PREVIEW OF LESSONS

Lesson 1 focuses on how to introduce agroforestry to groups of farmers so they will be interested enough to come back for more information. It involves a sequence of role plays and facilitated discussions to demonstrate different ways of addressing audiences and their effectiveness.

Lesson 2 involves a trainer presentation and facilitated discussion about techniques that are useful for helping people communicate in ways that promote idea-sharing and learning. The lesson focuses on the importance of creating an effective learning environment for farmers as part of the project's extension strategy. You will build on the ideas generated in this lesson through the activities in Lesson 3.

Lesson 3 is a series of activities designed to help trainees focus on specific conditions required for effective communication to occur. Trainees analyze realistic communication situations and practice skills required to make the best of different situations.

Lesson 4 consists of a discussion facilitated by the trainer. The discussion is aimed at encouraging trainees to consider the selection and use of **Communication Support Techniques and Materials (CSTM)** to spread and increase the impact of agroforestry messages throughout the project area. The lesson is designed to encourage additional lessons and activities that will lead to the effective development of appropriate CSTM by project staff and others within the project area. The lesson will also help you determine how to organize the resources, skills and time necessary to mount an effective communication program that complements and supplements your project's direct communication efforts.

The four lessons require about four days to conduct. The exact time depends mainly on the size of your training group. Because the lessons require trainees' participation, it will take longer if more are involved.

Lesson 1 ADDRESSING AUDIENCES ABOUT AGROFORESTRY

INTRODUCTION

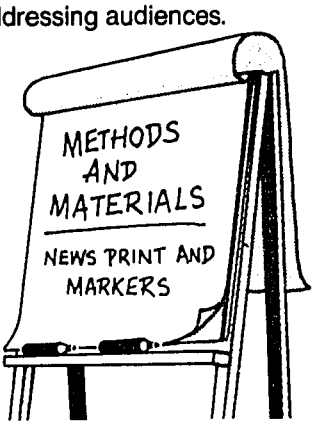
Members of an agroforestry Extension Staff will be asked to address various groups of people about agroforestry. They may be asked to give a lecture to a group of farmers attending a course on improved farming techniques at the Farmer's Training Center. They may be invited by officials to attend a public meeting to talk about agroforestry and its benefits. Or the Extension Staff may want to convince an organized women's group to invest time and energy in raising seedlings for agroforestry.

Whoever the audience, whatever the circumstance of the meeting, the objective is to generate enough interest in the subject that farmers will remember the message and, in one way or another, seek further information about it.

OBJECTIVE

Trainees will be able to distinguish between two different ways of addressing audiences.

METHOD AND MATERIALS



The methods used are **Role Play** and **Facilitated Discussion**. Role Play scripts are contained in the lesson. Have newsprint and markers available to record discussion notes.

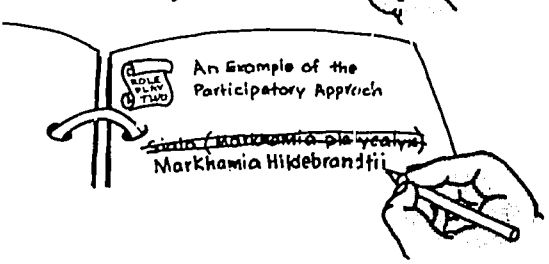
EXAMPLE

Prepare

The lesson consists of acting and comparing two structured role plays. Read about **Role Play** in the Introduction of this Module.

Read the scripts for each Role Play.

Modify the script for Role Play 2 to reflect local, multi-purpose tree preferences.



Consider trainees for the lead role in each Role Play.

Facilitate

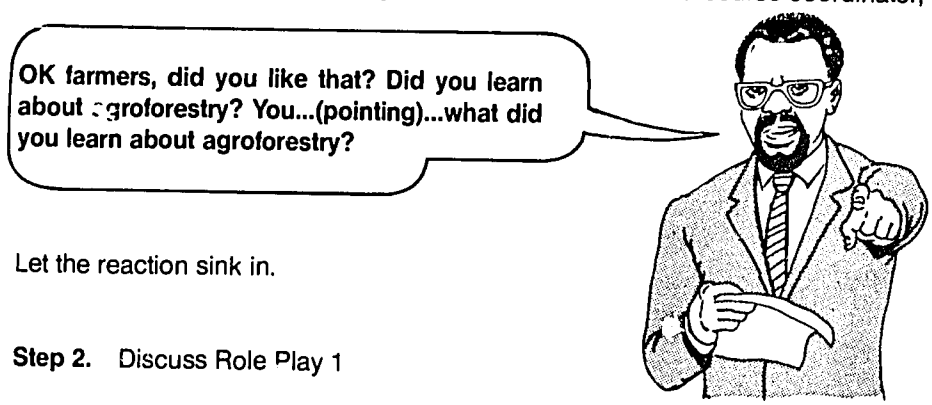
Step 1. Enact Role Play 1

Have your designated trainee go outside the room to read through the script, to understand the setting and the tone of the situation. In this case, she will be allowed to read directly from the script.

While she is out of the room, assign the remaining trainees to be the audience of farmers attending an agroforestry course at the Farmer Training Center (FTC), as indicated in the script.

Assume the role of FTC course coordinator, and on behalf of the FTC program, introduce the "agroforestry expert" who has come to teach the farmers about this important subject.

When the lecture is complete, again assume the role of FTC course coordinator, and ask:



Let the reaction sink in.

Step 2. Discuss Role Play 1

Resume your trainer role, and facilitate discussion with the trainees around the following questions. Note key points on newsprint.

a **Was that an effective way of delivering information about agroforestry?**

b **What was good about it?**

c **What was poor about it?**

Step 3. Enact Role Play 2

Following your discussion with trainees, suggest another role play.

Give your selected "instructor" a copy of the script for Role Play 2, and provide time for him to read through it to understand the method and tone. (This one will be more difficult to act out, as it is not possible to read directly from the script.)

While the instructor is becoming familiar with the role, encourage the farmer audience to be eager and responsive to the expert who is about to share with them the joys of agroforestry!

Allow the role play to unfold as it will. Terminate it when it has played itself out.

Step 4. Discuss Role Play 2

Following the role play, facilitate a discussion around the following questions:

a **Repeat the questions:**

Was that an effective way of delivering information about agroforestry?

What was good about it?

What was poor about it?

b **If you were a farmer, how would you feel after listening to lecture 1?**

c **How would you feel after listening to lecture 2?**

d **What effect would differences in feelings produced by different methods of presentation have on farmer's interest and ability to learn?**

e **How important are methods of presentation in getting people to participate in your project, or in the ideas your project is promoting?**

Step 5. Summarize the 2 Role Plays

Summarize the discussion along the following lines:

The first approach is called **directive**. We are telling the farmer what we know about agroforestry with little concern for whether this information is meaningful to him. We assume he will absorb it.

The second approach is called **interactive**, or **participatory**. We are finding out what the farmer knows and thinks about agroforestry so we can build a relationship with him, and find out how knowledgeable he is already.

Sometimes we need to look for compromises between the two approaches. The second one, although preferable, may be too informal or not thorough enough for some situations.

The second method may make farmers suspicious. It is possible they will feel they are being "played with", by being asked more than they are told.

It is always important for Extension Staff to try to "sense the mood", and to respond accordingly. If the technique used is not having the desired effect, be prepared to change. Anticipate the situation you are likely to meet so you can prepare some options.

Conclude by discussing the use of Role Play as a teaching technique. Indicate that this activity was based on relatively structured role plays. Variations on the technique will be used in future training exercises.

Step 6. Assign Trainees to Create Role Plays

Divide the trainees into two groups. Assign one group the task of creating a role play to present the following day that demonstrates an effective way of approaching audiences about agroforestry.

Assign the other group the task of creating a role play that demonstrates ineffective communication with a group your Extension Staff might approach in your project area.

Step 7. Observe and Review the Role Plays

Have the trainees present their role plays. Encourage the groups to take the major role in analyzing each other's role plays.

ADDRESSING AUDIENCES

Setting

The setting for Role Play 1 and Role Play 2 is the same.

Imagine that you are an agroforestry Extension Worker, and have an assignment to lecture a group of farmers at the Ministry of Agriculture's Farmer Training Center in your project area. Agroforestry is a term that is being heard more commonly within the area during recent months.

The local Agricultural Officer has asked your project to give a presentation on agroforestry to help farmers understand it, and to encourage them to begin practicing it. You have been given an hour to complete your lecture to a group of about 30 farmers.

An Example of the Directive Approach

Approach

Stand in front of the group and speak rapidly, in an authoritarian manner.

Script

Good Morning. Today I am going to tell you about agroforestry. Listen well, because there is alot for you to learn in only a short time. Please do not interrupt me with questions. If there is time I will answer them at the end. But I expect to make myself clear.

Agroforestry is most commonly defined as follows:

Agroforestry is a sustainable land management system which increases the overall yield of land, combines the production of crops, including tree crops, and forest plants and/or animals simultaneously or sequentially, on the same unit of land, and applies management practices that are compatible with the cultural practices of the local population.

Agroforestry is nothing new. In fact it is traditionally practiced in most countries of the Third World. What is new is the research emphasis being placed on gaining a better understanding of agroforestry systems, the theory and principles on which they are based and their practical application, so that they can be extended to help increase production of food, fuel, fodder, fruit, fiber, fertilizer, timber, and medicine, and at the same time conserve our valuable natural resource base.

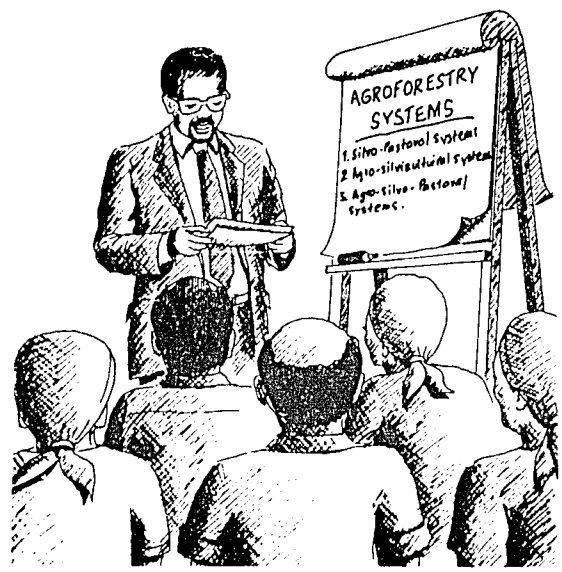
There are three basic types of agroforestry systems.

1 **Silvo-Pastoral Systems**, which involve management of forests for the production of wood, as well as for raising livestock.

2 **Agro-Silvicultural Systems**, which involve management of land for the production of agricultural crops and forest products.(These combine tree and shrub utilization with rainfed or, occasionally, irrigated plant production.)

3 **Agro- Silvo-Pastoral Systems**, which involve management of land for the production of agricultural crops, forest products, and domestic animals. These systems combine all three elements of crops, trees, and livestock in both space and time.

As you can see, then, the term agroforestry covers a broad range of land use systems in which woody perennials are directly associated with agricultural crops and/or domestic animals in order to realize higher productivity, more dependable economic returns, and a broader range of social benefits on a sustained basis.



Now we will cover the important subject of multiple cropping in relation to agroforestry. Agroforestry is based on the principle of growing plant species in association. In most cases multiple cropping in agroforestry is related to intercropping. Intercropping is defined as the growing of two or more crops simultaneously on the same area of ground.

And so on.....you may finish here.

An Example of the Participatory Approach

Approach

Try to appear casual and friendly. Depending on the group size, suggest that people sit in a circle, and help them arrange it. If farmers do not respond to your questions at first, gently encourage them to speak up. If you still get no response, suggest answers to get them going.

Script

Good Morning. My name is Dorothy. I work with (the name of your organization), which is an organization that assists communities in this area in many ways. One of the things we are interested in is trees, and how they can be raised and used to help farmers.

Do any of you have trees in your homes?

You do? Well then, can you tell me why you have trees there?

You have them because they are good. Can you tell me, then, why they are good?

OK. You have told me they are good for shade, for firewood, for fruit, and as boundaries between your farms. Now can you tell me where on your farms they are planted?

No answer? Are they all planted right outside your door?

You say they are planted all over. Now tell me where in particular.

In the crop fields, yes. On your borders, yes. Outside your home, yes. OK. Let's start with the trees inside your crop field. What kind of trees do you have there?

Siala. (Or whatever tree is common in your area.) I know Siala (Markhamia platycalyx). Why do you have Siala there?

As shade for resting under when you're tired. But do you have them there only for shade. Could you not go home to rest instead? Why not cut these trees down? Would it make farming easier?

You say it is good for the soil. How does it improve the soil?

The leaves fall down and make it better. Is there any other use of this tree?

You can sell it for making furniture. Now, who plants this tree along the borders of their homes?

From the show of hands it looks like most of you do. OK. I am going to introduce you to a word you may have heard. The word is, AGROFORESTRY.

Now, do you know what? This is what brought me here to talk to you. But it is you who have been telling me. You have been doing all of this, but it is only the word you do not know. Now, say it, AGROFORESTRY. Let us talk about agroforestry some more.

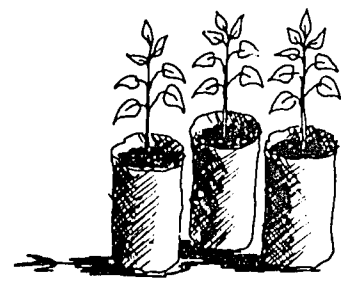
Since Siala improves the soil, you can plant it with your maize and beans. Apart from Siala, what other tree can do the same thing? (And so on, until other useful trees have been mentioned.)

I am going to tell you about a tree you may not have heard of which is good for most of the reasons Siala is good. It is even better for some things and it grows much faster. The tree is called Leucaena. But some people around here like to call it Lucia. Since Lucia is easier to remember, we will call it Lucia.

Continue to mention other benefits of Leucaena such as fast growth and coppicibility.

Introduce another species the project thinks may be appropriate for the area. Suggest how it performs like the local species they indicated they like.

Finally, suggest what the project may offer to help people in the area raise the various trees that you have discussed.



Lesson 2 ADULT LEARNING THEORY

INTRODUCTION

We have identified and demonstrated differences between directive and participatory approaches to introducing a group to agroforestry. It is important now to understand why these two approaches have such different effects on a person's interest and ability to accept and use the information we are trying to get across. This understanding will help your Extension Staff adjust their interaction with individual farmers as well as groups.

This lesson will highlight important points about Adult Learning Theory, and also generate information for your project about how to introduce farmers to agroforestry.

OBJECTIVE

Trainees will be able to describe at least three conditions that promote adult learning, and several techniques that Extension Staff can use to help create these conditions.

METHOD

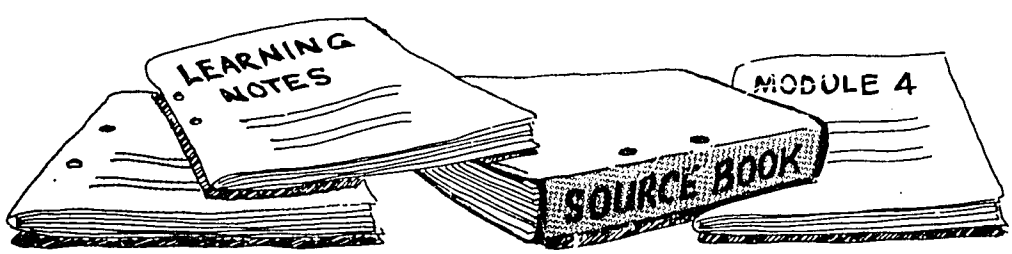
This lesson uses brainstorming and facilitation techniques. Have newsprint and markers available to record trainee responses as well as the major points and summary remarks you want to make.

EXAMPLE

Prepare a presentation and facilitate a discussion from the LEARNING NOTES in this Lesson on Adult Learning Theory.

Where questions appear in the text, encourage trainee brainstorming for answers. Record their responses on newsprint.

Use the material in the LEARNING NOTES to facilitate discussion about each question. Summarize discussion on the basis of the LEARNING NOTES. Make your points using project relevant examples of communication situations. Following the discussion give trainees copies of the LEARNING NOTES to keep in their Training Workbooks.



LEARNING NOTES

ADULT LEARNING THEORY FOR AGROFORESTRY

Why and how do people learn?

We can remember from our own experience at school that our learning is greatly influenced by the expectations of teachers and parents. These influential adults in children's lives provide rewards and punishments that strongly influence when, what and how they learn.

Adults, however, are not as affected as children by the expectations of others. They have personal reasons for wanting to gain new knowledge. These usually stem from a desire to somehow better their lives. Before an adult can effectively learn, he or she must be motivated to invest the time and effort.

What is required to motivate an adult to learn?

Particularly, what is required to motivate him to learn about something that he has never before heard about...such as **agroforestry**?

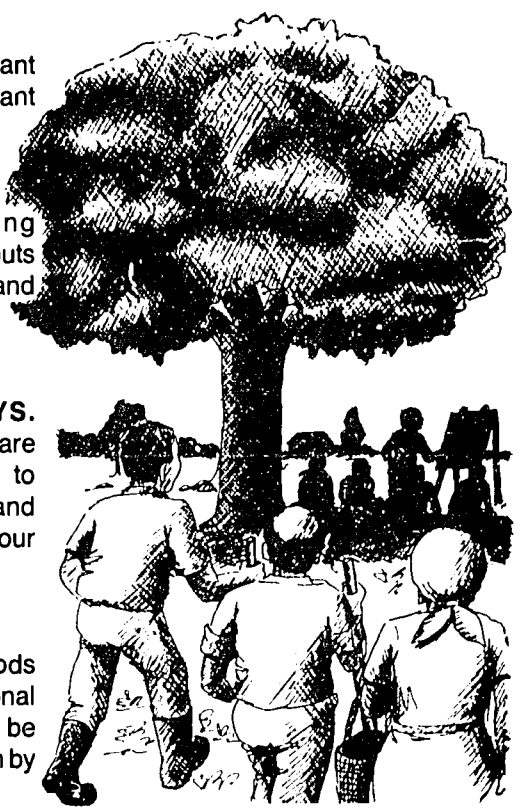
Here are some of the conditions that are found to positively affect adult feelings about learning.

RELEVANT INFORMATION. Information which is relevant to immediate felt personal or economic needs. People want information to improve their situation right away.

GOOD LEARNING ENVIRONMENT. A learning environment which is familiar, non-threatening, and puts people at ease. Teachers must be "believable" and respected to gain the trust of the learner.

APPROPRIATE COMMUNICATION PATHWAYS. Traditional, non-formal means of sharing information are often the most effective. These are usually specific to cultures and environments. It is worthwhile to identify and use traditional means of teaching and learning in your project area.

APPROPRIATE TEACHING METHODS. Methods and materials that are suited to the educational and experience levels of the learner. Methods should be used which encourage participation, dialogue and action by the learner.



What can an agroforestry Extension Staff do to create the conditions that positively affect learning?

We should be aware of the immediate needs of our target audience and how the subject of agroforestry is linked to these.

Think of the ways that agroforestry is linked to the needs of your target audience.

We can promote a comfortable, non-threatening learning environment.

We know that to learn in a group, adult students should first be put on an equal basis with one another. To achieve this, they need to know who one another are, their reasons for being together, and what their expectations are for the training session or presentation. The organization of the room or outdoor space where the session is being conducted will also affect the feeling within the group. How?

As Extension Workers, we frequently will find ourselves with groups who have invited us to speak or work with them. When we meet a group of farmers for the first time there are two basic approaches to consider using to put the members at ease with you, the teacher, and with one another.

1. **Confirmation**
   The group is there on a one-time only basis. They want information about agroforestry. The members of the group are unlikely to work together on agroforestry development. It probably is sufficient to confirm with the group why we are together and proceed with the presentation or discussion.

2. **Motivation**
   We are with a group whose members, we hope, will work together on agroforestry activities. We want to share aims and expectations for being together. In most cases, discussion about project objectives, activities and terms of participation are topics that will generate discussion and motivate them.

What can we do to get our key agroforestry "lessons" on to traditional "communication pathways"?

We can learn how information about agriculture and land use traditionally is shared among members of our target audience. Which practices and advice are respected? In what type of forum is this information shared? Knowing this we can seek to convince these community members to help share information about agroforestry.

What are traditional communication pathways in your project area?

What can we do, as Extension Staff, to encourage participation and action by the learner?

We can be good facilitators.

Facilitation is a teaching technique that helps to bring other people's ideas forward. It involves stimulating people to think and to share their thoughts.

Good **facilitation** is based on a belief that adults bring a lifetime of important knowledge, experience and information to the learning process. These are valuable resources, to be tapped and used to generate new ideas, plans, and eventually, action. Problem-solving is promoted when this experience and knowledge is shared.

A **good facilitator** knows not to insult adults by promoting a one-way flow of information. A good facilitator listens and encourages group members to participate actively in discussions.

A **good facilitator** is like a coach.... he harmonizes input from many sources, for a creative and winning effect.

An important **facilitation technique** is **"Active Listening"**. We need to be good **Active Listeners**.

Active Listening is a way of listening to a speaker until he is finished making his point, then repeating the message, as you understood it, back to him to ensure it was correctly heard and understood. **Active Listening** is a good way to provide feedback and ensure both people understand what is being said.

It is important to understand both the message and its meaning for **REAL Communication** to take place.

REAL Communication comes from combining the right attitudes and techniques, for adult learning to take place. It takes time to develop. Consider the following aspects of **REAL Communication**.

REAL COMMUNICATION

Lesson 3 BUILDING INTERPERSONAL COMMUNICATION SKILLS

INTRODUCTION

So far in this Module, we have discussed why and how adults learn, conditions that promote interest in learning and ways of approaching adult learning in groups. We have considered a few ways Extension Workers can facilitate the communication and learning process. Now we want to understand better person-to-person communication and develop skills to promote effective interpersonal communication.

This lesson contains material for a two day **communication training workshop**. The workshop provides the opportunity to discuss and demonstrate a variety of situations in agroforestry extension communication, and how the Extension Staff can most effectively respond and influence them.

WORKSHOP PREVIEW

The workshop material consists of eight activities. Activities 1-5 are concerned with barriers to good communication and how to identify and avoid them. Activities 6 and 7 suggest specific techniques for generating effective communication skills. Activity 8 helps us anticipate communication situations in our project and how we may apply to them what we have learned, for the best possible effect.

OBJECTIVE

Trainees will be able to describe barriers to effective communication. They will be able to demonstrate specific skills for overcoming communication barriers and describe how these can be applied in a variety of project communication situations.

PREPARE

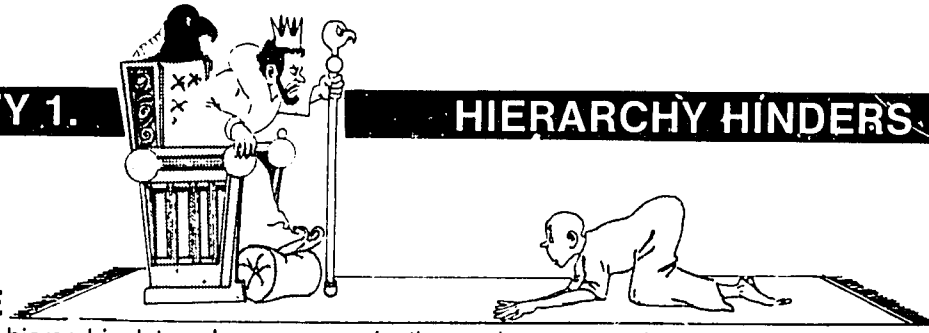
1 Arrange for a large room with plenty of space to move around. Ideally you will have tables or desks, but certainly chairs, that can be moved to create different spatial arrangements as needed.

2 Ensure there are pencils and writing paper for everyone. You also will need plenty of newsprint paper and markers.

3 Prior to the workshop, read through the activities. Rework the role plays and their settings to fit the issues and circumstances of your project situation.

4 For training Extension Workers, it is very helpful to have previously trained staff assist in planning and conducting the workshop. Have them help create the material for the role plays, and interpret their outcome.

ACTIVITY 1. HIERARCHY HINDERS



OBJECTIVE

To demonstrate hierarchical, top-down communication and to contrast it with a more participatory approach.

EXAMPLE

The activity consists of a structured role play by an "invited guest", brought in as an "expert lecturer" on communication. The guest should be someone who the trainees do not know well.

Have the invited guest become familiar with his role, indicated below.

Have flip chart stand, newsprint and markers available.

Situation and role

Have the trainees arrange themselves in rows or around a table. Introduce the guest as an important expert on communication.

Have the expert stand in front of the room or at the head of the table. He tells the group in a stern voice how important the subject is and warns them to listen very carefully because they will be tested at the end of the presentation.

The expert asks the group: **"What is communication?"**

Without giving a chance to think and answer, he points to someone and repeats, **"You, what is communication?"**

If the respondent gives an immediate answer the expert writes it on newsprint. If not, he accuses him of being slow and points to someone else. He insists it is essential to have a good definition to start with, and unless they hurry up and think of a good one, they cannot get on with the discussion.

After five to ten answers have been provided and recorded, he asks a second question, **"What conditions are required to have good communication?"**

Ideally, he gets an answer from each trainee to one or both of these questions. If the group is too large to do this in a reasonable time, he should stop when the answers become repetitive. All answers should be recorded for future use.

He then tells the group to take a break. During the break the chairs are rearranged in a circle. If tables or desks have been used, remove them, or yourselves to another area.

Upon resuming, the lecturer takes a position within the circle among the trainees. He further lightens the mood with some small talk and light humor.

Summary and Follow-Up The "expert" should explore, with the trainees, answers to the following questions:

What do you notice about the quality of the communication now, compared to the quality of communication before break?

Was the first communication approach participatory?

Even though the speaker encouraged answers from participants it was not an easy sharing environment. Why not?

Hierarchy can be a barrier to effective communication. What is hierarchy?

How was hierarchy demonstrated in these presentations?

Consider:

Organization of the room

Relationship of the speaker to the audience

Speaker's manner of setting expectations

Speaker's manner of presentation

What can we do to minimize the effects of the hierarchy barrier?

When in our project may hierarchy be an asset?

Consider:

Hierarchy can be an appropriate communication channel for the project to use. Formal community leadership structures are hierarchical. We need community leaders to have and to promote an interest in our agroforestry project. Hierarchical communication, if effectively used, can have a motivating effect on our project community.

What kind of messages about our project do we want to get through on hierarchical communication pathways?

ACTIVITY 2. BREAKING DOWN BARRIERS

OBJECTIVE

To demonstrate the effect of limited perspective on creative problem solving, and to identify types of barriers an extension team may encounter in promoting agroforestry.

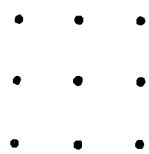
EXAMPLE

Present the group with the dot-linking problem, which follows.

Use the discussion questions at the end of the Activity to help trainees consider the significance of the puzzle to our work as agroforestry Extension Staff.

A PUZZLE TO GET PEOPLE THINKING IN NEW WAYS*

Draw 9 dots on a paper, on the blackboard or in the dust, like this:

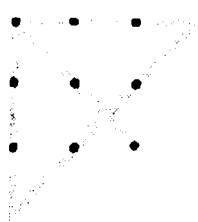


Ask everyone to connect all the dots with 4 straight lines joined together. **Draw the 4 lines without lifting the pencil from the paper.**

You will find that most persons will try to draw lines that do not go outside the imaginary square or 'box' formed by the dots.

Some may conclude that it is impossible to join all the dots with only four lines. You can give them a clue by saying, **"to solve the problem, you must go beyond the limits you set for yourselves".**

At last, someone will probably figure out how to complete the puzzle. The lines must extend beyond the 'box' formed by the dots, like this:



Be careful not to shame the students or make them feel stupid if they cannot solve the puzzle. Explain that many foresters and agronomists have trouble with it!

*Puzzle adapted from David Bower, **Helping Health Workers Learn.**

After the group has seen how to solve the puzzle, ask some questions that help them consider its larger significance. You might begin with questions like these:

1 **In what way is forestry like the grid formed by the dots?**

Consider: The term **forestry** often makes us think of plantations of trees lined up in rows.

2 **How does the idea that trees belong in a forest affect the way we look at a farming community's need for trees?**

Consider: It may be a barrier to a more people oriented approach.

Summarize:

As teachers and as learners, we sometimes get into ruts. Like horses with blinders we often tend to look at things from a narrow point of view. We keep on trying to solve problems in the same old way.

New approaches to agriculture and to forestry require new approaches to teaching and to learning.

This means taking off the conventional blinders that limit our vision and imagination. It means going beyond sector approaches to land use and exploring different options.

What can we do to help each other climb out of the mental 'boxes' or 'ruts' that confine our thinking? How can we explore new ways of using land and making forestry work for rural communities and teaching about it? How can we improve the way in which we teach about it?

Consider: As agroforestry Extension Staff we need to see things in new ways, and to help others do the same. Agroforestry is an unconventional way of raising trees, from the forester's point of view. It is an unconventional method of cropping from the agriculturalist's point of view. In agroforestry we begin to look at trees as crops and plants that promote crop productivity. We begin to see that forest products can be more accessible to rural people by growing them on farms. What are some of the types of "barriers" we may encounter in our efforts to promote agroforestry? What can we do to break them down?

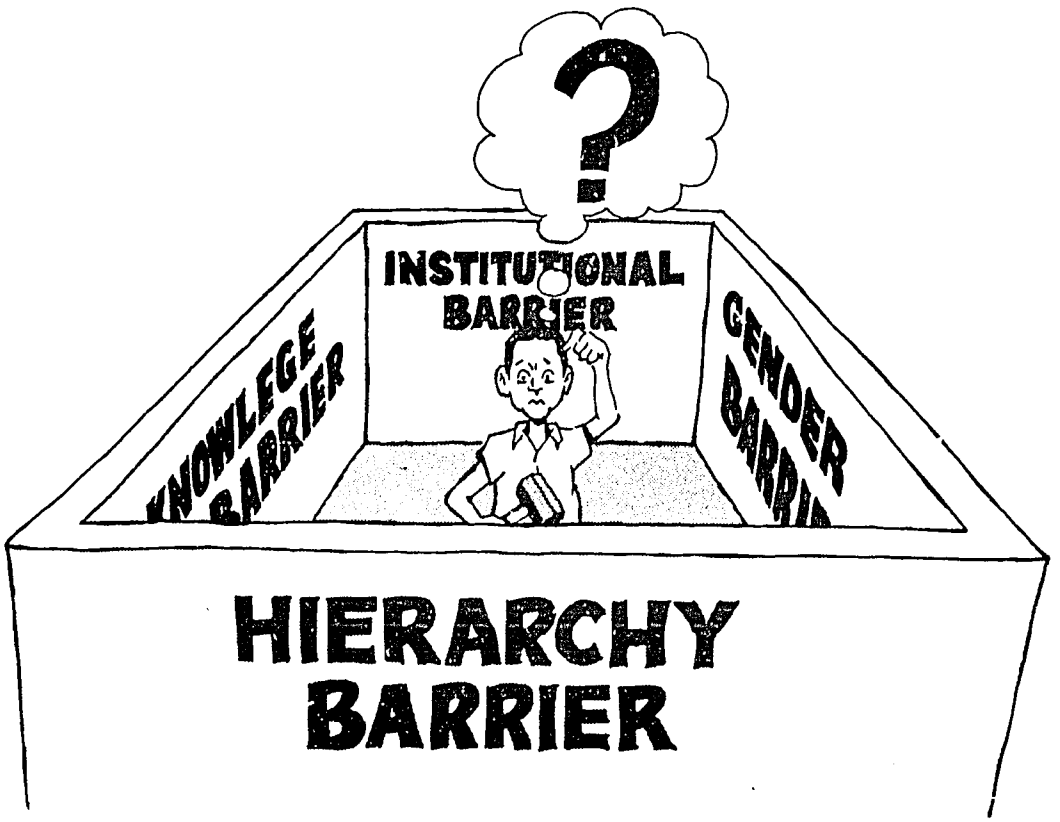
Consider:

Hierarchy Barrier - Break down by approaching farmers and their leaders as development partners with whom you share responsibility for teaching and learning; and for designing, implementing and evaluating development activities.

Knowledge Barrier - Learn from the realities of the 'field'. Do not rely on a classroom and lecture approach to learning.

Gender Barrier - Bring men and women, boys and girls together in equal numbers. Or if men and women are culturally prohibited from mixing for certain tasks, develop parallel activities to involve women as well as men in decisions to develop agroforestry for their benefit.

Institutional Barrier - Encourage government and non-government organizations to mix by creating interests in your project for all of them. Point out how these interests are complementary and not competitive.



ACTIVITY 3: MESSAGE DISTORTION

OBJECTIVE

To demonstrate how easy it is for an extension message to become confused and distorted as it gets passed between different people.

EXAMPLE

Think of a message that includes 2 or 3 personal names, 2 species names and 1 or 2 numbers regarding numbers of seedlings, spacing, and/or time of day. See the sample below.

Choose about five people to participate in the "communication chain". If the training group is only a few more than five, include all of them.

Select a place out of hearing range of the others for you to deliver your message to the first listener. Instruct each successive person to listen to the message and then to repeat twice, the message they hear to the next person. Tell each person to speak slowly and carefully.

Have the last person who receives the message recite what he heard, to the group. The trainer then recites the original message. Give group members a chance to tell others how they heard the message.

The message often turns out to be quite distorted by the time the last person to receive it recites it to the group.

Focus discussion on the following questions:

What caused the message to become distorted?

Consider:

too many people in the line or "chain of communication",
unfamiliar terminology,
too much information,
complicated information.

Remind them that even simple messages can become distorted.

What can we do to reduce this problem?

Consider:

Repeat back to the speaker what you have heard to make sure you have heard it correctly. Use feedback and ACTIVE LISTENING .

Write down information you need to remember.

Sample Message

Original Version.

Farmer Owiti asked Bernice for 200 **Grevillia robusta** seedlings saying that he wanted to plant them at one meter spacing along his boundary. Marwa told Bernice that only 150 Grevillia could be made available, and that they should be interplanted with Leucaena. Bernice should pick them up from Lewis at Siaya on Wednesday afternoon at 2 o'clock.

Possible Final Version.

There was a farmer who applied to Louise. The farmer wanted 200 seedlings. But Louise gave him only 150. He wanted to interplant them with Leucaena. The spacing was 150 meters. Louise does not have a watch.

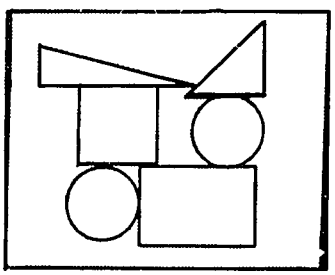
ACTIVITY 4. EYE CONTACT AND FEEDBACK

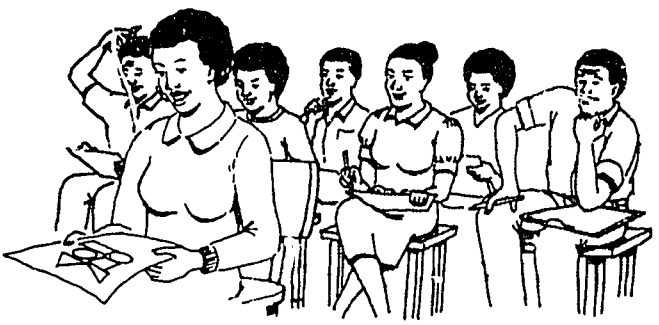
OBJECTIVE

To demonstrate the effectiveness of face-to-face contact between people, and to highlight the need for opportunity to ask questions and obtain feedback.

EXAMPLE

Choose any person from the group, and give her a paper with a drawing which connects six geometric figures, such as the one below.



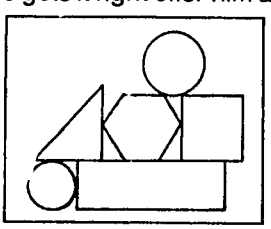


Have her sit in a chair well in front of the group, with her back to it. Give the other group members paper and pencil, and tell them to draw the figure as it is described to them.

Tell the speaker sitting in front of the group to describe, step by step, the figure on the paper so the others can draw it. The rules are:

The speaker may not look at the group. She may not use her hands to describe the drawing. No questions or comments are allowed from the group. She speaks. They listen and draw.

When the speaker is finished, have everyone show their drawings. (If anyone gets it right offer him an appropriate prize!)



Then give the same speaker another figure to describe, such as the one shown to the right. This time have her sit closer to the group, facing it. Allow the group to ask questions and the speaker to respond. Make sure the speaker holds the paper so that it cannot be seen by the audience.

The differences between the two approaches will be obvious by the time the speaker has finished. Have everyone show their drawings.

Focus discussion on the importance of direct personal contact for getting your extension messages across. We can check our assumption that the message got through by asking for feedback or questions.

Often we need to be seen to be heard!

ACTIVITY 5. ONE TRACK MINDS

OBJECTIVE

To demonstrate the effect of ignoring other aspects and concerns in people's lives when trying to get our agroforestry messages across.

EXAMPLE

Preparation

This is a role play that involves three characters. Read each trainee his role from the Role Play Notes, repeating them twice. Allow each trainee to play his roles as he sees it. Stop the exercise when it becomes repetitive.

When the role play is over, encourage the rest of the group to discuss any aspect they feel is relevant or interesting. Focus on the following issues:

Why do we need to be sensitive to peoples' situations and concerns when trying to communicate with them?

Why should we be aware that there is alot going on in a farming household at any time we might approach it; that our agroforestry messages may not be the most important thing on their minds?

How should we be prepared to deal with these situations?

Consider:

Flexibility in our scheduling especially when approaching a farmer for information that is primarily for our purposes. It may be better to delay now if we can get the job done better, later.

Making sure we explain the purpose of our visit and what is important to the farmer.

Being prepared to listen to a farmer's most immediate personal issues and concerns if he wants to share these, before discussing the issues that interest us.

What would your trainees do if they found a situation like the one in the role play?

ONE TRACK MINDS

Situation and roles

There are three people involved: farming husband and wife and an agroforestry Extension Worker.

Husband's Role

You have gone to the sugar factory today to collect your pay for the casual labor you performed two weeks ago. You are made to wait in line for most of the afternoon, but by the end of the day you are told to return again tomorrow. You will not be paid today. You must go home empty handed and explain the situation to your wife.

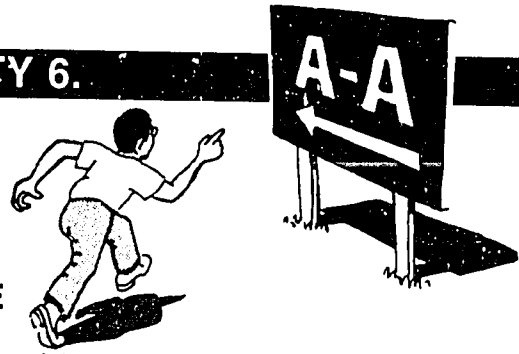
Wife's Role

You have been in the house all day with a sick baby. You have not been able to take the baby to the clinic because you have no money. You are waiting for your husband to return from the sugar factory with his pay so you can get the baby treated. When he comes home with no money, you are upset, and become distrustful of him. (What happened to the money?)

Agroforestry Extension Worker's Role

You are told by the project manager to interview this household today for the agroforestry diagnosis survey. You want to find out what kinds of farming system problems they have so you can begin to design agroforestry interventions with them. You are intent upon getting the job done today. You want to avoid having to travel to this remote part of the project area again, tomorrow.

ACTIVITY 6. GETTING TO "A-A"



OBJECTIVE

To introduce a model of communication theory that will help trainees understand possibilities and conditions for effective, Development-Generating Communication.

EXAMPLE

The activity begins with a role play. It is concluded with a presentation and discussion on communication roles that we encounter in real life.

Preparation

Read through the Role Plays. Select three people for the role play. Read each person his/her role, twice. Initiate the role play and conclude it when the actors have made all their points.

Read and prepare a presentation based on the LEARNING NOTES in this Lesson.

After the role play, facilitate discussion around the following questions:

What was going on?

What was happening between the Supervisor and the Extension Worker?

> Consider:
>
> The Supervisor was scolding the extension worker in front of the farmer, to demonstrate his authority...to make it clear whose fault the misunderstanding was (not his). Perhaps the Supervisor saw it as an opportunity to reprimand the Extension Worker for past "misbehavior" as well?

What effect did the Supervisor's reaction have on the Extension Worker?

> Consider:
>
> Did the Extension Worker feel defensive? Embarrassed? Angry? How did these feelings affect her ability to correct the situation with the farmer?

What effect was this encounter likely to have on the farmer's view of the EW? Could it affect their future working relationship?

> Consider:
>
> If the farmer saw that the Supervisor had little enough respect for his Extension Workers to treat her like that in front of others, would the farmer maintain respect for her? Or would the farmer respect the Supervisor after such an encounter? What effect would the farmer's feelings have on the Extension Staff's ability to do agroforestry development with him?

How could the misunderstanding represented in the role play have been better handled by the Supervisor and Extension Worker?

> Consider:
>
> Could ACTIVE LISTENING have helped the situation in a way that invited a more constructive solution?

What kind of role should the Supervisor have played before he could do effective ACTIVE LISTENING?

> Suggest:
>
> We should examine the communication situation a bit more closely.

Conduct a presentation based on the material in the LEARNING NOTES in this Lesson. Where there are questions and discussion suggestions in the text of the NOTES, probe for answers from the trainees.

Following the presentation give copies of the LEARNING NOTES to the trainees for their Training Workbooks. Ask them to be prepared with questions about Parent-Adult-Child (PAC) communication the following day.

GETTING TO "A-A"

Situation and Roles

The setting is an interaction among an Extension Staff Supervisor, one of his Extension Workers, and a farmer participating in the project.

Supervisor's Role

You are accompanying one of your Extension Workers to some farms to check on her progress. On visiting the first site, the farmer asks you if you have brought the barbed wire. You do not know what he is talking about, so look at him and your Extension Worker questioningly.

She starts to explain, but suddenly you think you see what is going on. You begin scolding her in front of the farmer. She has no business promising farmers barbed wire, and if everybody did that the project would become broke. You warn her that she could spoil things for everybody. You are impatient with her "excuses".

Extension Worker's Role

Your extension supervisor is accompanying you to some of your farms to see your progress. Soon after arrival at the first farm, the farmer asks your supervisor if he has brought the barbed wire which you had promised him. You realize immediately the misunderstanding. You had suggested to the farmer that living fences could be developed through agroforestry, so that the farmer would not have to buy expensive barbed wire, but he misunderstood you. You try very hard to explain this to the farmer and your supervisor.

Farmer's Role

The Extension Worker whom you met last week is coming for a visit with her supervisor. You are happy because you assume they are bringing the barbed wire the Extension Worker had promised you at the last visit. You realize, however, they are carrying no wire. You are disappointed enough to bring up the subject immediately after greeting them.

COMMUNICATION FOR MOTIVATION AND DEVELOPMENT

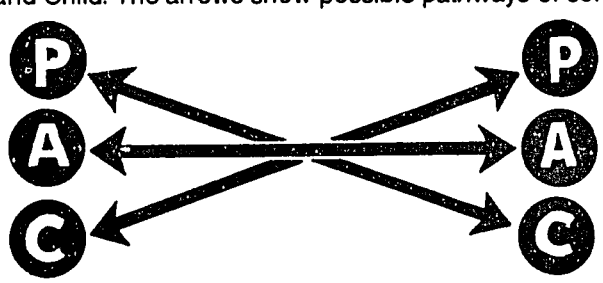
Thero is a theory of communication that suggests there are three basic roles we can adopt as communicators. We can adopt the role of the **"parent"**, the **"child"**, or the **"adult"**.

Our "parent" role is one from which we are in control, and we communicate by being authoritarian; we give orders. In our parent role we seldom listen.

Our "child" role is one from which we need to be controlled. In this role, we receive orders. Although we can say what is on our mind, no one except, perhaps other "children", will take us seriously because we are not responsible for ourselves or for others.

Our "adult" role is one from which we are thoughtful, sensitive, and responsible to others as well as ourselves. We communicate through sharing information - through both listening and talking.

The following sketch is a model of these three roles found within each person. The letters P, A, and C stand for Parent, Adult, and Child. The arrows show possible pathways of communication.



According to the theory, it is possible for positive, **Development-Generating Communication** to take place only between certain of these roles. Communication pathways are feasible between adults and between parents and children.

Effective communication for extension work is not possible, however, between "pairs of parents", "pairs of children", or between "adults and children" or "adults and parents".

When communication is attempted between these roles, conflict can occur. Defensive barriers to communication are constructed.

Consider:

Look at the model. Think about what has been said about communication roles and pathways. Try to explain, in your own words, why communication succeeds between some roles, and "fails" between the others.

Let us look at the communication models again. This time, pretend one person is the Supervisor from the previous role play, and the other is the Extension Worker. In terms of the model, what happened when the Supervisor and the Extension Worker tried to communicate?

Answer:

When the Supervisor "went to P" (adopted a Parent role), the Extension Worker was "forced to C" (required to take the Child role).

According to the theory:

Because communication is blocked between pairs of "P"s, pairs of "C"s and between "A"s and "P"s, and "A"s and "C"s, people are forced to change their roles if they want to communicate.

If someone tries to communicate from the "P" role, the receiver has to adopt the "C" role in order to develop a **pathway** of communication.

Likewise, if someone is trying to communicate from "C", the target person must go to "P" to develop the communication pathway.

It is possible of course, and very common, that a person receiving a message "coming from P" will choose not to "go to C". What happens?

Answer:

Messages are not exchanged, and no communication occurs.

The **most effective communication occurs "at A-A"**, or between people in the roles of Adults. At this level, people communicate on an equal basis. They are open to give-and-take. When they are open and sharing it is possible for learning to take place. People respect one another and are willing to talk and listen.

As good Extension Workers, we need to develop skills that enable us to:

Identify Parent, Adult, and Child roles when they occur

Help people to adopt Adult roles for good communication

Discover good examples of Adult communication and work to get our agroforestry messages channeled on to these pathways.

Consider:

Can we learn to identify P, A, and C roles by examining communication behavior within our agroforestry Extension Staff?

How important is A-A communication within the staff?

Important for sharing and learning among one another?
Important for self and mutual respect?

Important for maintaining an example of how to interact with farmers?

How do we stay at A-A communication within the Extension Staff?

Understand and respect everyone's role?
Active Listening?
Have periodic meetings for open sharing of experience, problems and frustrations?
Help each other with problems?
Adopt PAC terminology to keep reminded?
Maintain a sense of humor?

Is there room for P-C communication within the Extension Staff?

In the strictest sense, there is room in a hierarchy for P-C communication; ultimately, someone is the boss.

However, an effective Extension Staff supervisor will adopt a style that minimizes P-C communication. This should set an example for all Extension Staff members. By respecting one another's roles in the project, most communication between staff at different levels can occur "at A-A".

How can we help farmers "get to A" so we can better communicate and share with them?

Show our respect for them?
Share common concerns?
Listen to their problems?
Encourage them to discuss their ideas?
Give them reasons to respect us by providing useful information, and following through on our commitments?

Where are A-A pathways most likely tc occur naturally?

Among farmers of relatively equal social and economic standing.

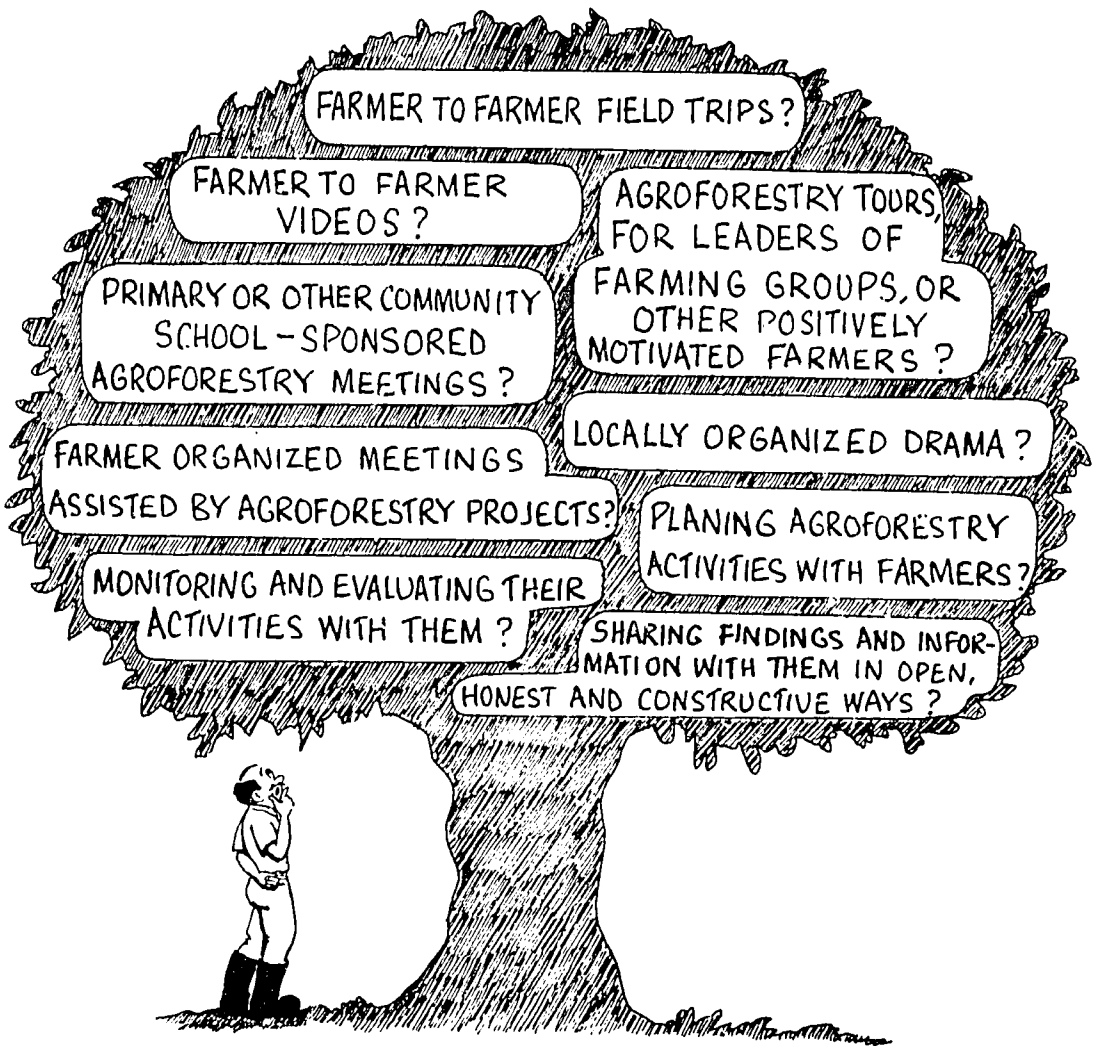
The last question leads us to consider strategies for getting agroforestry messages on to existing "A-A" pathways. This means relying on a communication strategy where there is less chance for hierarchy to occur. Such a strategy should include:

Motivating farmers to communicate with other farmers about the project's agroforestry messages.

Having "local" Extension Workers do as much of the teaching about agroforestry as possible. It should be easier for them, than for outsiders, to encourage effective adult communication.

This strategy assumes that Extension Workers adopt a sensitive and respectful approach toward the farmer.

What are possible methods for improving and encouraging Adult-Adult communication for agroforestry development?



ACTIVITY 7: ACTIVE LISTENING

OBJECTIVE

To demonstrate the positive effect that Active Listening can have on creating Adult-Adult communication.

EXAMPLE

The main activity consists of two role plays. The situation is the same in both. The first is acted **without** the use of ACTIVE LISTENING. The second uses the technique.

The activity can be extended by assigning the trainees the task of creating role plays that dramatize possible project situations where active listening applies. Ideally, each trainee should have a chance to practice active listening through a role play. Plan enough time to do this.

Preparation

Read through the Role Plays on the following pages. Select actors. They should be the same for both Role Plays.

Describe the **situation** to all the actors together.

Read the Farmer and Extension Worker roles to them **individually, repeating each twice.**

Allow the role plays to develop as the actors see fit.

Discuss Role Play 1

Follow up the first Role Play by facilitating discussion around the following questions:

How do you think the argument would effect the relationship between the Extension Worker and the group?

Would the argument affect implementation of agroforestry within the area?

Where does the project stand on the 'Eucalyptus controversy'? (The activity should raise this question. You may want to discuss it here or postpone it to a later training session.)

Is there a better way to handle this situation? Let's try the Role Play again.

Role Play 2

Read the Extension Worker her role for Role Play 2. Tell the farmer his role is the same as the previous Role Play.

Follow Up the second Role Play by asking the Extension Worker:

How does it feel to play the two different roles? Which one is easier? More satisfying? Why?

ACTIVE LISTENING

Situation

A group of farmers has gathered for a second meeting with a project Extension Worker. The first meeting was held two weeks ago. During the first meeting the Extension Worker interviewed the group about its land use and agricultural production problems.

The meeting included discussion about the choice of species to raise in project nurseries. Farmers were asked to think about which species they prefer before the second meeting.

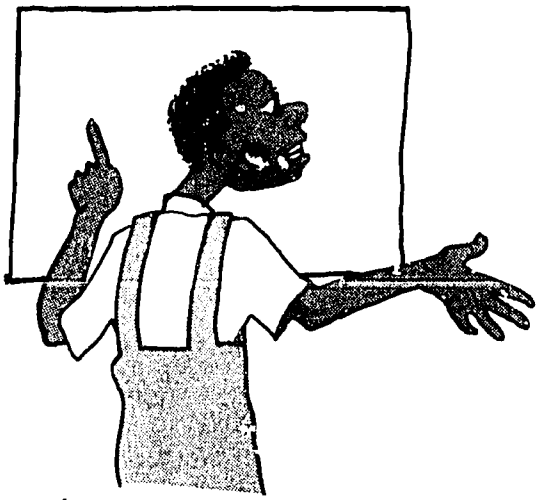
The purpose of the second meeting is for the Extension Worker and farmers to decide on the species they would like to raise and how many of each.

An Example of a Confrontation Approach

"Difficult" Farmer's Role

You are a poor farmer with only a small piece of land. You have been thinking about the species you would like to grow, and have decided on Eucalyptus. You have seen how well this species has done on some of your neighbors' farms. You know that your neighbors are earning good cash by selling Eucalyptus poles. You also like this tree because it grows fast and coppices well, (shoots again).

Some other species were recommended by the Extension Worker in your meeting last month. You see no reason to bother with anything other than Eucalyptus, because they are so profitable. You are the first to respond during the group meeting, and you remain insistent about your point of view throughout the meeting.



Extension Worker's Role

You ask the group if they have thought about the species they would like. You have told them about the value of indigenous species and of fast growing legumes. You hope these are the type they will want.

You learned in your training that Eucalyptus is not an ideal agroforestry species because of its negative effect on crops growing near the trees and its large water consumption. You try to convince the farmers about this.

When one farmer remains insistent about his preference for Eucalyptus in front of the whole group, you begin to loose your patience with this 'difficult farmer'.

Farmer Groups

Individual farmers in the role play should support one of the actors, or remain quiet, as seems most realistic for the situation.

ROLE PLAY TWO

An Example of Active Listening

The farmer's role is the same.

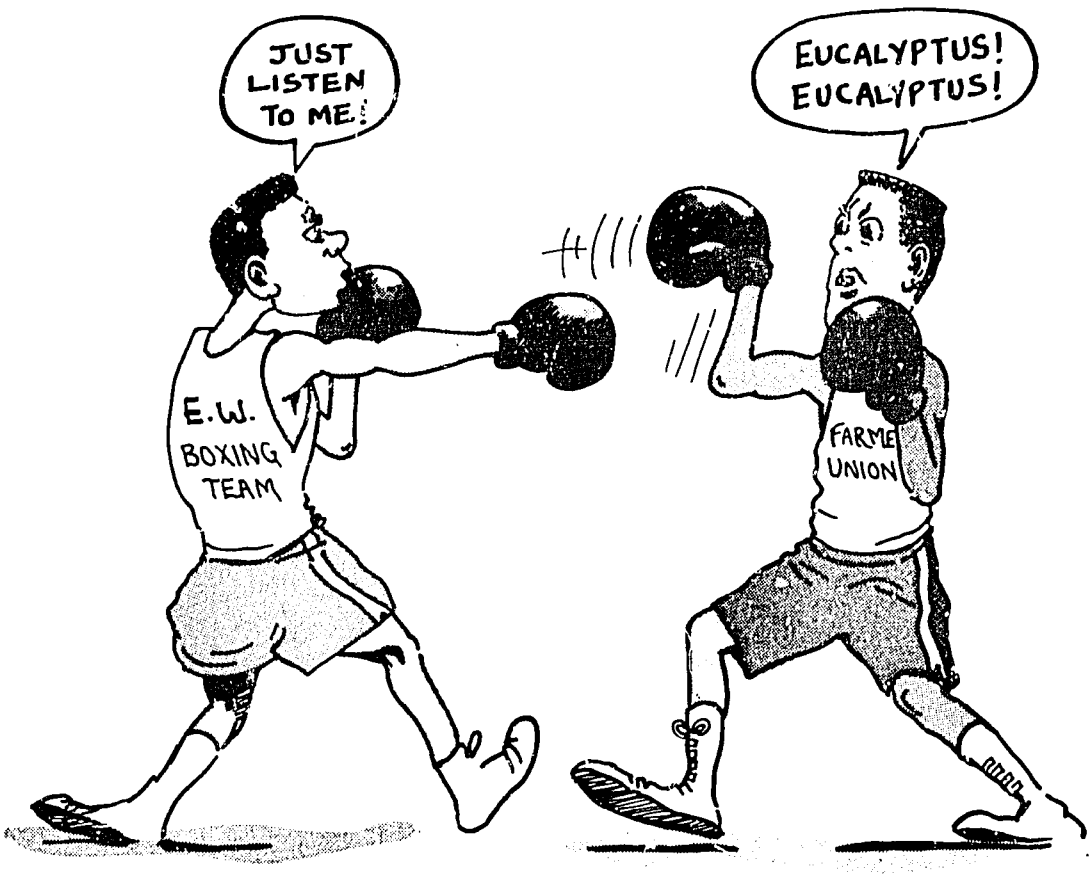
The group's role is the same.

The Extension Worker's role changes. Explore the Eucalyptus issue with the farmer using **Active Listening**. Example:

> When he insists on Eucalyptus, you patiently ask the reasons why he likes them. Then respond to him with what he has told you, to make sure you understand it.
>
> Attempt to understand his point of view. You understand that the cash is very important to him because he has children in school who will require school fees over the next few years. Selling poles may be an easy way of raising cash. You know they coppice well and are therefore easy to manage for frequent harvesting. ...Etc...

Ask the farmer how big his piece of land is. When he replies that it is small, suggest that he may have a problem in raising a lot of Eucalyptus because they can take away valuable crop land. Suggest that there may be other species that could provide poles, but are not harmful to his land. If he still insists on Eucalyptus, suggest he may grow a few along a border. Suggest he also try other species to see what he thinks of them.

Continue to **Active Listen**. You do not need to "win" the argument here and now.



ACTIVITY 8. PROJECT COMMUNICATION SITUATIONS

OBJECTIVE

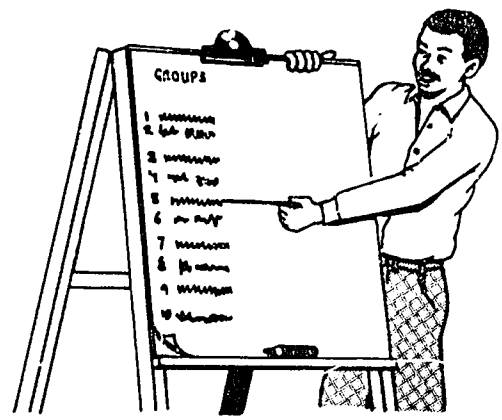
To anticipate types of people with whom the project Extension Staff will commonly communicate, and consider how ideas covered in the preceding activities might apply to various communication situations in the project.

EXAMPLE

List Communication Partners

Ask the trainees to think about types of groups and individuals they may need to communicate with. Are the groups the same for Field Supervisors and Extension Workers?

Brainstorm a list of groups. List responses on newsprint. Write responses to the left, leaving space between each item. Leave plenty of space to the right to form two columns.



The following suggestions may help you develop a list suitable for your project:

Project Manager (Project Extension Staff Leader)	School Groups
Field Supervisors	Church Groups
Extension Workers	Individual Farmers
Government Officials	Visiting Donors and Project Agency Representatives
Government Agency Extension Agents (MOA, Forest Department, Culture and Social Services, etc.)	Visiting 'Agroforestry Development Tourists'
Formal Farmer Organizations	Visiting Students
Women's Groups	Project Evaluators

Characterize Communication Situations

Have the trainees consider the main purposes for communicating with each person or group listed. Write the responses in the first column to the right. The following are examples, only.

Extension Workers communicate with the Project Manager to keep him informed of progress, problems and ideas about how to solve problems, so that the project is successful.

They communicate with other Extension Workers to share tasks, ideas and information about day to day aspects of project implementation.

They communicate with Government Officials to win their approval of project activities so they will allow the project freedom to operate and influence the community to accept the project and the ideas it is promoting.

They may communicate with formal farmer's organizations to introduce them to the idea of agroforestry in hopes they will seek more information about it, or because government officials insist they do.

They may communicate with women or church groups to gain their participation in collecting seeds and raising seedlings, and to influence members to raise these trees on their farms.

They may communicate with donor and outside visitors to convince them of the good job the project is doing and how it has overcome problems.

They may communicate with other visitors to teach them something about what the project is doing.

Identify Communication Problems

Next, ask trainees to consider what kinds of problems they might encounter in communicating with each of these groups. Write key responses in the third column. For example:

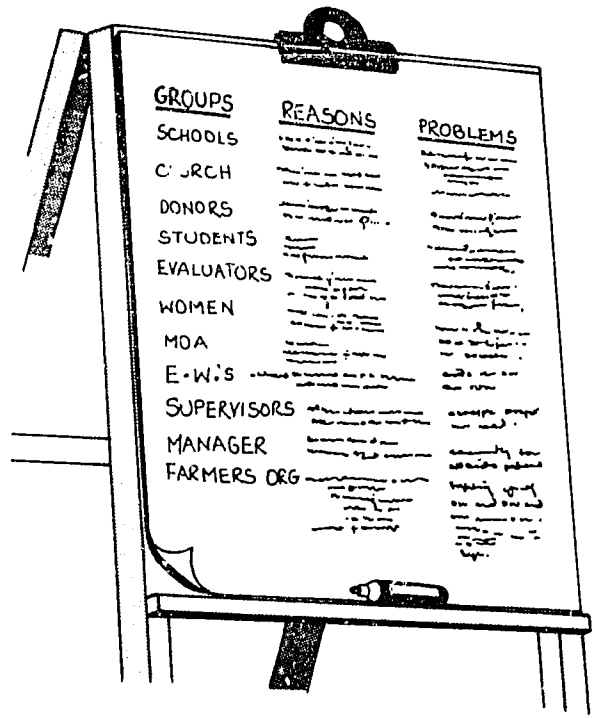
We may have problems communicating with the Manager because we fear what he may think of us and how he may judge us.

We may fear Government officials' lack of approval about what we are doing.

Government Extension Staff may be threatened by, or jealous of us because we are promoting something different, which they may not understand. We may have vehicles or higher pay.

Formal farmer groups may not understand us or our message because contact with them is too brief and formal.

Women or church groups may have a problem understanding our language. The message may be complex and confusing even if the language is easily understood. It may be difficult for them to see what they get out of it. Our planning schedule may be incompatible with their meeting times.



Visitors may take up a lot of our time and we feel we get little in return. We feel resentful. We may feel we need to please them, yet find them very judgmental.

Plan and Implement Role Plays

Organize trainees so they can create and act out a role play for each of the key communication situations they list. Each Extension Worker may be in one group, or several, depending on the size of the training group.

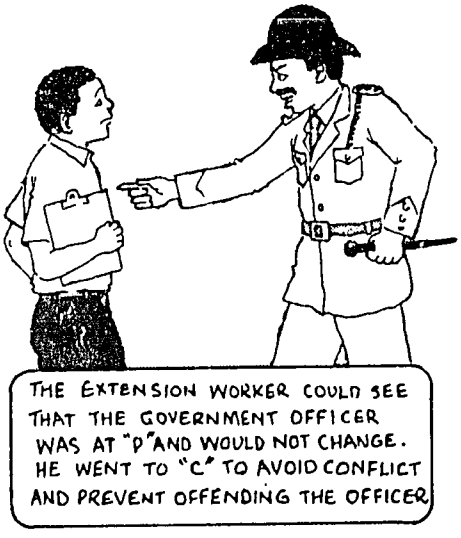
Each group should contain a Field Supervisor or Extension Worker, depending on the level of training concerned. The opposing roles should be played by a suitable number of individuals (1, 2 or 3) to represent a realistic situation.

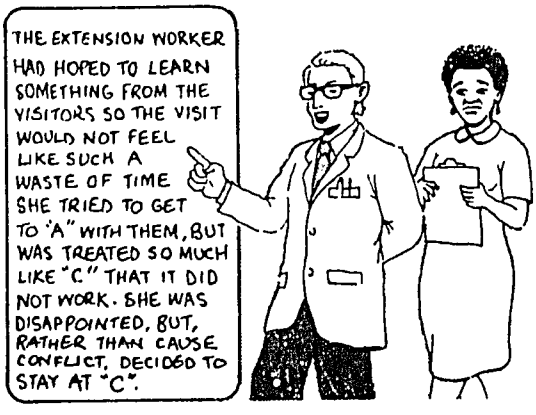
Assign each Role Play Group the task of creating two role plays. The Extension Worker's role should be played by a different trainee in the two Role Plays.

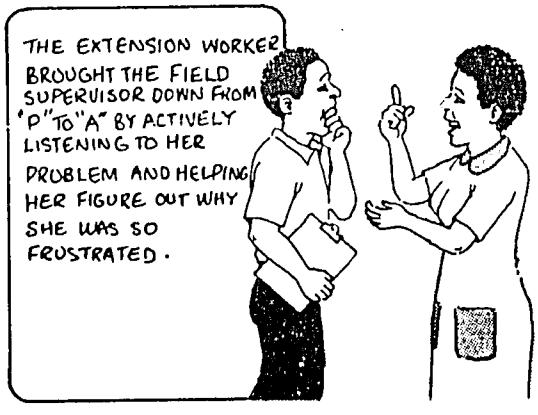
One Role Play should demonstrate what might go wrong in their communication situation if the Extension Worker or Supervisor adopts an inappropriate "P" or "C" role.

The other Role Play should demonstrate how appropriate roles and **Active Listening** can overcome a difficult communication situation.

Encourage members of the "audience" to critique what was happening using Parent-Adult-Child (PAC) communication terms, at the end of each Role Play.





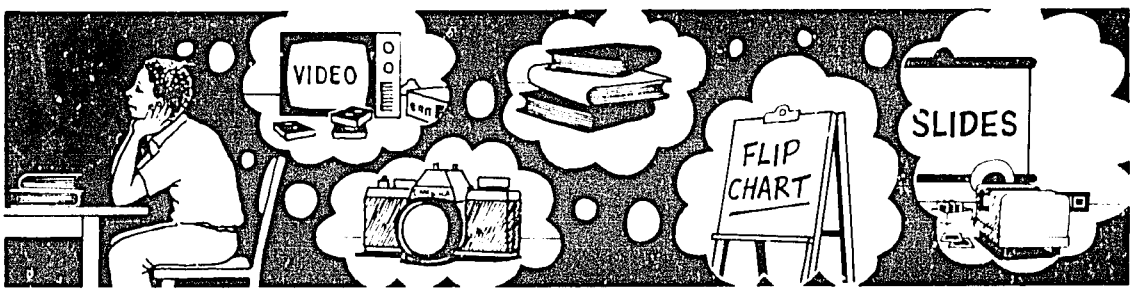


Using Parent (P), Adult (A), Child (C) communication terminology will help your training on communication theory. PAC terminology also becomes a helpful reference and working tool for Extension Staff learning and Extension Staff team building.

Lesson 4 PLANNING FOR COMMUNICATION SUPPORT

INTRODUCTION

Your project staff cannot contact directly all of the farmers in your project area who could take advantage of agroforestry. Direct person-to-person contact can be supplemented by the use of media of many types. Some of the most effective **Communication Support Techniques and Materials** are popular media through which messages of human and social interest traditionally have been shared. More modern means of popularizing ideas, as used by commercial advertisers, political campaigners and entertainers, can also be very effective.



There is great potential for including a popular media component in your agroforestry extension program. Work with project staff to select, develop and use the best package of communication materials and techniques for your project situation.

OBJECTIVE

Trainees will be able to specify conditions and criteria for developing effective communication support for their agroforestry extension project.

METHOD AND MATERIALS

The method used is facilitated discussion. Use newsprint and markers to encourage and record discussion.

EXAMPLE

Prepare

Prepare for the Lesson by reading the material in SSM 4-2 entitled **A Guide for Planning Communication Support for Your Agroforestry Extension Project**. The material is extensive and will require several hours to review and consider. Focus on Sections I and III of the **Guide**.

Review the discussion questions below and consider appropriate responses to them based on the **Planning Guidelines** and your own ideas.

Facilitate

Write on flip chart paper and probe for answers to the questions below. Encourage trainees to respond based on what they know about communication in the project area. Urge them to identify and think about how messages are passed in the area most effectively and with the greatest impact. Record their answers. This is a good starting point for developing their own list of possible communication support possibilities and tools.

Assist them with suggestions. For questions whose answers are unknown or unsatisfactory, list or indicate them as topics requiring follow-up.

1 **What are traditional means of communicating and popularizing an idea in our project community?**

Consider:

- Song, storys, plays

2 **What are modern ways of communicating and popularizing ideas in the project community?**

Consider:

- Commercial media such as sign boards at shops, sport rallys and roadsides; packaging; radio or TV jingles; t-shirts.
- Political media such as rallys, barazas, public meetings, pamphlets, pins, loudspeaker broadcasts.
- Educational media such as books, photographs, slides, voice tapes.
- Entertainment media such as theater, songs, films, books, galas.

3 **Which ways do they think work best? Why?**

4 **Which media may not be familiar to our project community but may be used with trained and guided project staff?**

Consider:

- Video
- Slides
- For others see list in Section I of A Guide for Planning Communication Support, SSM 4-2.

5 **Which of these materials and techniques are most likely to address our primary target audience; the poor, small scale man and woman farmer?**

Consider:

- Literacy
- Access or exposure to different media types.
- Cost and time required for training and development.

6 **Which techniques or materials can best be used on a regular, on-going basis?**

Consider:

- Which materials or techniques can best incorporate changes or additional messages? At what cost?
- Which communication techniques or materials can be used in other parts of the project area, or at different stages in the development of the project?
- Which communication support techniques or materials do you think will best share agroforestry and development messages after the project has gone?

7 **How can we make the most effective use of existing materials and techniques (media) for spreading agroforestry ideas and messages among project participants?**

Consider:

- The **agroforestry ideas and messages**. Are they completely new to people in the project area? Or are they ideas which need encouragement and reinforcement because they are already practiced? Build on what the people know and practice.
- Who controls, influences or uses the media (communication materials/techniques) already in the area? Do they have an interest in the project and its messages? How can we encourage them to become more active in promoting the agroforestry message? How can we convince them that working together can be of mutual benefit, and to keep costs low?

These discussion points should bring up a number of ideas about communication support possibilities in the project area. Use the list of ideas to investigate the role of communication support techniques and materials in the project. Focus your inquiry by **brainstorming** some possible answers to the following questions.

Use the questions and their answers to help you and your staff to develop a plan of action or strategy for **CSTM** in your project area. Record ideas on newsprint.

1 **Who within the project area/community may help us in guiding and developing communication support?**

Who among the project staff will have the responsibility for gathering and organizing the information?

Who else in the project area is already using communication materials and techniques? Can we work together? How should we approach them?

2 **What skills are already resident among our own staff? What other resources are available in the project area?**

3 **Where are these resources and skills located?**

4 **When should we incorporate communication support ideas and efforts during the project's development?**

Summarize

Indicate to the trainees that these questions and their answers will help to **develop a plan of action**, or **strategy**, for **CSTM** in your project area.

Remind them that **CSTM** should be designed, selected and used to multipy the effect of good person-to-person communication. Good CSTM complement good Extension Staff communication skills.

Suggest it is important to appreciate the time and energy required to support this part of the project's development. Too often communication tools are tried once and forgotten. Good CSTM require active involvement by staff and project participants in developing, testing, using and evaluating their effectiveness and impact.

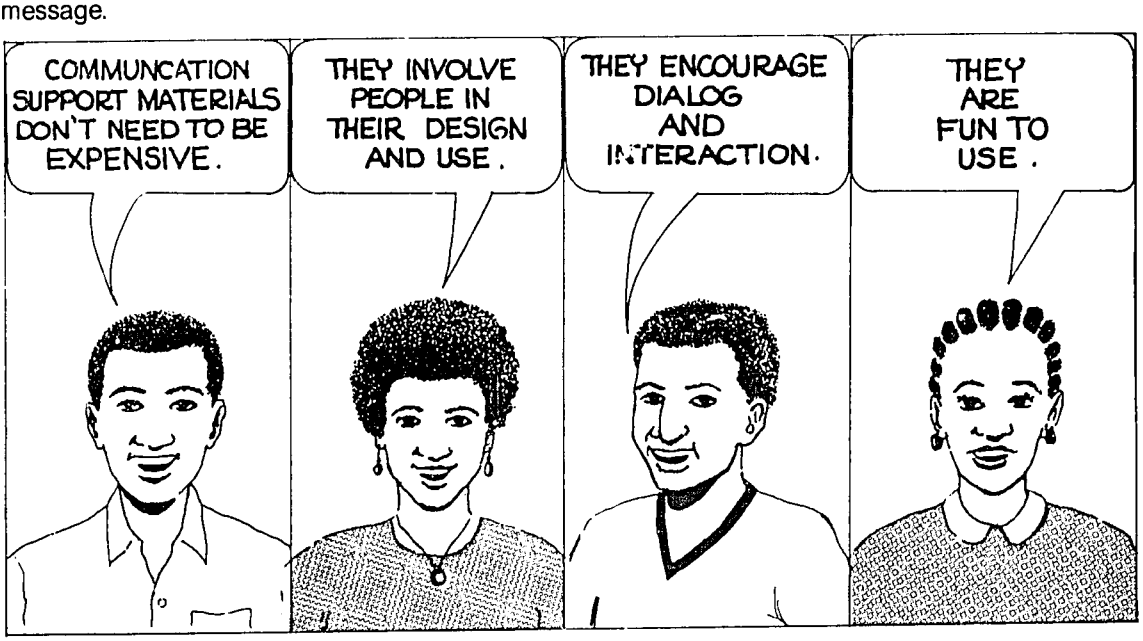
Thinking about and planning for **Communication Support** in our project now will help create an awareness of its role in future stages of project development. Careful consideration and awareness of the many factors affecting **CSTM** will help ensure their effective and exciting use in promoting agroforestry.

A GUIDE FOR PLANNING COMMUNICATION SUPPORT FOR YOUR AGROFORESTRY EXTENSION PROJECT

INTRODUCTION

This Guide contains information and suggestions for selecting, developing and using **Communication Support Techniques and Materials (CSTM)** in your agroforestry extension program. Communication Support Techniques and Materials should be used to complement your project staff's training and extension efforts, not as a substitute. They are tools to encourage dialog, discussion and feedback with your extension staff, and with farmer groups or individual farmers.

Communication Support Techniques and Materials are learning aids which can increase the scope and retention of your training or extension messages. Words alone are often insufficient to generate awareness, understanding, comprehension, action and change. Direct person-to-person contact is impossible to establish with all the farmers in your project area who may benefit from your agroforestry message.



CSTM can improve Extension Workers' activities in the field. They can encourage farmer participation in project activities. They should enliven and enhance a presentation and promote discussion of ideas, problems and possible solutions or actions which can be taken. They should broaden awareness about how agroforestry can promote development and change.

Supporting communication between people or groups is the essence of CSTM. If they are not considered and used in this way, then developing and producing them can be an ineffective exercise. They may be nice to look at, but when the time comes to evaluate their effectiveness as a training or extension tool, we may find ourselves asking, "what effect did they have on the learning and action of people for whom they were intended"?

This Planning Guide contains the following sections:

Section 1 looks at characteristics of good Communication Support Techniques and Materials. It contains examples of CSTM which can have a role in project training and project activities. A checklist of factors to consider when selecting, designing and producing good Communication Support Techniques and Materials is provided.

Section 2 addresses examples of CSTM for extension staff training.

Section 3 addresses CSTM which may be used by extension staff with farming groups/communities. Several examples are suggested for you to develop with your trainees. They require extension staff involvement in their preparation for most effective use in extension work.

Section 4 addresses CSTM for planning, monitoring and evaluation. Examples of CSTM are suggested for you to consider when involving extension staff and farmers/groups in activity planning, monitoring and evaluation.

NOTE

Many people believe that special skills and talents are needed to generate effective Communication Support Techniques and Materials. To a certain degree, this is true. Support materials do benefit from the skills and talents of illustrators, graphic artists, photographers, etc... It is more important to note however, that the best production and use of CSTM can be achieved through and with the people who will use them. In addition to a sense of pride and "ownership" in these media, extension staff are being encouraged to be imaginative and creative, characteristics which are the essence of problem solving, information sharing and communication.

This Guide does not deal specifically with technical production, eg. layout, color, reproduction, typesetting, letter transfer, calligraphy, photo composition, perspective and so forth. These are dealt with in several good texts which address design and production issues. Some of these texts are listed below.

Good Communication Support Techniques and Materials can be enhanced by a command of their technical production, but you would be surprised at what can be accomplished with limited resources and local participation.

References

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806 Connecticut Ave. N.W.
Washington, D.C. 20525, USA.

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2934 N.E. 16th Ave.
Portland, Oregon, 97212

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Dag. Hammarskjold Foundation
Ovre Slottsgatan 2
752 20 Uppsala, Sweden

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UNICEF Eastern Africa Office
P.O. Box 44145
Nairobi, Kenya

TAICH News (free periodical)
Technical Assistance Information Clearing House
200 Park Avenue South
New York, NY 10003
USA

TALC
Teaching Aids at Low Cost
30 Guilford St.
London WCIN IEH
England

CONTACT (free periodical)
Christian Medical Commission
World Council of Churches
150 Route de Ferney
1211 Geneva 20
Switzerland

INTERMEDIATE TECHNOLOGY PUBLICATION LTD.
(Source of Communication Teaching Materials)

40 St. Martins Lane
London WCZN 4ER
England

INTERNATIONAL DEVELOPMENT RESEARCH CENTER
(Source of Communication Teaching Materials)

Box 8500
Ottawa KIG 3H9
Canada

SECTION 1 IDENTIFYING APPROPRIATE COMMUNICATION SUPPORT TECHNIQUES AND MATERIALS

Communication Support Techniques and Materials are tools which encourage and assist project participants' communication. Communication can take place between a trainer and her trainees, Extension Workers and farming groups/communities, between individuals, or between farming communities. The role of CSTM is to encourage the sharing of information, skills, attitudes, knowledge, and even behavior, among all types of participants in the project. Effective CSTM need to be developed and designed to best assist this sharing in training and extension efforts. Producing the image is one thing - making sure it addresses the experiences and needs of your audience is another.

This section of the Guide is concerned with both extension staff training and community extension tools which support learning and discussion, and which improve and enhance the sharing of:

Behavior,
Awareness
Skills,
Information,
Knowledge

= (BASIK)

To perform these BASIK functions, good CSTM should have the following characteristics.

GENERATE	They generate and support learning and discussion.
ENHANCE	They enhance the sharing of BASIK among and between participants.
REINFORCE	They reinforce verbal messages and provide the visual stimuli often missing from verbal presentations.
FACILITATE	They facilitate discussion, debate, comparison, problem identification, and problem solving.
REMIND	They serve as a reminder of specific situations, and BASIK.
SUMMARIZE	They serve as an effective summary of ideas, issues, problems, as well as BASIK.

Consider these characteristics when selecting, designing and using CSTM. Use them and the checklist below as a guide. These two lists can also help you identify the constraints and advantages associated with each CSTM you choose. These characteristics of CSTM, and the checklist should be shared with your extension staff.

Testing the content, design and use of CSTM is crucial to their effectiveness and long-term use. Feedback during the design and planning stages of the CSTM, as well as during its use in the classroom and field is very helpful. Ideally their use should result in action, change or improvement of a condition or problem. Remember, they are best used as tools to an end — not as an end in themselves.

A CHECKLIST FOR THE SELECTION, DEVELOPMENT AND DESIGN OF CSTM

This checklist is meant to serve as a guideline for your extension staff training and community extension efforts. It will help guide and direct your thinking in the selection, development, design and use of materials and techniques for generating communication between groups and individuals.

AUDIENCE

- ☐ WHO ARE YOU GOING TO ADDRESS?
- ☐ HOW LARGE A GROUP IS IT?
- ☐ WHAT IS THEIR EDUCATIONAL EXPERIENCE?
- ☐ WHERE DO THEY COME FROM?
- ☐ WHAT IS THEIR BACKGROUND? WHAT ARE THEIR PROBLEMS, REALITIES, EXPERIENCES AND SUCCESSES?

YOU MAY USE MATERIAL AND INFORMATION GENERATED FROM LESSONS IN MODULES 3 & 5 TO ANSWER SOME OF THESE QUESTIONS.

DEVELOPING THE MESSAGE

- ☐ WHAT IS THE CONTENT OF THE MESSAGE OR INFORMATION YOU WISH TO SHARE?
- ☐ HOW WAS THIS DETERMINED? BY WHOM?
- ☐ WHAT ARE THE ORIGINS OF THE INFORMATION? IS IT FAMILIAR TO YOUR AUDIENCE? IS IT NEW?
- ☐ WHAT IS THE INTENTION OF SHARING THIS MESSAGE/ INFORMATION? WHAT WILL IT RESULT IN?
  - ☐ AWARENESS.
  - ☐ KNOWLEDGE.
  - ☐ NEW SKILLS.
  - ☐ ACTION.
  - ☐ CHANGE OF BEHAVIOR/ ATTITUDE.

- ☐ IS THE INFORMATION ALREADY AVAILABLE ELSEWHERE ?
- ☐ IN WHAT FORM ?
- ☐ USED WITH WHAT SUCCESS ?
- ☐ IF THE INFORMATION OR MATERIAL IS NOT AVAILABLE, WHO WILL BE RESPONSIBLE FOR DEVELOPING IT ?
- ☐ ARE THE RESOURCES YOU WILL NEED (ARTISTS, DESIGNERS, EQUIPMENT) AVAILABLE LOCALLY, WILL YOU NEED TO OBTAIN THEM ELSEWHERE; OR WILL YOU TRAIN THEM ?

LOGISTICS AND TECHNICAL CONSIDERATIONS

- ☐ IN THE CASE OF EQUIPMENT, WHO WILL BE USING IT ?
- ☐ HAVE THEY BEEN TRAINED OR ORIENTED IN ITS USE ?
- ☐ DO YOU HAVE THE SPARE PARTS AND TECHNICAL KNOW-HOW TO REPAIR AND MAINTAIN THE EQUIPMENT ?
- ☐ IF NOT, WHERE WILL THAT BE DONE ? IS IT PRACTICAL ?
- ☐ WHERE WILL THESE MATERIALS AND EQUIPMENT BE STORED ? IS IT SAFE AND DRY ?
- ☐ IS TRANSPORT NECESSARY FOR THEIR USE ?
- ☐ HOW DURABLE ARE YOUR MATERIALS EXPECTED TO BE ?
- ☐ WHAT SORT OF PROTECTION IS REQUIRED TO KEEP THE MATERIALS SAFE FROM THE ELEMENTS ?
- ☐ WHAT ARE THE COSTS INVOLVED ?

TACTICS AND TECHNIQUES

- ☐ WHERE WILL MATERIALS AND EQUIPMENT BE USED, FOR EXAMPLE, IN A ROOM, OUTSIDE, IN AN OFFICE, AT NIGHT, DURING THE DAY ?
- ☐ WHO WILL BE USING THESE MATERIALS ? ARE THEY FAMILIAR WITH THEIR CONTENT AND USE ?
- ☐ DID THEY HELP IN THE PREPARATION AND DESIGN ?
- ☐ WHAT EXPECTATIONS DO THEY HAVE REGARDING THE USE OF THESE MATERIALS ?
- ☐ HOW WILL YOU/THEY USE THE MATERIALS ? SUPERVISED / UNSUPERVISED ?
- ☐ WHAT IS THE ROLE OF GOVERNMENT / OTHER AGENCIES IN THE DEVELOPMENT AND USE OF THESE MATERIALS ?
- ☐ DO YOU NEED THEIR APPROVAL ?
- ☐ WHAT ROLE DO THESE MATERIALS PLAY IN YOUR :
  1. EXTENSION TRAINING PROGRAM ?
  2. COMMUNITY EXTENSION PROGRAM ?

- ☐ ARE MATERIALS ONLY EXPECTED TO BE USED ONCE, OR MANY TIMES?
- ☐ HOW WILL YOU MEASURE THE USE AND IMPACT OF THE TECHNIQUES AND MATERIALS?
- ☐ WHICH INDICATORS WILL YOU AND YOUR STAFF USE TO MEASURE THEIR EFFECTIVENESS AND DESIRED RESPONSE?
- ☐ HAVE YOU TESTED THEM FOR COMPREHENSION?

The following list identifies some Communication Support Techniques and Materials that may be used to support agroforestry extension staff training and community extension activities. Some materials are more commonly used for community extension than for extension staff training.

video	booklets/pamphlets
8 & 16 mm film	books/magazines
slides	posters
cassette tapes	newsletters
overheads/transparencies	T-Shirts/cloth
flip charts	brochures
flash cards	badges and pins
hand outs/flyers	role play
stickers	certificates
calendars	flannel graphs
announcement boards	radio/tv
dance	song
theater/drama	puppetry

You can use the process of selecting CSTM to teach extension staff about the advantages and disadvantages of each.

SECTION 2 COMMUNICATION SUPPORT TECHNIQUES AND MATERIALS FOR EXTENSION STAFF TRAINING

In Part 1 of Module 4, we emphasized role plays and facilitated discussion as important and effective techniques for enhancing and promoting participation in extension staff training. Not all information and skills dealing with agroforestry however, can be shared and delivered in this fashion.

This section suggests some ways in which the trainer can use Communication Support Techniques and Materials to improve the learning and exchange of information, skills and knowledge among trainees. It offers examples and applications of CSTM in extension staff training. It also focuses on some of their characteristics and how to make best use of each CSTM identified here. The ideas suggested can be important to an improved, and more dynamic training program.

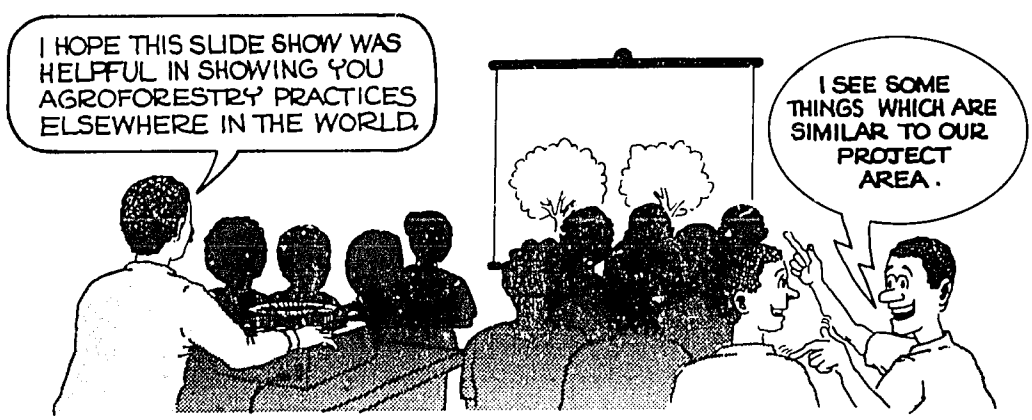
Characteristics of an extension training program which should influence your selection of Communication Support Techniques and Materials are:

1. Your knowledge of the group(s), their composition and background.

2. The group can normally be addressed in a controlled environment, such as a room.

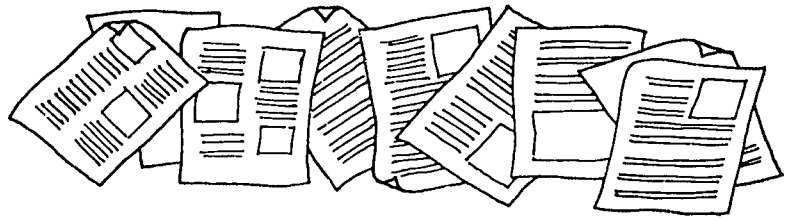
3. The training situation provides regular opportunities for supervised, guided and controlled feedback and discussion.

"Pre-packaged" CSTM available to agroforestry trainers seldom cover topics or issues directly relevant to your situation. Although trainers often see this as a constraint, prepared materials available from other organizations may be used for agroforestry training. These may help to illustrate trends, problems, activities or issues common to a global or regional audience. These materials can orient trainees to a broader perspective of agriculture and natural resource issues. Prepared materials may assist trainees to understand and identify with a larger set of issues and problems. They can also highlight efforts being made to address these.



Developing and producing your own materials serves a different purpose. Let us take a look at several examples of CSTM and their potential applications in an extension staff training program.

Hand-outs



Handouts are an easily prepared and effective tool for extension training. Their use is highlighted throughout the Sourcebook in the form of LEARNING NOTES. Handouts may be used to provide quick and easy reference on subjects being discussed or techniques being demonstrated. They can be used as a reference after training is completed. Handouts are a relatively inexpensive and easy way to provide information to your trainees on any number of issues or topics addressed in your training program. Handouts can be reproductions of other people's material, or your own.

Characteristics

Easy to use and reproduce, handouts of text and line drawings are most often photocopied, produced on a duplicator or cyclo-style machine, stenciled or reproduced by hand. Photographs are more difficult to reproduce, as they require a high quality photocopier or stencil machine, and even then, are not of high quality. Color photocopiers are available, but are very costly.

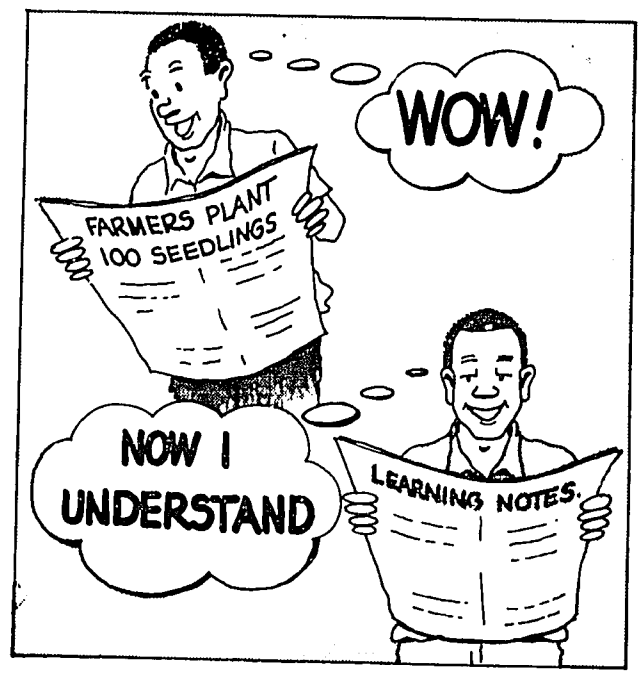
If you are producing your own handouts, keep the language and illustration simple and straight-forward.

How to use Hand-outs

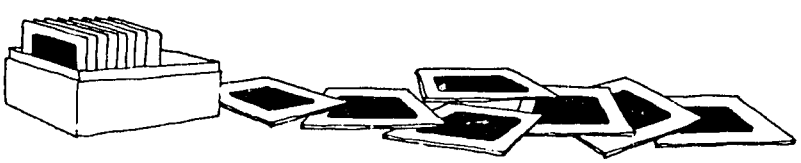
Some handouts are designed to be used once. Handouts or flyers which publicize an activity or event are examples of these.

Use handouts as a reference and resource material for trainees during the training and later in the project's activities. Handouts used in this fashion should be placed in a notebook or binder. This makes them easier to use, organize and store.

Consider them for helping to guide a presentation, conduct a role play, facilitate a discussion, and narrate slides, or other CSTM. Use them as a resource or reference for activities outside of the training classroom. Use them to summarize issues, events or topics covered during your training. Use them as a way of sharing information on the trainees' inputs into training activities.



Slides

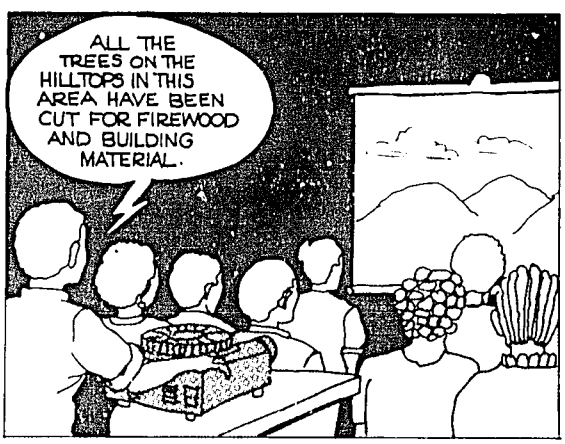


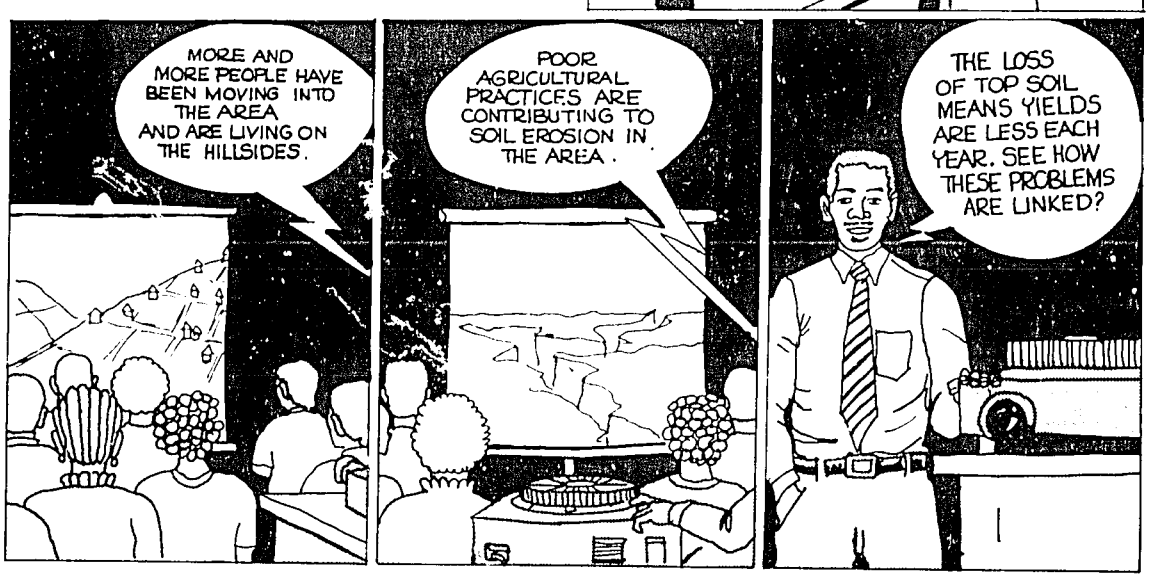
Slides can be especially effective CSTM for enhancing and reinforcing your training activities. "Prepackaged" or prepared slides, and slide sets, can help orient and introduce your trainees to general issues, problems or topics relevant to agroforestry, agriculture and natural resources. These are usually on topics of a global or regional nature. Examples of these are given in Module 2.

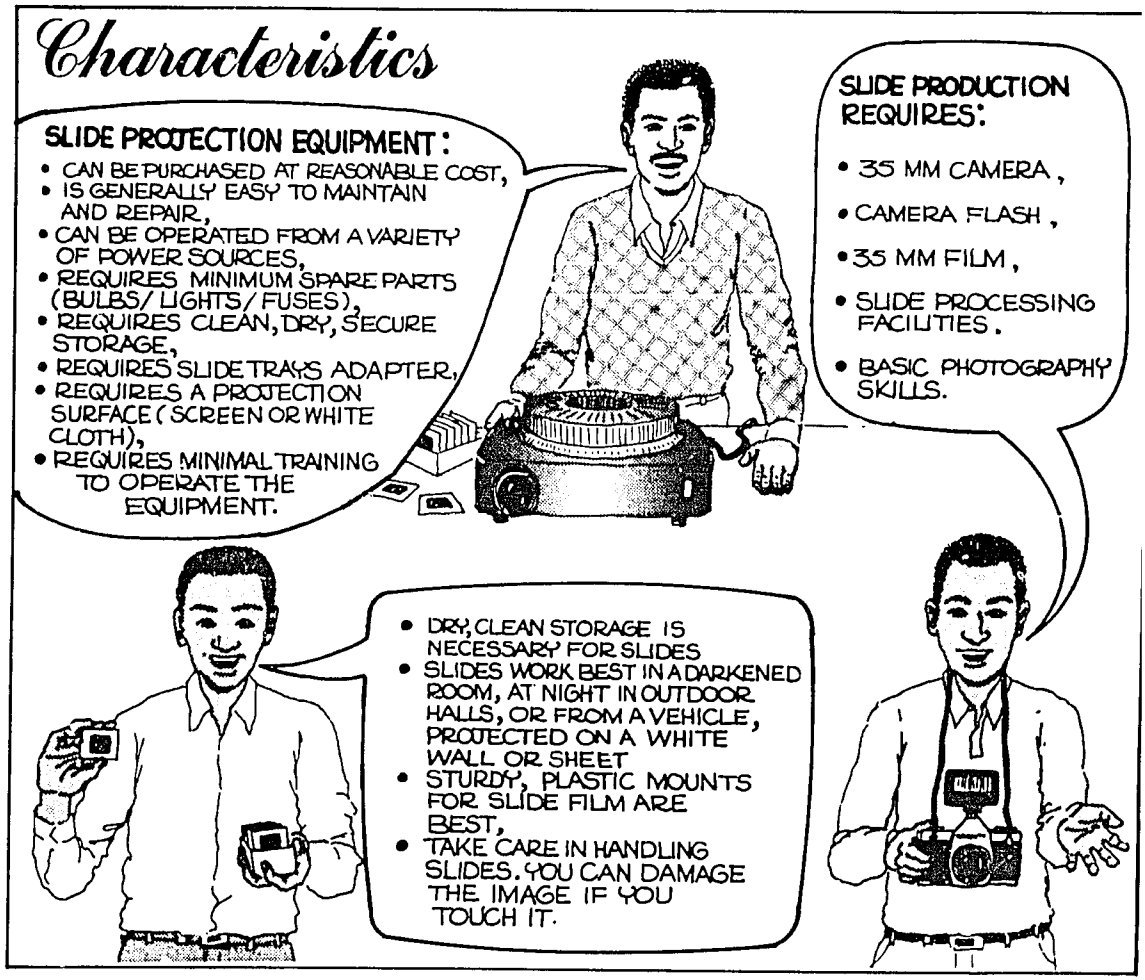
As trainers, you can increase the learning value of slides by developing sets that are directly related to conditions and issues in your project area. Slides can be an effective way of sharing information and knowledge about issues as well as documenting local efforts to address them. Slide sets can be developed to reinforce specific technical information particular to your project.

In either case, slides should be used to stimulate an exchange of ideas between you and your extension staff and between extension staff. Slides are a relatively inexpensive and easy way of helping trainees visualize what you are talking about.

A common and effective use of slides, for example, is to show land use problems in your area and how they are linked. You could show relationships between deforestation, woodfuel scarcity, soil erosion, etc. and what certain agencies and individuals are doing about these problems. Slides are also useful to show examples of agroforestry. Pictures of traditional tree/crop associations in your project area, or of successful agroforestry practices can help trainees identify a starting point for designing and promoting appropriate agroforestry activities.







Slides can be projected as quickly or slowly as you like. Slides and slide projectors can be used to address a large or small audience. The image can be adjusted by moving the projector closer to, or farther away from the screen.

Slide equipment is easy to use, easy to maintain, and relatively inexpensive compared to many other types of equipment. There are more sophisticated slide projectors with sound-synchronized cassettes available. This equipment is meant to "run" on its own, and reduces the opportunity for stopping the presentation and discussing each slide. This equipment is costly and difficult to maintain. More time, training and equipment is required to prepare slide materials to use with it.

How to use Slides

Using Prepared Slides

View the Slides before presenting them to your trainees. Familiarity is important for guiding and facilitating discussion. Consider providing discussion or review notes (handouts) to your trainees in advance of the presentation, or after. These will help them follow the content of the presentation or discussion. Prepared slide sets and film strips often come with a script. The script can be used as is, or you can adapt it.

Making your own Slide Presentations

Making your own slide presentations offers a good opportunity to develop and illustrate issues, information and practices specific to your project area. Slides are most effective when presenting images of environments and people familiar to your audience and project area.

Recently on market are self-processing Polaroid slides. They are reported to be of high quality and reasonable cost.

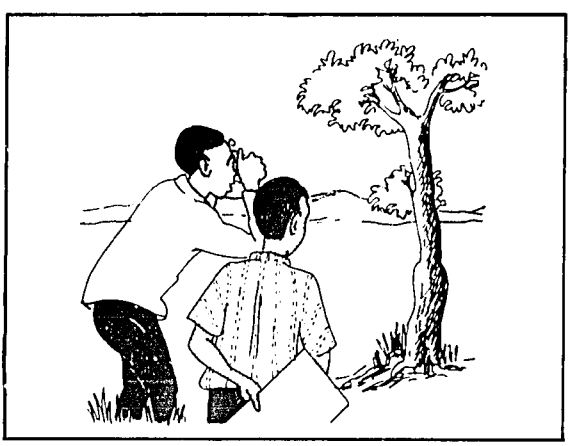
Preparation

"Homemade" slide presentations should be accompanied by a script. A script will help guide the filming and the presentation of your slides. If you are preparing a slide set to use with your trainees, prepare the slides in advance, preview them, and edit them. Test them with your audience. Do not assume that they see the same things in the pictures that you see. Audience feedback is helpful in determining changes you need to make in your next presentation. A good slide set is best complemented by a good oral presentation. Practice your presentation.

Keep your slide presentations relatively brief. Address a single theme, issue or problem to generate discussion around the slide presentation. Consider the attention span of your audience. Rather than overwhelming or boring them, try and make sure that they keep coming back for more. Simple, relevant and local messages help serve as an easy focal point for audience attention and discussion. Be sure to leave time for discussion and feedback.

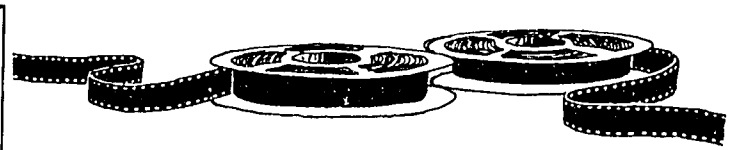
Practice, testing and revision, as in all CSTM, helps perfect the content, delivery and use of these materials. Slides offer a cost-effective, practical way to develop and produce your own, locally relevant CSTM.

Involve your trainees in developing the script and preparing the slides. In particular, involve them in making slide sets of technical information specific to the project area. You can record and document the variety of tree species in your area, or the variety of agricultural techniques used in an area. Taking pictures can be an important training exercise as well as an important record of information about your project and its people. Invest time in training on how to develop scripts and use a camera. Extension Workers are already most familiar with the farmers/people in their area, and their use of the camera can reduce the anxiety and intrusion a camera can represent.



Trainee involvement in the script and choosing slides will test their comprehension and understanding of ideas to be presented. Their involvement in the selection of sites which illustrate the script will also help. Trainees will be more familiar with the content and the information presented in the picture. Involvement and more effective use of this Communication Support Technique and Material is increased if you make slide presentations this way.

Film



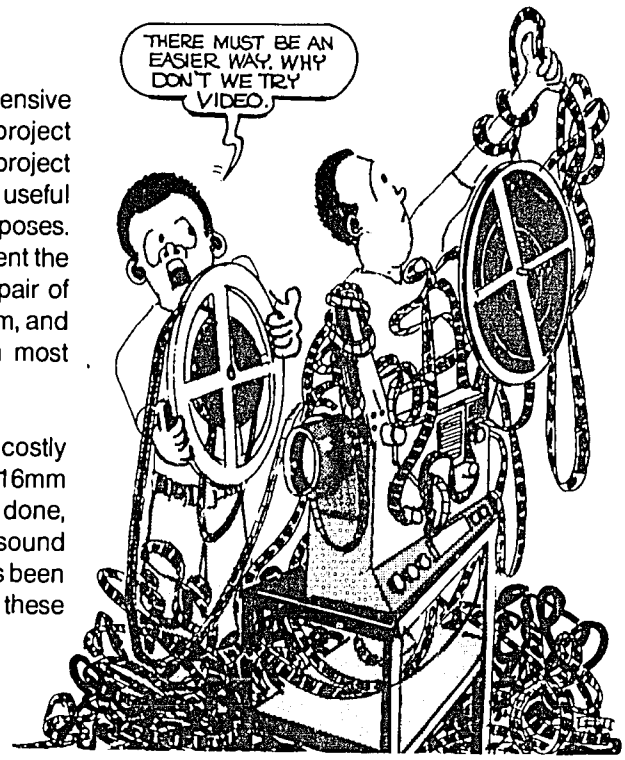
Moving Picture Films can be used for extension training purposes, although to a more limited extent than slides. Most films available for extension training purposes are made in 16mm format and deal with subjects or issues of an international or regional nature. Like prepared slides, prepared 16mm films are best used as an orientation and introduction for your trainees. Films available for purchase, however, are costly. The equipment used to project them is relatively expensive compared to other projecting equipment and is more problematic. Moving picture films available for agroforestry training are limited. This CSTM is quickly being replaced by video.

Sometimes it is possible to borrow or rent films and a projector from agencies or companies in your country. Some church organizations and multinational companies maintain 16mm film libraries and publish lists of films available to the public, and other agencies.

Characteristics

16mm films and projectors are an expensive investment for a project. Their use in project activities and training is limited. Some project trainers and Extension Workers find them useful for raising issues and for entertainment purposes. In this case, it may be easier to borrow or rent the films and equipment. Maintenance and repair of 16mm films and projectors is also a problem, and requires access to a skilled technician in most cases.

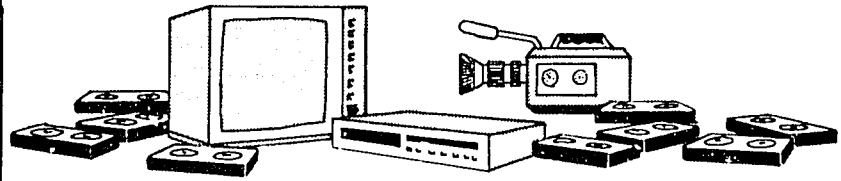
Production of your own 16mm films is very costly and requires skills, time and money. 16mm cameras are expensive. Once the filming is done, you need to edit the film. This requires sound recording and commentary. Again, video has been developed in order to overcome many of these constraints.



How to use Film

If you choose to use 16mm film, in your training activities, use the film in the same way you would use prepared slides/slide sets. Film should be used to stimulate discussion on issues particular to agroforestry, your project, or problems it is trying to solve. View the film before you show it to your trainees. Familiarize yourself with its contents. If this opportunity does not present itself, you can view the film together with your trainees. Lead a discussion on its content, and view the film again in order to review and summarize both its content and your discussion.

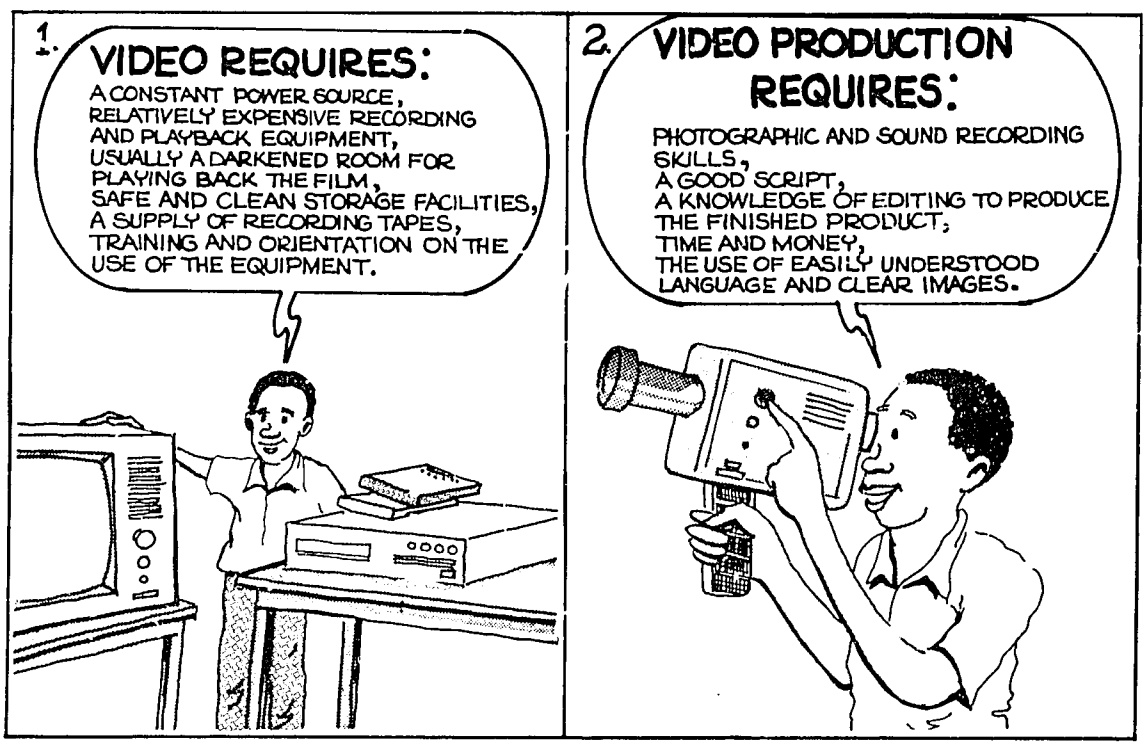
Video



Video has become an increasingly attractive option for supporting training activities. Its cost and size have made it a relatively practical tool for communication and education. Video can be useful for recording and playing back group interactions, role plays, dialogs, skills development and techniques. The relatively low cost of tapes and the ease with which they are copied means that more and more agroforestry video tapes should be on the market soon.

Video technology allows for an instant picture with sound. The video recording tapes can be used again, or easily stored for future reference. The video playback unit allows for the video tape to be stopped, reversed, forwarded, slowed and started when you want. This makes it a good tool from which to critique or discuss the tape's contents.

Characteristics



Despite the increasing durability of video equipment, the monitor and playback equipment is not easily transported without precautions. The most practical use of the video would be at an established training center, or a well managed mobile training unit. Video playback equipment does not like dust!

Video repairs and maintenance can be very expensive. Consider repair and maintenance facilities available to you when selecting your equipment. There are three pieces of equipment: the video camera, the playback machine and the monitor or TV.

How to use prepared Video tapes

If you are using prepared video tapes, it is best to preview them first before you use them in a training session. Familiarize yourself with the content and topics presented. Draw up a lesson plan on how you intend to use the video tape as part of a session. Develop some notes or guidelines for yourself on the points you wish to highlight for discussion or review. These guidelines can also be reproduced for trainees so that they are familiar with what to look for during the tape's screening.

Video tapes can also be shown without any discussion. Ask trainees to watch the video and to comment on it. Trainee's comments can form the basis for a discussion. Another viewing of the video can highlight the points discussed, or missed by the trainees.

These uses of video present a good opportunity for the trainer to lead discussions on agroforestry/natural resource subjects and issues. Issues, highlighted on the video, can be followed-up with specific examples provided by field trips or practical demonstrations.

Making your own Videos

Make your own videos when you want to record and present images of issues and situations specific to your training. You can make videos of your project area, local people and the problems your agroforestry project is trying to solve.

Making your own video requires skill and understanding of basic photographic and sound recording techniques. You need to be familiar with the video camera, its operations and what its limitations are.

Video cameras used to record activities in the training room are relatively easy to control. Video cameras can be used to record and playback role plays for discussion and critique. Use a tripod. Your use of the video camera and playback equipment in a controlled environment can also serve as a good opportunity for some of the trainees to become familiar with how to use it.

Videos made outside this "controlled environment" are more of a problem. Cameras are often an intrusion into people's lives. Their presence tends to overwhelm and alienate people. Consequently, it may take you and your trainees more time to get video pictures of "true life" situations. People can however, adjust to the presence of a camera. Introduce them to the objective of the filming, how the camera is used and show them the results. Trust and confidence in the individual doing the filming is important.

If you are preparing a video to demonstrate a series of events or issues, you will need to prepare a script for the video. Scripts help you avoid wasting time, money and energy. Preparation of a script is an excellent way to involve your trainees in the development of the ideas, issues and themes you wish to cover. Their involvement is a training activity in itself. Test their understanding of the issues at hand, involve them in presenting a logical sequence of events, and involve them in the actual filming of the content. As the trainer, you will also benefit from preparing a script. It will force you to think through the sequence of events and topics you want to film in order to produce a clear and easily understood video.

SECTION 3 COMMUNICATION SUPPORT MATERIALS AND TECHNIQUES FOR COMMUNITY EXTENSION

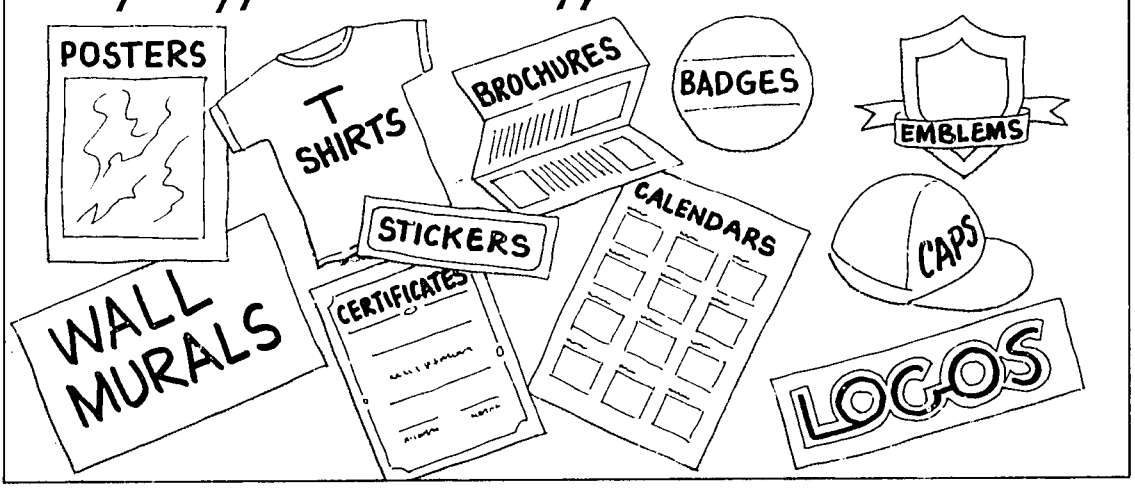
Communication Support Techniques and Materials can be used to encourage participation and help reinforce agroforestry messages. Selecting and using them provides exciting opportunities for project staff both to increase and to improve their communication with various community groups and individuals. The CSTM mentioned here are not the only ones you can use. Consider them and others for your agroforestry extension project.

Share information from this section on CSTM, the material in Section I and your own experience as a trainer with your trainees. This information should become part of your extension staff's understanding and knowledge about the development and use of CSTM for community extension.

Project promotion and support materials

These are materials which promote and increase awareness of the project, its supporters, participants and employees. Although not specifically designed to encourage discussion or dialog, they can play an important role in promoting and supporting aspects of the project's role and activities in a project area, and further afield.

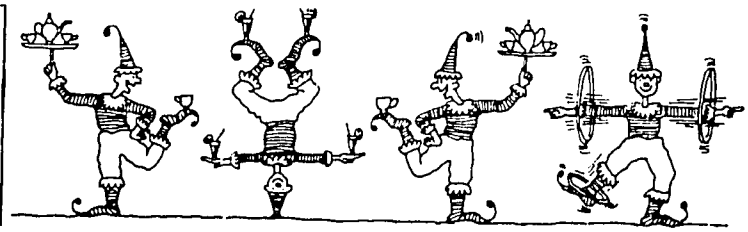
Examples of promotion and support materials are:-



These materials tend to be mass produced for distribution throughout the project area. In some instances however, they are designed and used for extension staff only. Their production will depend on your budget and the impact you wish to have on a particular group of people, or the general public. The type of communication these materials support tends to be one-way, often out of your direct control. They are meant to increase your project's profile and to stimulate more questions about what it is you are doing in the area. These materials help create awareness of the project and what it is doing.

These materials can be designed and used to create a sense of solidarity and identity with, and within, the project. They can also serve to reward and motivate participation in project activities, workshops, seminars, field days, festivals, etc. If you use these materials, be prepared for the many questions and requests which may come your way. These materials help create awareness of the project and what it is doing.

Drama



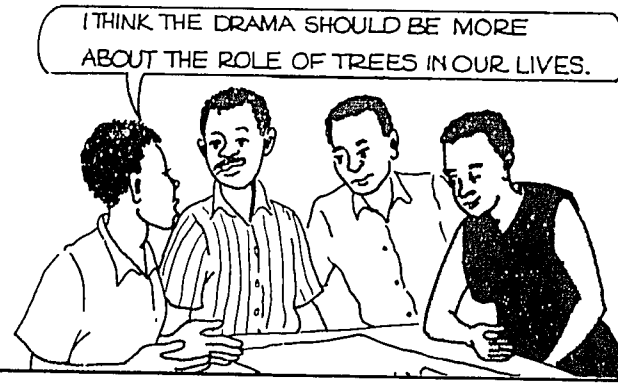
Drama can be one of the most exciting and effective ways to share messages, generate discussion, and influence attitudes and behavior. Drama is much like an extended role play. It has the advantage of focusing on local issues and in local languages. Your extension staff can be crucial in developing this medium, and can be catalytic in involving and training others in the community.

Characteristics

Drama is a good method for involving a variety of people in the development and presentation of ideas. Drama can present situations, behavior, attitudes, issues and activities like no other medium. It can cross over cultural, political and social lines that are considered delicate or unapproachable. It can incorporate humor, and is an opportunity for expression, imagination and creativity that has few other outlets. Drama, plays, story telling, mime, skits, dance, song and puppetry have played roles in many traditional societies and settings. Investigate the history and the possibilities for dramatic presentations in your project area.

How to develop and use Drama

INVOLVE YOUR EXTENSION STAFF IN DECIDING THE THEME, CONTENT AND ISSUES TO BE ADDRESSED BY THE DRAMA. THEY SHOULD HELP IN DECIDING THE ROLES FOR EACH OF THE CHARACTERS IN THE DRAMA.



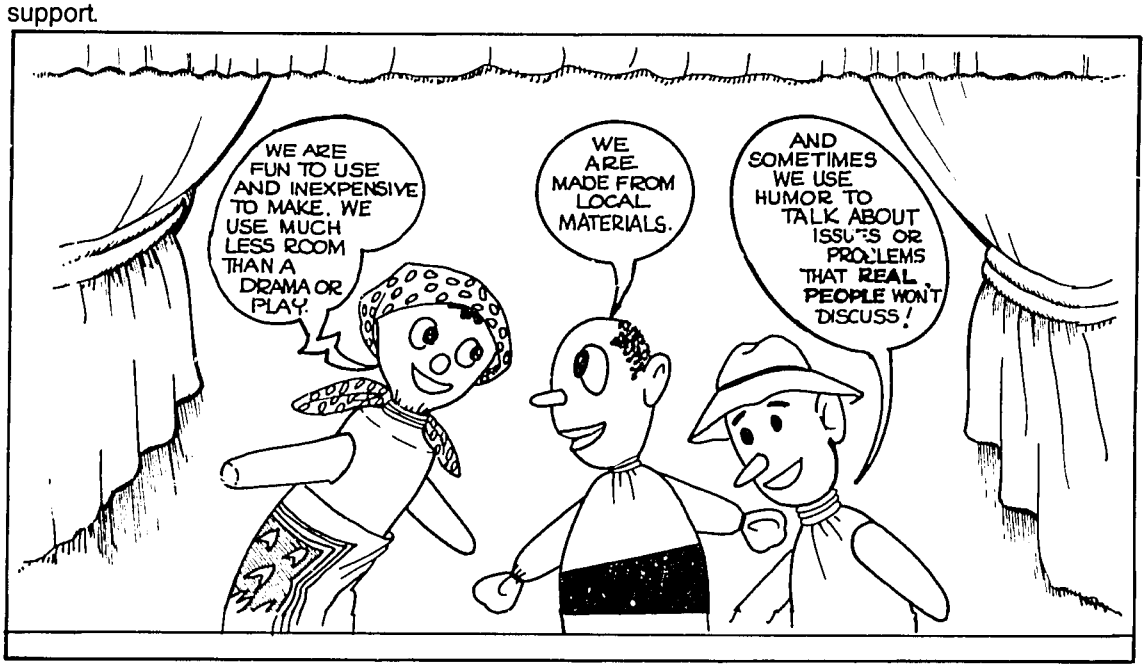
ENSURE YOUR MESSAGE IS CLEAR AND WELL UNDERSTOOD BY THE GROUP. AN OUTLINE OF THE DRAMA, OR A SCRIPT, IS HELPFUL IN GUIDING ITS DEVELOPMENT. THE SCRIPT SHOULD DESCIBE A SEQUENCE OF EVENTS AND IDEAS, AND SHOULD ENCOURAGE SPONTANEITY, IMAGINATION AND CREATIVITY ON THE PART OF THE ACTORS. LOOK FOR THE INDIVIDUAL OR INDIVIDUALS IN THE GROUP WHO ARE MOST CAPABLE OF INTRODUCING HUMOR AND ENERGY TO THE DRAMA, AND DRAW ON THEIR TALENTS.

DECIDE ON THE MATERIALS (PROPS) WHICH SUPPORT YOUR DRAMA. DECIDE ON A VENUE FOR THE DRAMA AND WHAT FORM OF ADVERTISEMENT YOU WILL USE. WORD OF MOUTH AND PUBLIC ANNOUNCEMENTS CAN BE VERY EFFECTIVE. USE EXTENSION VISITS TO PUBLICIZE THE EVENT. PRACTICE THE DRAMA BEFORE PRESENTING IT. THIS WILL HELP TO REDUCE ANXIETY OR UNSURETY ABOUT MESSAGES AND ROLES.

Most dramatic events are held in public halls or community common areas. Visit these areas well in advance to decide on how you will organize the venue. The time of day/night you present the drama will help determine what additional equipment or materials you will need, eg. public address system, curtains, stage, lighting, seating, etc... Ask the community to assist you to prepare the event.

If drama is an effective method for raising issues and delivering information to groups and communities in your project area, consider developing a professional drama group. These may involve local people who are encouraged, trained and assisted by the project staff. The availability of such individuals will help you determine how much staff time and effort you put into the formation of your own drama group, or work with others. It is important to note that drama and drama groups are one of the oldest and most successful forms of entertainment and education known.

Puppetry has also been tried with good effect in project communication and information sharing. The same rules apply to the development of good puppetry for project extension communication and support.



Newsletters

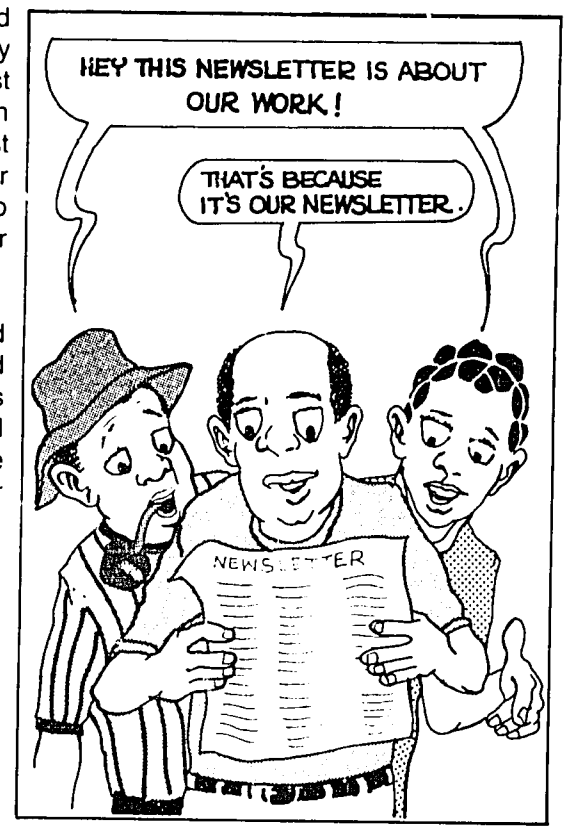
Characteristics

Newsletters have a variety of uses which can improve communication within the project and with people outside the project area. They can be used to maintain contact and provide information to people who the project does not see regularly. They can also be used to promote the project and its activities further afield, eg. government officers and offices.

How to develop and use Newsletters

Newsletters should carry information of interest to your target audience. You can produce your own materials or use those written by others. Articles or announcements concerning the project or related topics are good subject matter for newsletters. Events or important achievements related to the project and its participants help to make the newsletter's content more personal and relevant.

Newsletters should be simply produced and regularly distributed. They are improved by illustrations or pictures. Most importantly, the best newsletters present information which has been offered by the reader. Reader "feedback" is the best way to discover the impact and value of your newsletter. Reader feedback is also a way to determine how the information has motivated your readership.

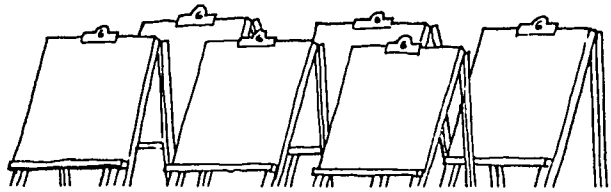


Good newsletters encourage feedback and comment. Too often newsletters are produced and distributed without any idea of who the material was designed for and how that information is being read and used. Remember your readership! They will be the ones who determine how effective your information sharing has been.

Your budget, the cost of production, and your access to reproduction facilities will help determine the format and style of your newsletter. If you can afford it, appoint a staff person or persons to collect information, organize and design material, and supervise production and distribution. The more complex the newsletter, the more staff and skills are necessary for its production.

Consider how the newsletter will be distributed. Postage or delivery costs are sometimes forgotten in the rush to develop and use a newsletter for project promotion and communication support.

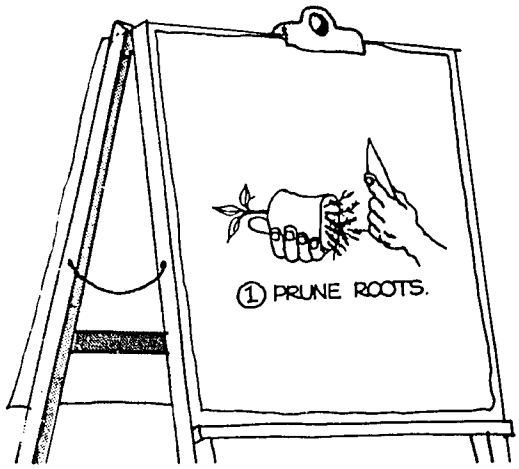
Flip charts



Flip Charts are believed to be one of the most simple and easiest CSTM to develop and use. They should, however, be designed and used with the same consideration as for other CSTM.

Characteristics

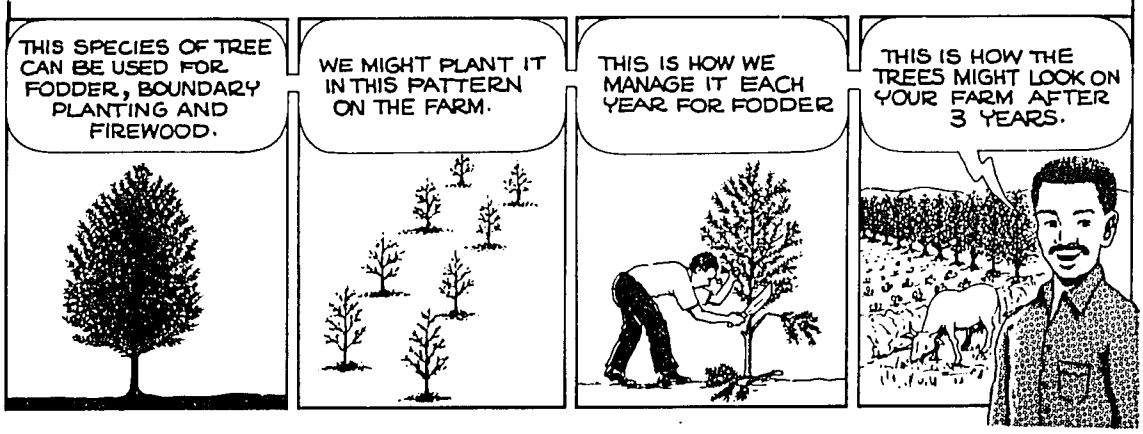
Flip Charts require very little equipment. They are a series of bound, heavy cards or sheets of paper, each with an illustrated message. They make limited use of language. Instead they focus on illustrations or diagrams of an object, an activity or a situation. They should be designed to be used as visual reference supporting a verbal presentation. They should increase awareness, provide new information and address how new skills may be used.



How to develop and use Flip charts

Flip Charts, like other CSTM, benefit from a script before they are produced. The trainer or project manager may develop a script on her own, or with the assistance of the Extension Workers who will make use of the materials. Involve your extension staff in developing flip charts. Their participation in preparing the script and the material, and in testing the material, will encourage familiarity and use of the flip charts as part of their community extension efforts.

It is important to identify simple messages or objects for illustration. Complex messages are best addressed if pulled apart and illustrated as a series of separate pictures. These can be placed together in the final illustration(s) to better effect once their separate parts are understood. Complex illustrations may take away from your message; they tend to make it difficult for your audience to understand the picture along with the message.



Flip Charts should be well thought out, tested for perception and comprehension, and well drawn. A good illustrator is a bonus here, especially one familiar with illustration or graphics for rural/farming audiences. Remember, not everyone sees what you see, especially when symbols or representative characters are used. You will have to test and adjust the content and your illustrations accordingly. Once you are happy with the results, and are convinced that flip charts can be effective tools in generating discussion as part of extension efforts, they can be reproduced in larger quantities by a printer.

N.B. A "good" artist in these cases, is very helpful but not always necessary. Often, such an individual is not available. Make sure staff and farmers participate, in the design of illustrations. This is an effective way to ensure comprehension of the pictures you do produce. Your materials will also be used more effectively than if they were not designed and tested.

Flip charts should be used for relatively small audiences. Your staff will want to arrange the group they are presenting to, so that everyone can see the flip chart easily.

REMEMBER:

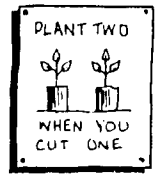
FLIP CHARTS ARE BEST USED TO ILLUSTRATE INFORMATION, SERVE AS A VISUAL REFERENCE OR REMINDER, OR TO MAKE A PRESENTATION MORE LIVELY. USE THEM TO GENERATE DISCUSSION. THEY ARE MORE EFFECTIVE IF:

1. THEY ARE ACCOMPANIED BY A SCRIPT, OR LIST OF KEY ISSUES FOR DISCUSSION.
2. EXTENSION WORKERS HAVE PRACTICED USING THEM THEM, PREFERABLY IN A ROLE PLAY.
3. THEY USE CLEAR, SIMPLE, TESTED ILLUSTRATIONS.
4. THEY MAKE LITTLE, OR NO USE OF WRITTEN LANGUAGE.
5. THEY ARE PROTECTED FOR REGULAR USE AND FROM WEATHER BY A PLASTIC COVERING.
6. THEY ARE STORED IN A FLAT POSITION AND DRY PLACE.
7. THEY ARE EASILY AND READILY TRANSPORTABLE.
8. THEY ARE EASILY HUNG-UP ON A HOOK, OR EASEL AND LEFT FREE STANDING.

WHEN YOU USE THEM, REMEMBER TO ADDRESS YOUR AUDIENCE AND NOT THE FLIP CHART

One of the most difficult parts of flip chart production is to (re)produce images. An effective way of doing this is to take a slide of the object, activity, or issue which you are trying to illustrate. With the slide, you can then project the image onto a large piece of paper and trace it. In this manner, you can eliminate details of background, texture, etc... and generate a fairly accurate representation. Strengthening the outline of the area/object of primary focus, adding color and detail, becomes a matter of practice, testing and interpretation. This is a quick, accurate and easy way of transferring images onto paper for extension education purposes. Many people with "limited talent" and a little practice can use this technique quite easily.

Posters



Posters are one of the most commonly produced CSTM. They are probably one of the most often used, and most often abused, CSTM. They are relatively easy to produce, but they are difficult to produce and use well.

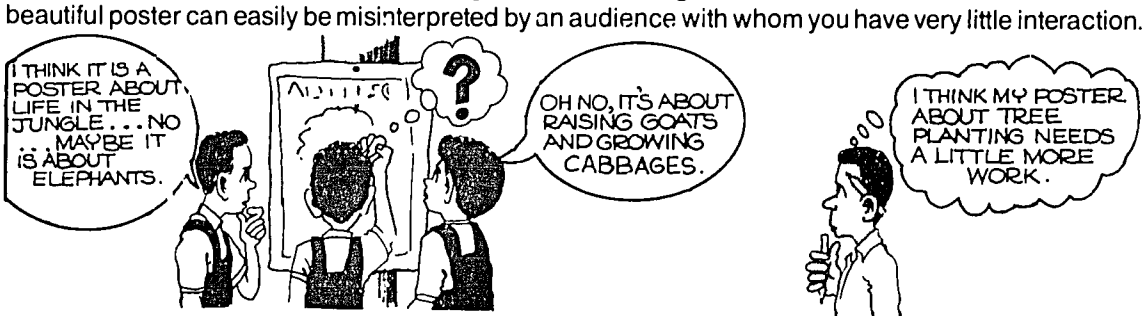
Characteristics

Posters are best used for project promotion, announcement and advertising. The best designed posters give simple information and simple illustrations to capture the attention of the audience. Posters provide information on events, services, or as part of a campaign. Posters are most often hung in public areas where they encourage public awareness of issues or activities supported by the project. They are a public service tool and should encourage people to seek additional information about the written and illustrated messages from project staff or informed community members. Complex poster designs and messages discourage an audience from using and responding to them.

How to develop and use Posters

Determine, with your extension staff, what aspects or messages of your project warrant the use of a poster. Develop a simple message and decide on the format and design of your poster. Determine the quantity of posters you will require, and where and how they will be distributed and hung. Determine the objective of designing and producing the poster. What will be accomplished by the poster and what response do you expect from the people who will see it?

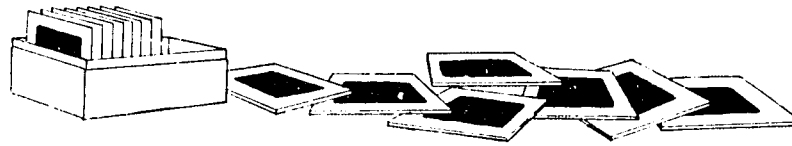
Test the design of the poster with a sample audience, especially if the illustration and message are designed to pass on new skills, encourage action or change attitudes and behavior. Even the most beautiful poster can easily be misinterpreted by an audience with whom you have very little interaction.



Add color to your poster. It will help make the format and the message lively. Choose your colors during the testing, and get feedback. Colors can have a strong impact on your audience and can attract or discourage them. Color reproduction of your poster is, however, more costly.

Posters which are used with supervision can be more complex. Posters can be made from charts, diagrams or illustrations when the subject needs a large format and regular reference and use. Posters for training or instructional purposes can be produced and hung in offices, training centers, or classrooms. Posters used for this purpose can be easily reproduced by hand or by using the slide projection technique described under Flip Charts.

Slides



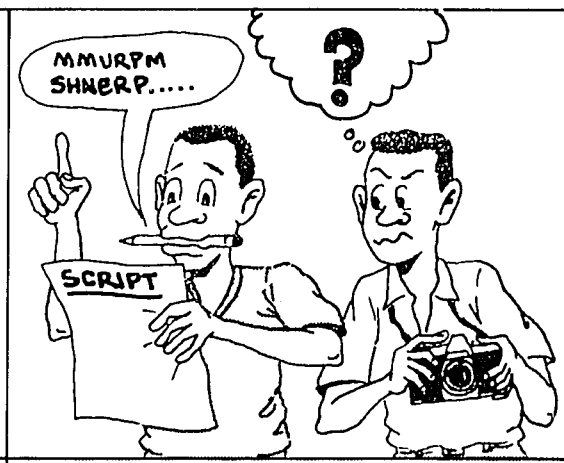
Slides, when well developed and presented, have great value as CSTM for community extension work. They are versatile. Their cost makes them a valuable tool for sharing information between the extension staff and the project's participants.

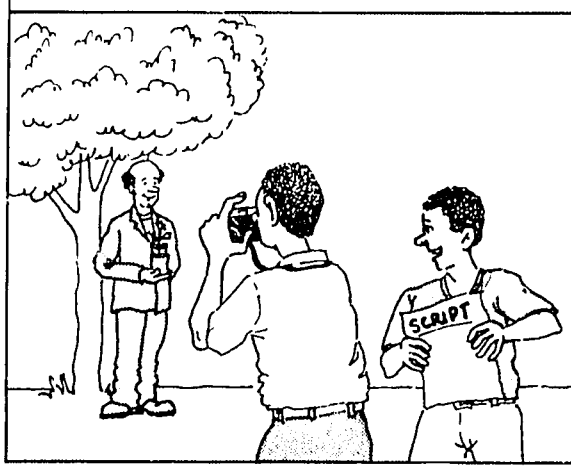
Characteristics

Slides or slide sets for community extension have many of the same characteristics as slides for extension staff training. They should be used to reinforce and enhance your extension activities. They should stimulate the exchange of ideas between your staff and farmers, visitors, officials or the general public.

How to develop and use Slides

PREPARE A SCRIPT AND A LIST OF CAMERA SHOTS YOU WISH TO TAKE WITH YOUR EXTENSION STAFF. THESE SHOULD ADDRESS A THEME OR ISSUE PARTICULAR TO YOUR EXTENSION MESSAGE. IDENTIFY THE SITES YOU WILL USE TO ILLUSTRATE EACH OF THE MESSAGES YOUR EXTENSION STAFF HAVE IDENTIFIED. THE SCRIPT CAN ALSO SERVE AS A GUIDE FOR THE EXTENSION WORKER WHEN MAKING HIS PRESENTATION.

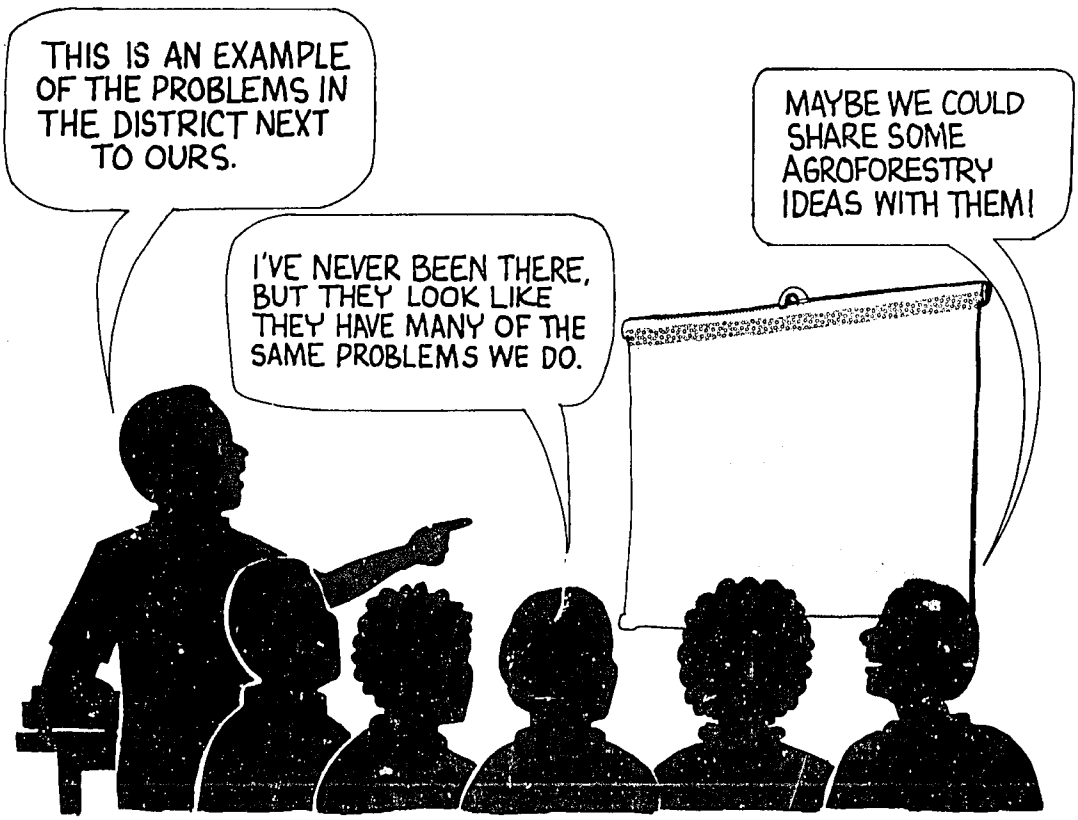




PHOTOGRAPH THE SITES, MESSAGES OR INFORMATION WHICH YOU WILL ILLUSTRATE DURING YOUR PRESENTATION. USE SHOTS OF LOCAL PEOPLE. THIS WILL MAKE IT EASIER FOR PEOPLE IN THE AUDIENCE TO RELATE TO THE MESSAGES AS WELL AS THE PICTURES. PEOPLE ENJOY SEEING THEMSELVES, AND IT MAKES COMPARISON OF PROJECT ACTIVITIES AND EFFORTS MORE RELEVANT TO YOUR AUDIENCE.

Your extension staff will require knowledge and skills with the camera and slide projection equipment. You may assign a staff photographer, or train several extension staff in the use of this equipment. The project staff may even wish to train some community members to use a camera, and use their pictures to help document efforts and activities in the community project sites.

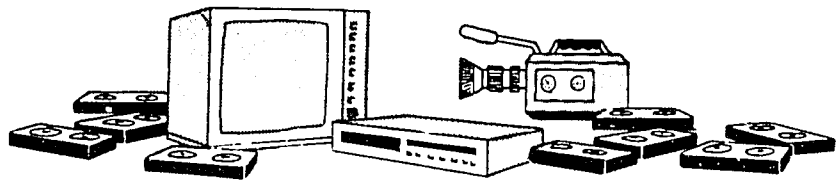
Try and keep messages and information simple and straight to the point. Keep your slide presentation short. Use slides to address information of local importance. You can use slides to document the various stages in a project's development, or use them to compare efforts between communities. Slides can also be an effective way of comparing environments or situations in different parts of the project area. An informative comparison can help people "visit" the area without having to make the trip. It will also allow people to become more aware of issues outside of their communities and better appreciate the issues and activities of others. Practice, test and revise your slide presentation as necessary.



Make sure your extension staff know how to use the equipment and are familiar with the conditions under which the slide presentation will be shown. Remember, the slide presentation should encourage discussion. Allow the audience time to respond. Proceed with the slide presentation as slowly as the audience and the discussion demands. Be prepared to help discussion and to practice REAL communication.

Consider the use of slides for audiences other than rural communities and farmers. Slide presentations can be used for orienting and introducing visitors and donors to your project and its activities. Slide presentations can also be used for providing information to government offices and officers.

Video



More sophisticated and with more problems than slides, video can still be used as a communication support material for community extension. To use it effectively as a community extension tool requires practice and experimentation. Some projects have tried to teach both extension staff and community members how to use video. The results of these efforts are mixed. Consider the use of video for visitor, donor or government orientation and education.

Characteristics

Video requires skilled use of the equipment to produce results which result in effective communication. Video for community extension is a problem because both the equipment and the technology are capable of overwhelming the rural audience and the extension staff. Most video projection equipment can only address a small audience; the size of the audience is determined by the size of your TV screen. There is however, an advantage in using video because it produces instant pictures for viewing. Consider using video in a controlled environment, as the projection equipment is still fairly fragile. Video can be used to document and demonstrate new skills, provide information and awareness, and address the attitudes and behavior of your audience.

How to develop and use Video

There are two potential uses for video in community extension. One is for project documentation. Video used in this fashion can provide a record of project development and community participation. The video images and the sound recording can be used to document the progression of events or activities, as well as record interviews with project participants. The results of this effort can be shared with a variety of different audiences. Select information and issues which will be most relevant to your audience. Prepare a script or guidelines before you begin filming. If you have sufficient time and money, you can record a wide variety of subject matter and then edit it for each audience, later.

Another application of video is for community extension and extension communication. Perhaps its greatest potential is in farmer-to-farmer extension. Through video, farmers can share with one another their ideas and experiences as they relate to messages the project is trying to promote. Farmers should be encouraged to talk about their problems, activities and successes in the project knowing their comments will be shared with other farmers. You and your extension staff can make this exchange of ideas more beneficial if you have prepared some guidelines for discussion in advance of the video filming.

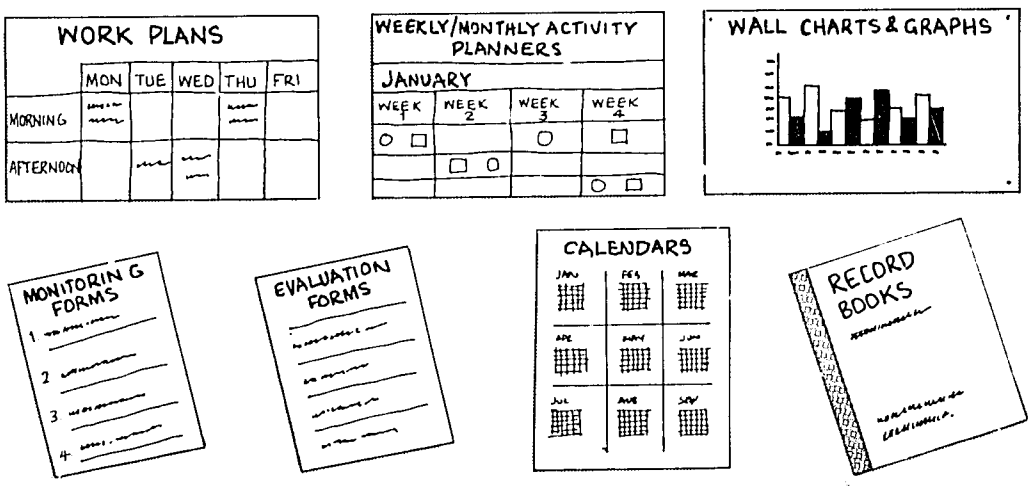
You should identify the sites and individuals you will film and who will be doing the filming. After filming, show the farmer what you have recorded.

Given the fragile nature of the video projection equipment, select a safe and easily controlled environment for presenting the video. The possibilities of using video as part of a mobile extension unit, using a generator or the vehicle's battery as a source of power, are beginning to be explored. Video projection equipment can be run from solar panels.

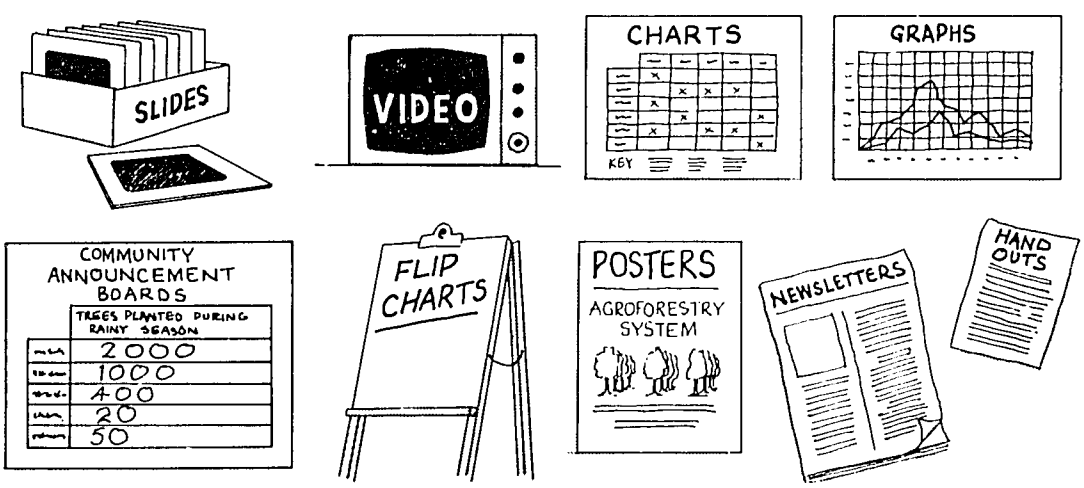
SECTION 4 COMMUNICATION SUPPORT TECHNIQUES AND MATERIALS FOR PLANNING, MONITORING AND EVALUATION

CSTM play a role in project planning, monitoring and evaluation. They can play an important role in both information collection and information sharing in the project. Good information collection and information sharing materials and methods encourage greater community participation and management of the project's activities.

Examples of CSTM which can be used for information collection are:



Examples of materials which can be used for sharing information collected with the assistance of your extension staff, farmers or community are:



Methods for information sharing are also important. Consider the use of community or farmer group meetings, extension staff meetings, drama, field trips, role play, etc...

Characteristics

CSTM for project planning, monitoring and evaluation are characterized by two stages:

STAGE 1

THE FIRST STAGE INVOLVES PEOPLE IN THE COLLECTION OF INFORMATION IMPORTANT TO THE PLANNING, MONITORING AND EVALUATION OF THE PROJECT, ITS ACTIVITIES AND RESULTS.

STAGE 2

THE SECOND STAGE INVOLVES THE SHARING OF INFORMATION BASED ON THE COLLECTION EXERCISE AND ITS RESULTS.

Each project has a challenge to use communication methods and materials for effective planning, monitoring and evaluation. The people who will use CSTM should be involved in designing the materials, and be trained to use them.

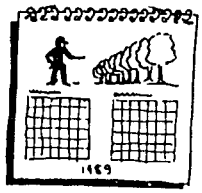
Remember the characteristics of your audience when developing information collection materials. In selecting and designing any materials, make sure that the user understands:

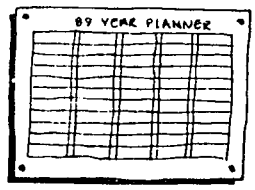
- **THE NEED FOR THE IMFORMATION, AND MATERIALS USED TO COLLECT IT**
- **WHAT IS ACCOMPLISHED BY USING THESE MATERIALS**
- **HOW THEY WILL BE USED**
- **HOW OFTEN THE MATERIAL IS EXPECTED TO BE USED**
- **HOW AND WHERE THE RESULTS OF THIS INFORMATION WILL BE SHARED**

Make sure that the purpose of collecting information is related to the communication characteristics you are trying to develop in your project. Use extra time to include people in the collection and sharing of this information. Effective involvement of staff and the community members will help ensure the quality and accuracy of the information collected. It will also encourage more effective sharing, and action based on its results.

See Module 7 for examples of planning, monitoring and evaluation forms for project staff.

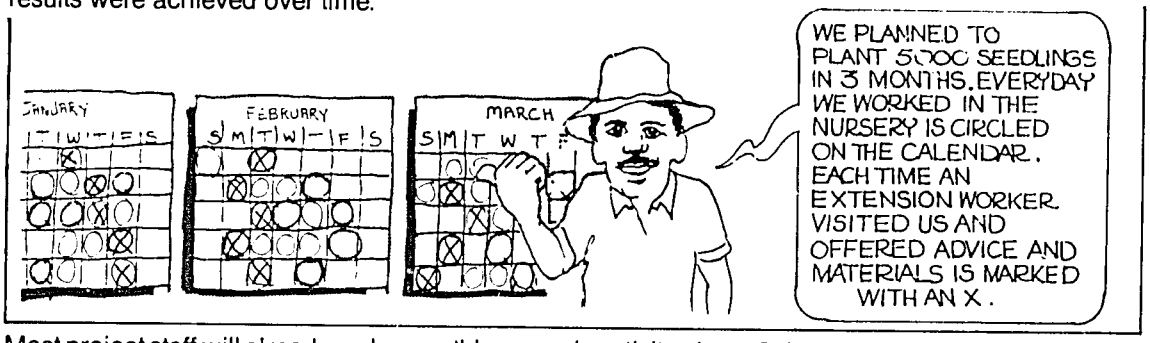
Calenders





Planners

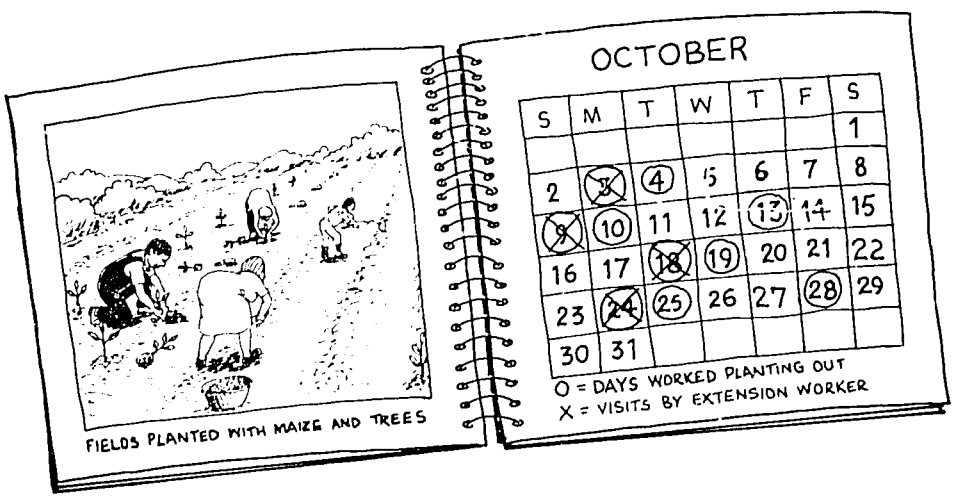
Calendars can be used as a CSTM to combine pictures with a tool commonly used to measure time. Calendars can be used by farmers and community members to plan and monitor activities. Calendars can be designed and used to encourage participation in planning and monitoring. They can also be used as a tool for the measurement of how much time and materials were put into the project, and what results were achieved over time.



Most project staff will already make monthly or yearly activity plans. Calendars, however, are proposed as a way of getting project participants and project staff more involved together in planning and monitoring. Almost everyone likes to have a calendar. Frequent reference by both Extension Workers and farmers to the calendar can make planning and monitoring easier.

You can use calendars to plan and monitor a variety of different activities and events with groups of individuals. Encourage your extension staff to participate in developing calendars for use with project participants.

Consider what pictures may be used as visual reminders of activities or cycles in the project. You may want to include annual crop cycles and extension activities related to these activities. Perhaps you can use a picture from a flip chart. Using the same picture more than once helps to reinforce the picture and the message associated with it.



Choose the best way to present the measurement of time. You can use a monthly, yearly or seasonal format. In most instances, monthly formats work best as many people are most familiar with calendars that show one month at a time.

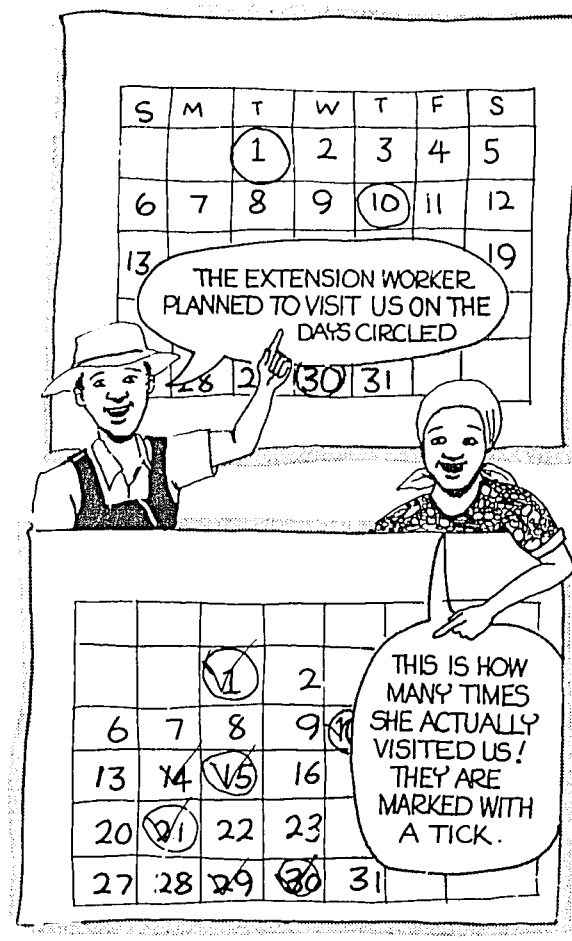
Decide on what types of information you will collect and monitor with farmers or groups. Determine how the calendar will be introduced and how to train people to use it.

Example

Suppose you wish to help groups plan and monitor the frequency of your visits. The calendar can be used to show the time of your visits. Each visit can be noted by a circle or a tick on the date and time of each visit.

Use each visit to explain what is expected to happen by the next visit, what you are expected to do, and what the farmer or group is expected to do. Sharing this information gives both extension staff and groups/farmers an idea of time, activities and tasks during their time apart. It forms the basis of an agreement and a plan between visits. Think of ways you might record these agreements on the calendar (writing, symbols, colors, etc.). Group or farmer use of the calendar presents a chance for monitoring your activities, plans, and agreements.

You may wish to record other events and activities on the calendar. Some calendars might want to record government visits, holidays, holy days, births, planting periods, or harvesting periods. Keeping these records can help you become more familiar with families and communities. Using calendars to plan and monitor activities can also help you and individuals/groups identify different obligations and demands made of each others time.



Project staff may also wish to share the use of the calendar to coordinate activities, events, and avoid competing for farmers time.

Other information sharing methods

Some people refer to what goes into projects and activities as **"inputs" "Outputs"** usually refers to the results of our combined efforts and inputs. Many people in agroforestry projects find both **inputs** and **outputs** difficult to record. This is especially true for farmers or groups. It is a challenge to get project staff involved in measuring and monitoring the **inputs** and the **outputs** of activities. Some projects involved in helping farmers record and monitor this information have taught project participants to use stickers, colors, symbols or characters to indicate **inputs** and **outputs**. These techniques and materials have been used to get groups and individuals involved in measuring and recording their efforts and their results.

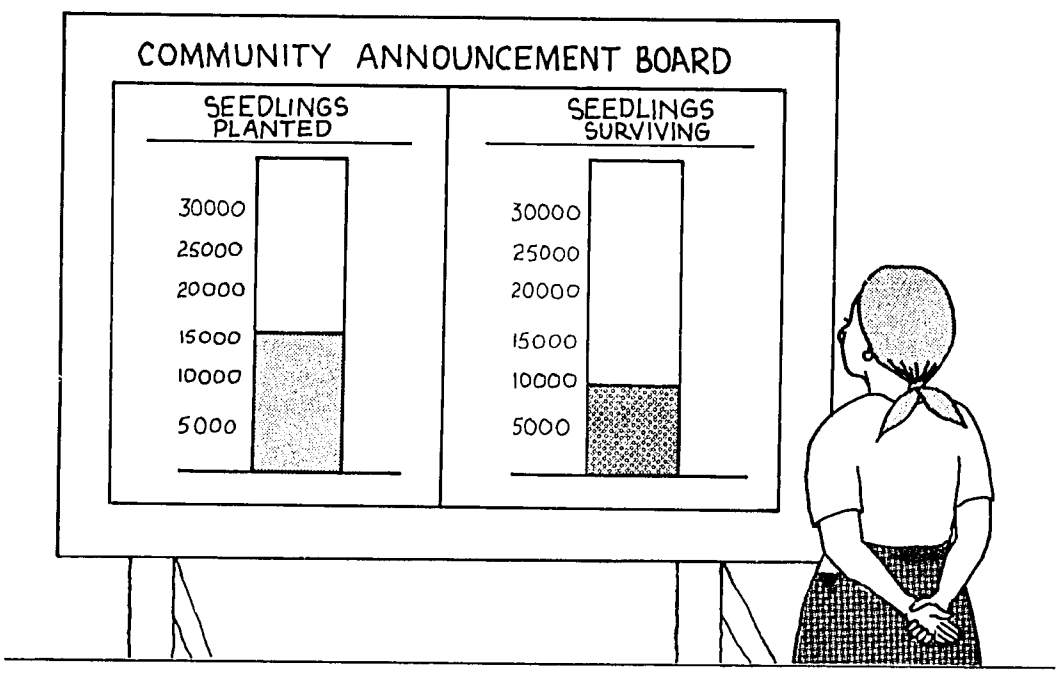
INPUTS TO OUR PROJECT.

- TIME – HOURS/ DAY WORKED
- MATERIALS – TOOLS, TRANSPORT, POLYBAGS SEEDS, SOIL, WATER.
- LABOR – HOW MANY PEOPLE WORKING.

OUTPUTS FROM OUR PROJECT

	BEFORE	AFTER 2 YEARS
– CROP YIELDS	30 SACKS	100 SACKS
– MONEY	150	500
– FIREWOOD	40 BUNDLES	80 BUNDLES
– POLES	100	400
– SEEDLINGS	1000	5000
– FRUIT	20 SACKS	50 SACKS

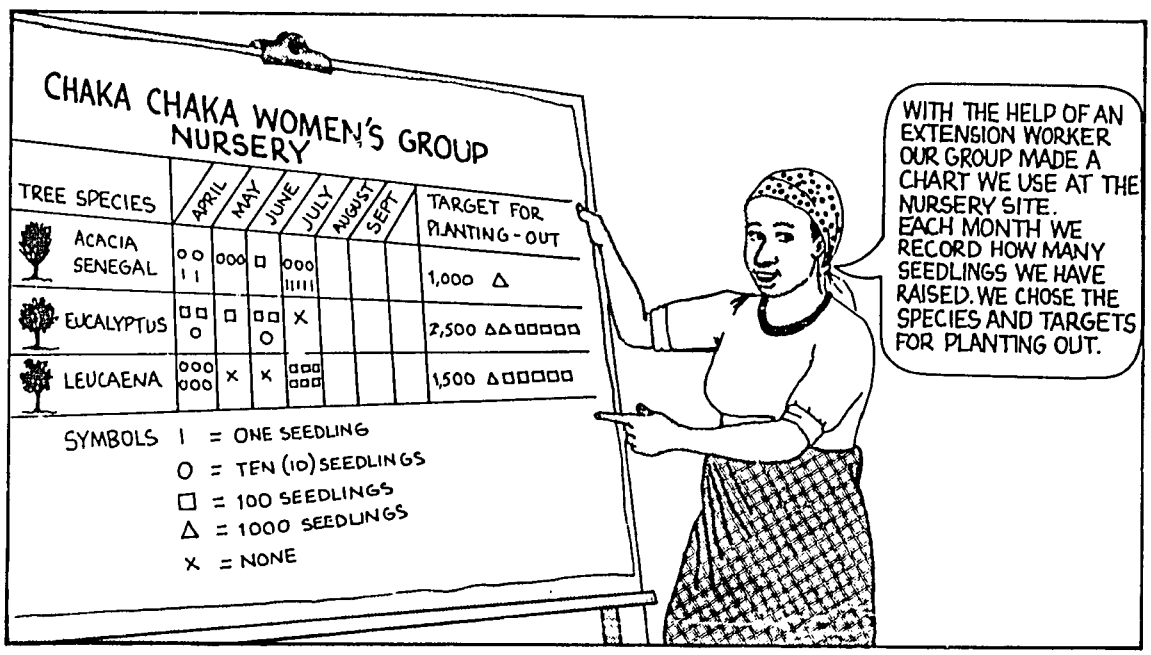
Consider how you might encourage groups or individuals to identify and record information for themselves and others. Project staff will want to assist project members in this exercise, to confirm what they do, reaffirm its importance and check for accuracy.



You may also wish to consider the use of community or village announcement boards to share the results of community involvement and effort. This not only publicizes results, it can help build a sense of community pride and ownership.

Community meetings are also an effective technique for sharing the results of information collection, project monitoring and evaluation. Use the other examples of CSTM in this section to share information and the results of monitoring and evaluation activities. It is important to share the results of any monitoring and evaluation activity with project participants, especially if your project has involved them in the planning and the development of objectives.

Develop and use CSTM to improve the role of groups/farmers in information collection and sharing. Consult non-formal/adult education workers for suggestions on how to involve project participants in the process. Seek their assistance in designing monitoring and evaluation materials which will involve farmers in the recording of information. They can also assist you in training farmers to use them. Help project members to assume the role and responsibility for planning and monitoring their own progress. Your use of CSTM should stimulate and improve the exchange of information. It should contribute to the participant's understanding of the project and the success of **their** efforts in **their** project.



AGROFORESTRY

EXTENSION TRAINING SOURCEBOOK

MODULE 5
Land Use Diagnosis for Agroforestry

MODULE 6
Agroforestry Design

MODULE 7
Planning, Monitoring and Evaluating Agroforestry Extension Activities

CARE

TRAINING MODULE 5 LAND USE DIAGNOSIS FOR AGROFORESTRY

INTRODUCTION

The material in this Module will help you teach your agroforestry extension trainees how to assess needs and opportunities for agroforestry development in your project area.

This Module stresses the importance of diagnosing land use problems based on an appreciation of local social, cultural and environmental situations. This approach to land use diagnosis is meant to generate support for agroforestry ideas and activities among your staff and potential project participants.

Land Use Diagnosis used in agroforestry is an assessment of land use system characteristics and performance. The objective of diagnosis is to identify constraints within the system that prevent it from working to its maximum potential. Problems of land use include both immediate production shortfalls, and long-term sustainability problems.

Using Land Use Diagnosis and the results it produces, the project team will have a basis for determining how agroforestry can best be applied or adapted to address land use and production problems. Land Use Diagnosis is the basis for agroforestry design.

CONTENTS

There are six Parts in this Module

Part 1 introduces the purposes, approach and methods involved in Agroforestry Diagnosis. It includes the following lessons:

Lesson 1 Introduction to Diagnosis

Lesson 2 Steps in Agroforestry Diagnosis and Roles of the Project Staff

Part 2 is concerned with developing a profile of the project area. Lessons include:

Lesson 3 Identifying Information Needs for a Project Area Profile

Lesson 4 Ranking Information Needs for a Project Area Profile

Lesson 5 Identifying Information Sources and Collecting Information for a Project Area Profile

Lesson 6 Conducting Interviews of Qualified Informants

Lesson 7 Classifying Agricultural Land Use Systems

Lesson 8 Training Project Area Profile Report Writer(s)

Part 3 is about Group Interviews in the Agroforestry Diagnosis Survey. It contains the following lessons:

Lesson 9 Purpose of Group Interviews and Roles of the Interviewer

Lesson 10 Information for a Group Interview (Stage 1: Knowledge-Building)

Lesson 11 Practicing the Stage 1 Group Interview

Lesson 12 Characteristics of the Group Interview (Stage 2: Motivation)

Lesson 13 Practicing the Stage 2 Group Interview

Part 4 is about the On-Farm Diagnosis Survey. Lessons include:

Lesson 14 Purpose of the On-Farm Survey

Lesson 15 Designing the On-Farm Survey

Lesson 16 On-Farm Survey Interview Techniques

Lesson 17 Conducting an On-Farm Survey

Lesson 18 Coding the Questionnaire

Part 5 is about identifying agroforestry tree species. Lessons in this Part include:

Lesson 19 Identifying and Describing Local Agroforestry Species

Lesson 20 Making an Inventory of Agroforestry Species

Part 6 is about analyzing information obtained through Diagnosis activities. It contains one long lesson:

Lesson 21 Causal Diagramming

DIAGNOSIS PART 1.

The material in Part 1 will introduce trainees to the idea of diagnosis. Our use of diagnosis is based on the International Council for Research in Agroforestry's (ICRAF), Agroforestry Diagnosis and Design (D&D) methodology. Trainees will see how diagnosis fits into the project approach and will learn of its importance as the foundation for project design. They will also learn of the important relationship between diagnosis for knowledge-building and for farmer motivation. Trainees will get an overview of components and characteristics of the agroforestry Land Use Diagnosis process.

The two lessons in Part 1 require about half a day to conduct. This does not include the time you must spend in preparing for these lessons.

Lesson 1 INTRODUCTION TO DIAGNOSIS

OBJECTIVE

Trainees will be able to explain why and how diagnosis is considered useful to the agroforestry development process. They will be able to describe how diagnosis relates to agroforestry design.

Trainees will be able to explain why diagnosis is important at the household level and why it is based on a "basic needs" approach. They will be able to list categories of "basic needs" of farming households and use them in the Agroforestry Diagnosis process.

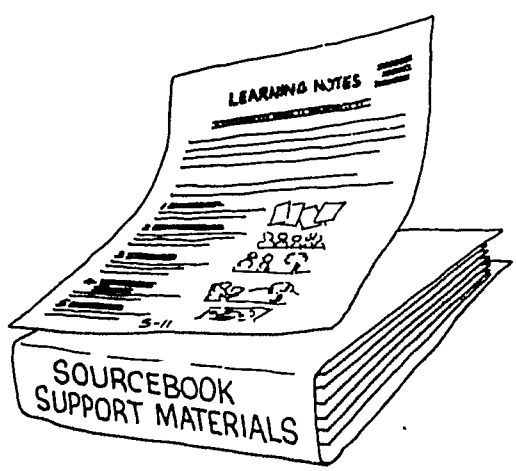
METHOD

The lesson consists of a presentation and a facilitated discussion. It will require one to two hours depending on the amount of discussion generated.

EXAMPLE

Prepare

Prepare a presentation to introduce Agroforestry Diagnosis using the LEARNING NOTES in this lesson entitled, Introduction to Agroforestry Diagnosis. Refer also to SOURCEBOOK SUPPORT MATERIALS (5-1) and (5-2).



Consider the following points as you prepare your presentation:

Diagnosis is part of ICRAF's methodology for Agroforestry Diagnosis and Design (D&D). D&D is a six stage, 15 step process. (SOURCEBOOK SUPPORT MATERIALS (5-2) pages (12-17).) Diagnosis for agroforestry extension projects, as presented in this Module, are drawn from ICRAF's Steps 3, 5, and 6.

Raintrees's paper was written for an audience of researchers. Although D&D is a process that can be conducted by trained and supervised Extension Staff, the literature and manuals published to date are not aimed at this level. Experience in agroforestry extension projects, however, shows the concepts of diagnosis to be easy enough for extension staff to consider.

Diagnosis, in essence, is a "common sense" approach to working with farmers. It is the basis for helping them choose activities and techniques to improve their livelihoods. Consider it your challenge to present this material in terminology and in doses that your trainees can comprehend.

Facilitate

Deliver your presentation and facilitate a discussion. Explain the concepts and procedures of diagnosis by asking the trainees questions whose answers require reference to the points you want to make. In other words, have them understand the reasoning before the terminology.

Sample

You may ask the trainees:

> "If you were to observe an unusual tree species growing well on a nearby farm, and you wanted to know if that were a good species to recommend to other farmers, what would you first like to know about it, before recommending it?"

Once you have a list of responses, suggest they be grouped into the three categories that allow you to make points about productivity, sustainability and adaptability. These are three important criteria for any agroforestry species and important to consider when recommending tree species for local agroforestry design.

Summarize

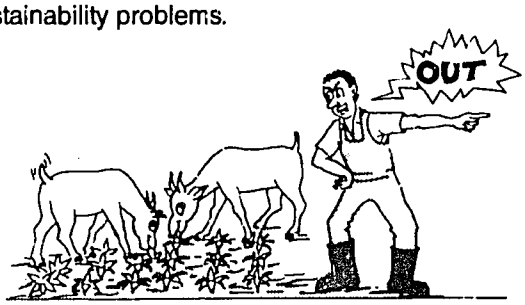
Summarize your discussion and your presentation. To help summarize this lesson on Diagnosis, give trainees copies of the LEARNING NOTES for this lesson. Tell them to put these in their Training Workbooks. Ask them to read them before your next meeting.

Reassure your trainees that diagnosis will be more easily understood through practice. They do not have to absorb it in a day.

LEARNING NOTES

INTRODUCTION TO AGROFORESTRY DIAGNOSIS

Diagnosis used in agroforestry is an assessment of the performance of land use systems. The objective of diagnosis is to identify constraints within the system that prevent it from working to its maximum potential. Problems of land use include both immediate production shortfalls and long-term sustainability problems.



IMMEDIATE PRODUCTION PROBLEMS

LONG-TERM PRODUCTION PROBLEMS

Diagnosis is a systematic way of looking at land use systems, their problems and their potential. When we use Land Use Diagnosis for agroforestry, we are interested in:

How people use the land to meet their needs
How well they use it
What problems prevent them from using it better

In diagnosis, the first challenge is to describe and characterize land use systems. Next, we identify problems and assess them according to the farmer's expectations. This includes what he wants to produce, and how much. Problem identification from the viewpoint of farmers helps us see the constraints in their use of the land and relationships among problems they have.

The farmer and the farm is the land use system of most common concern to an agroforestry extension project.

Groupings within the farming community also provide important perspectives into broader land use production objectives, problems and opportunities. The community perspective has an important place in our diagnosis for agroforestry.

When we use diagnosis to determine production objectives, we need to ask farmers questions about their use of the land and its ability to meet their basic needs for:

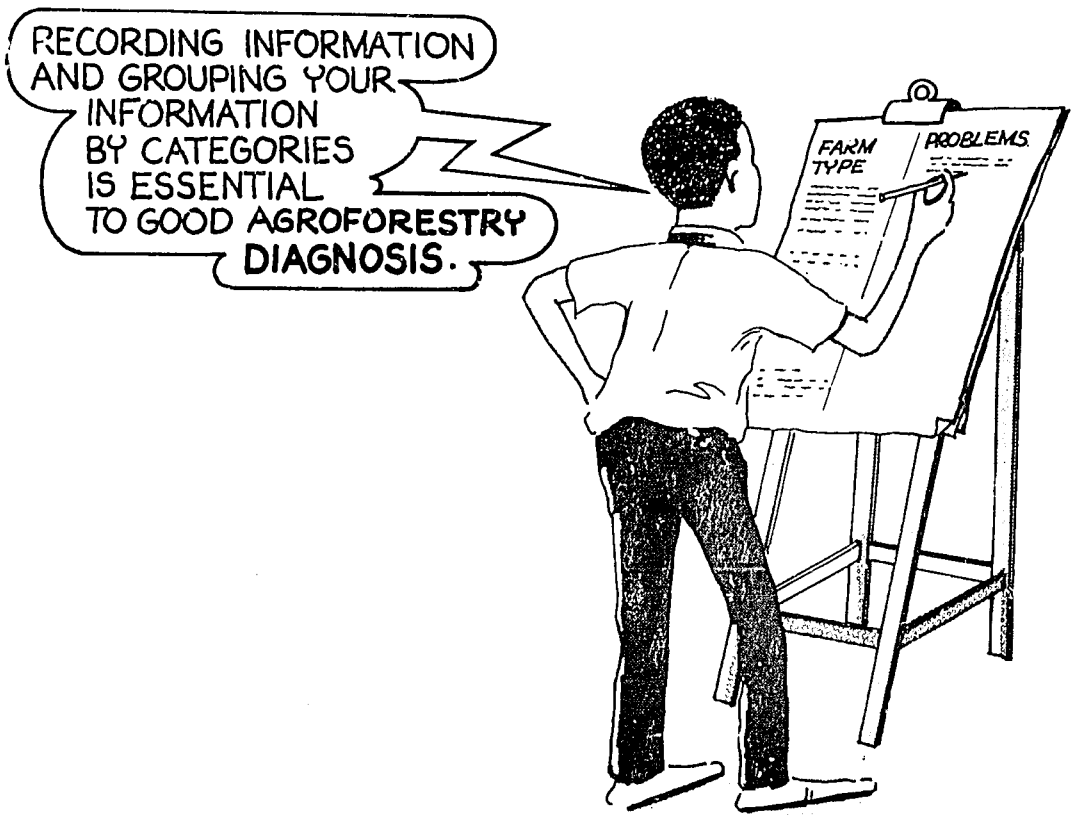
FOOD•FUEL•WATER•MONEY•
BUILDING MATERIALS

As Extension Workers, we aim to improve existing land use systems through agroforestry. We want to be sensitive both to how the problems appear today and to underlying, longer term, larger scale aspects of the problems. Farming households may not be as aware of the large-scale problems or may feel they have little control over them.

Agroforestry Diagnosis gives Extension Staff and the farmer insight into both productivity and sustainability aspects of the local land use system.

Agroforestry Diagnosis is on-going and it is flexible. The project team decides which information is needed early in the process and which information can be gathered later. Information about which production problems are key in the area is important to have early in the diagnosis process. It is difficult for us to collect and analyze all the information about all aspects of a land use system right away.

Keep in mind that you will understand much more about land use and land use systems through your presence and experience in the project area. Some of you will come from the area and others will have studied about it, or about similar land use systems. Your biggest challenge will be to record and catalog information effectively for land use diagnosis.



Lesson 2 STEPS IN AGROFORESTRY DIAGNOSIS AND ROLES OF THE PROJECT STAFF

OBJECTIVE

Trainees will be able to identify the five major steps of Agroforestry Diagnosis. They will be able to describe how diagnosis for knowledge-building purposes relates to diagnosis for community motivation, and to distinguish between the two extension roles.

METHOD

The lesson consists of a presentation and facilitated discussion. It will require one to two hours.

EXAMPLE

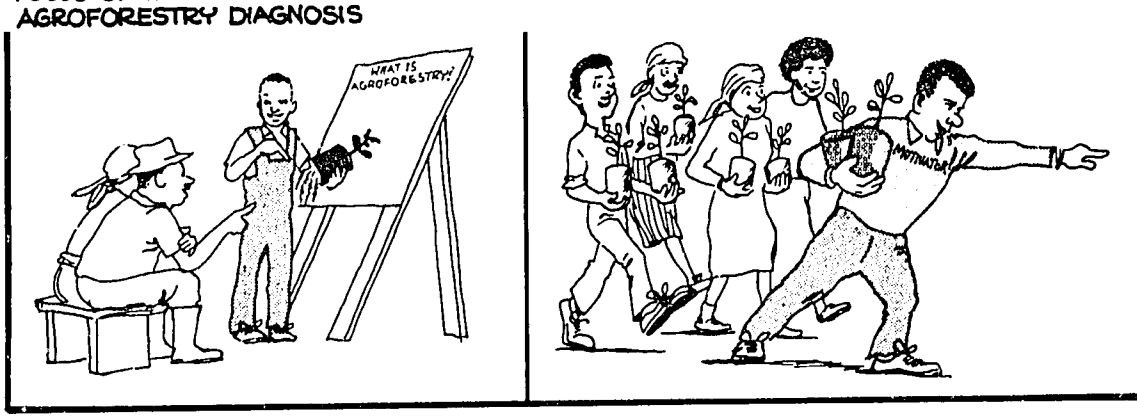
Prepare

Prepare a presentation based on the LEARNING NOTES of this lesson entitled, Overview of Agroforestry Diagnosis. Refer also to SOURCEBOOK SUPPORT MATERIALS (5-2).

Facilitate

Deliver your presentation by outlining the five stages of Agroforestry Diagnosis.

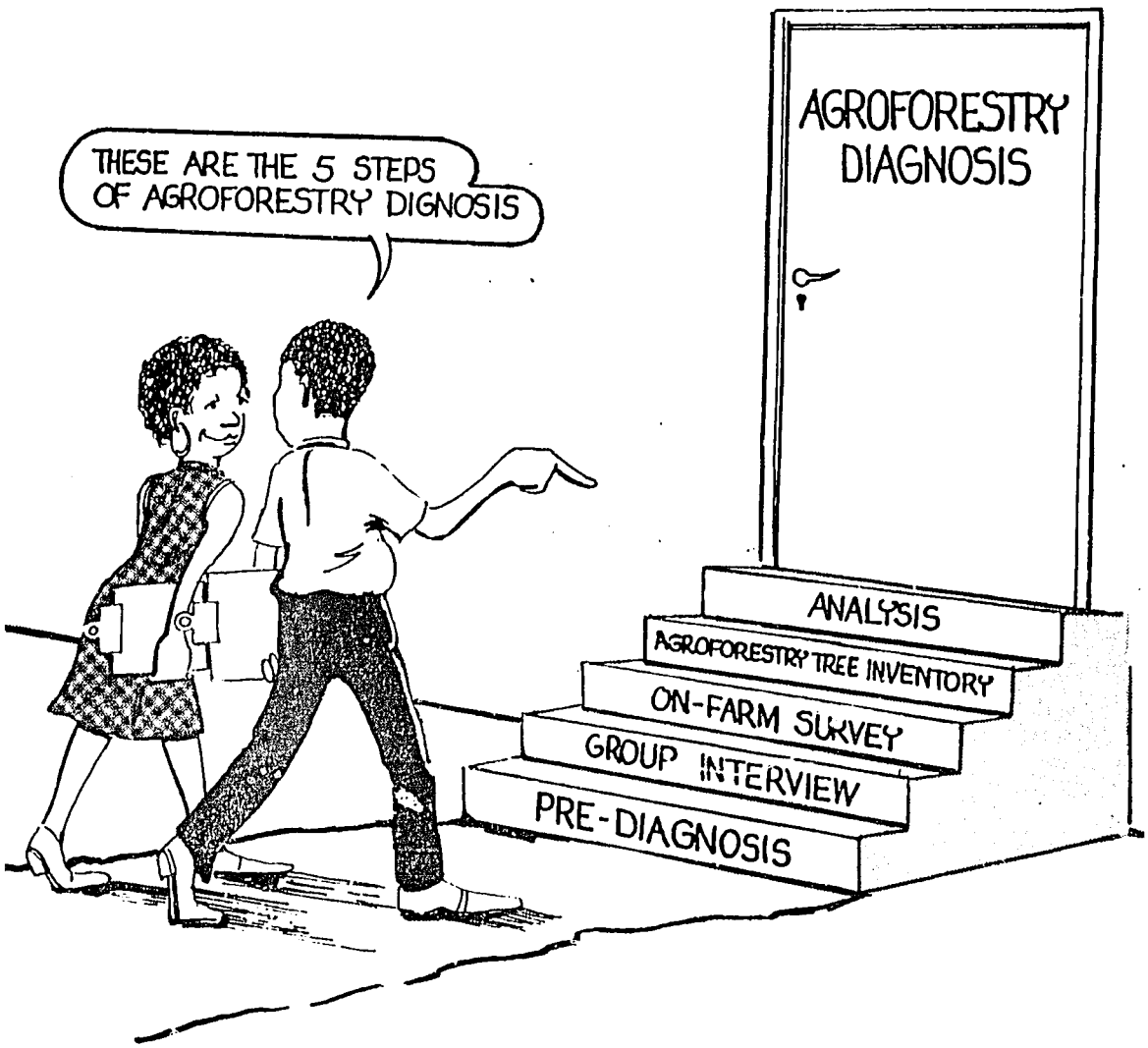
FOCUS ON THE EXTENSION WORKER'S ROLE AS KNOWLEDGE-BUILDER AND AS MOTIVATOR IN AGROFORESTRY DIAGNOSIS



Summarize

Summarize by telling the trainees that the guidelines you are using are materials originally prepared for scientific researchers. The use of D&D in an extension project context is relatively new. You will be relying on their feedback to help decide what information is important to the project and most easily understood by them.

Emphasize that you will be learning together as you go. They will evaluate the procedures related to Agroforestry Diagnosis and adapt them according to their experience and needs.



LEARNING NOTES

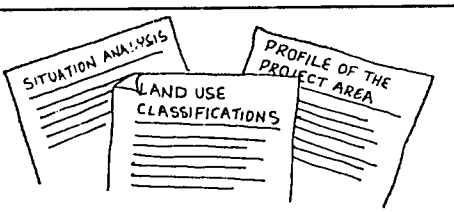
OVERVIEW OF AGROFORESTRY DIAGNOSIS

In our introductory discussion on Agroforestry Diagnosis we considered the purpose and key characteristics of Agroforestry Diagnosis. Now we want to focus on the specific steps and activities that make up the procedures of Agroforestry Diagnosis.

We also want to look at the different roles we play in these procedures.

Land use diagnosis for agroforestry extension projects can be divided into five major steps. These are:

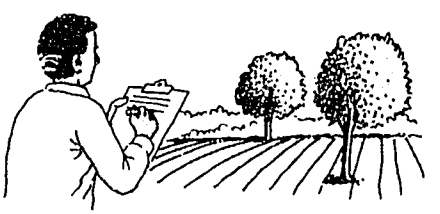
1 PRE-DIAGNOSIS
Land use classification and profile of the project area.



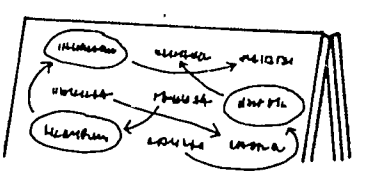
2. GROUP INTERVIEW
Community level assessment of land use problems, production constraints, and roles of trees in farming systems.

3. ON-FARM SURVEY
Household level assessment of land use problems, production constraints and roles of trees in farming systems.

4. AGROFORESTRY TREE INVENTORY
Assessment of local trees and shrubs for agroforestry potential.



5. ANALYSIS
Linking problems, constraints and agroforestry opportunities through causal (cause and effect) diagramming.



STEP 1. PRE-DIAGNOSIS

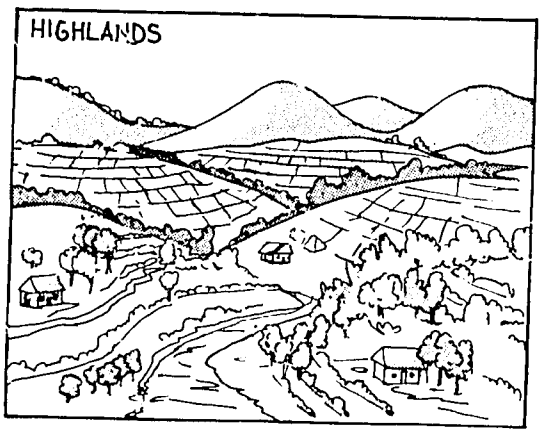
Pre-diagnosis involves defining the land use system in which we are working. We are looking for descriptions of biological, physical, social and economic characteristics of our project area. These should indicate how the system works.

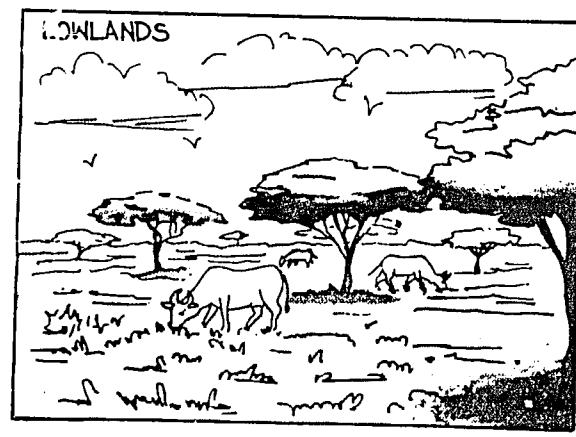
We want to know about major aspects of our project area in terms of:

LANDSCAPE CHARACTERISTICS | **HOW FARMING IS ORGANISED** | **WHAT IS PRODUCED**

By analyzing these major aspects, we can define specific land use types, or domains, within our project area. Within the different domains, we can expect different types of problems, and the potential for different types of agroforestry interventions.

For example, one part of our project area may be in the highlands. The land there may be steep, the climate moist, and the temperatures cool. The land there may have been cleared recently, and soil fertility is relatively high. Human population is dense, and there is little livestock.





Another part of our project area may be in the lowlands. There the climate is hot and dry. Soil fertility is low from overcropping and overgrazing. Human population is sparse, and livestock density is high.

The people in each domain face problems trying to make a living from these two areas. These problems can be quite different. During training, we will examine such differences and what they mean in terms of the need and the potential for agroforestry.

Information for pre-diagnosis comes from printed papers, reports and observation. Information also comes from interviews with people who know a lot about the area and are good at sharing this information. We will consider what kind and how much information we need for pre-diagnosis and how to get it from:

WRITTEN MATERIALS | **PERSONAL INTERVIEWS** | **OBSERVATIONS**

STEP 2. GROUP INTERVIEW

The group interview is the first of two components of the Agroforestry Diagnosis survey related to the farmer.

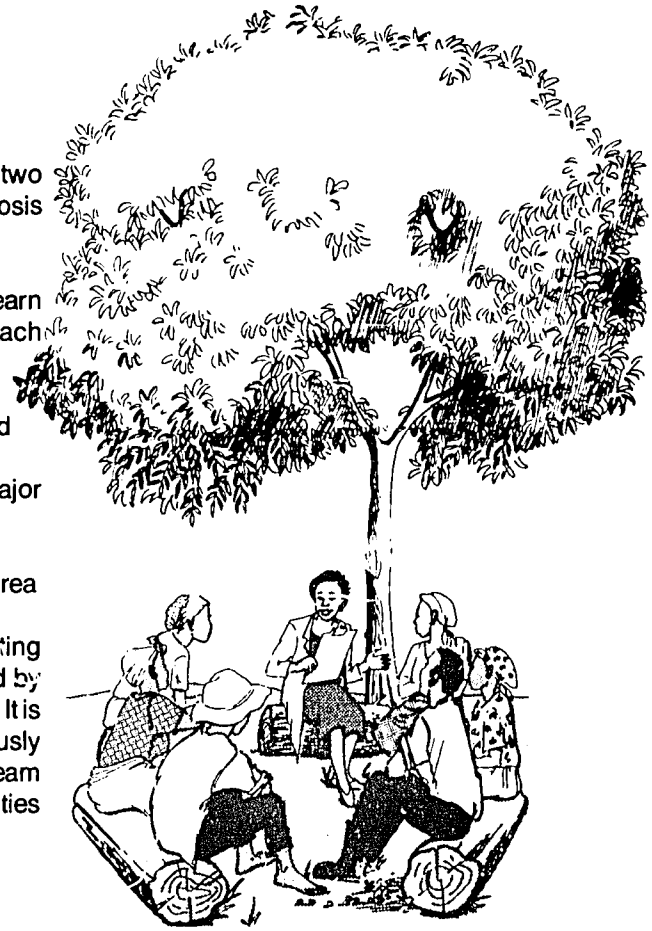
The purpose of the group interview is to learn from the community of farmers within each domain:

How they earn their living from the land

What they consider to be their major problems in trying to do so

How trees and shrubs are used in the area

Group interviews take place with existing groups of farmers or with groups organized by the project team specifically for this purpose. It is best, if possible, to meet with previously organized groups with whom the project team can work on agroforestry development activities later.



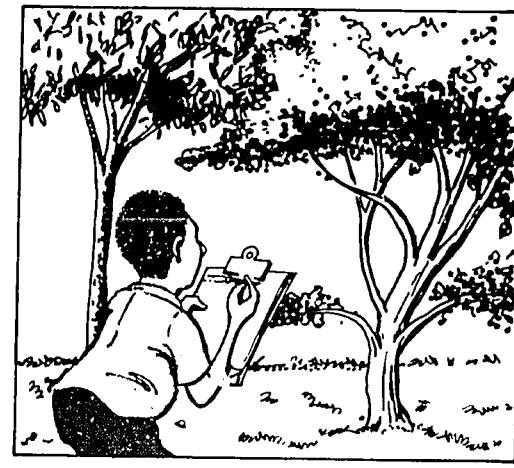
STEP 3. ON-FARM SURVEY

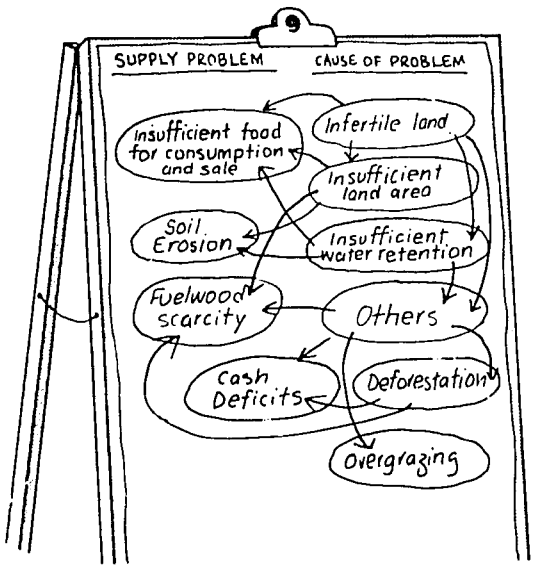
This is the third procedure of Agroforestry Diagnosis, following the group interview. Our purpose is to increase our understanding about problems facing individual farmers within each domain. We learn more about roles of trees in farming systems.

We also learn how the information from an on-farm survey complements information from the group interview. Good on-farm interview techniques are needed for this part of Agroforestry Diagnosis.

STEP 4. LOCAL TREE INVENTORY AND ASSESSMENT

Agroforestry Diagnosis involves learning about trees and shrubs in your project area (and surrounding areas) that may have applications in your project's agroforestry systems. We will consider what we need to know about trees to decide if they are components of agroforestry systems already, or if they might be good agroforestry species. We will learn how to identify trees, and to record information about them which is relevant to agroforestry design. We also will consider the value of basing our agroforestry project on local knowledge.





STEP 5. ANALYSIS (CAUSAL DIAGRAMMING)

The analysis of data, collected from surveys, will help to show interrelationships among factors that contribute to production and sustainability problems. We use causal diagramming in order to do this. Information which results from causal diagramming provides a basis for the systematic assessment of the potential for agroforestry interventions.

We will learn how to use causal diagramming as a tool to analyze the outcome of our Agroforestry Diagnosis surveys for potential agroforestry designs. Causal diagramming is a tool for studying the link between the causes of problems and their effects.

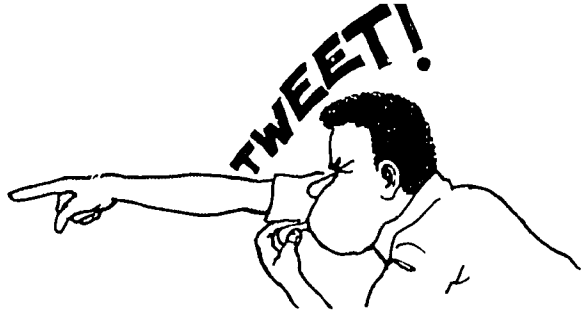
THE ROLES OF EXTENSION STAFF IN AGROFORESTRY DIAGNOSIS

We have looked at the 5 steps involved in Agroforestry Diagnosis. Now consider the roles that you will play as you and the rest of the staff participate in this process.

Diagnosis for agroforestry project development requires that the extension team adopt two distinct, but complementary roles.

First is the role of the KNOWLEDGE-BUILDER. In this role you collect and assess information so you will know your project area better.

Second is the role of the MOTIVATOR. In this role you stimulate, encourage and teach people.

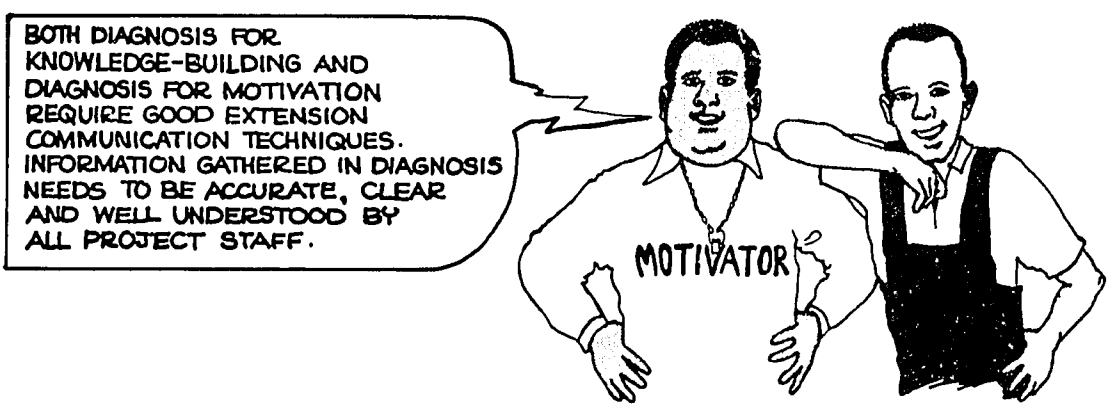


As a knowledge-builder, you are most active in project activities which are developing in a "new" area. Relatively little is known by project staff about the farming systems and the types of problems that farmers are experiencing.

AS ***KNOWLEDGE-BUILDERS***, PROJECT STAFF GATHER AND ASSESS INFORMATION ABOUT LAND USE SYSTEMS IN THE PROJECT AREA AND HOW WELL THEY WORK TO MEET THE NEEDS OF THE PEOPLE LIVING THERE. ON THE BASIS OF THIS INFORMATION, THE PROJECT DEVELOPS HYPOTHESES, OR BEST GUESSES, ABOUT HOW AGROFORESTRY MAY BE DEVELOPED AND APPLIED TO ADDRESS THE PROBLEMS IDENTIFIED. INFORMATION FROM DIAGNOSIS IS USED TO CREATE AN INITIAL SET OF AGROFORESTRY DESIGNS, TO FIT THE LAND USE PROBLEMS IDENTIFIED.

AS ***MOTIVATORS***, YOU ARE INVOLVED IN USING AGROFORESTRY DIAGNOSIS PROCEDURES (GROUP AND ON-FARM INTERVIEWS) AS TECHNIQUES FOR ENCOURAGING PARTICIPATION BY FARMERS AND FARMING GROUPS IN DECISION-MAKING ABOUT AGROFORESTRY DEVELOPMENT IN THE AREA. YOU ALSO SEEK TO VERIFY THAT AREA-WIDE INFORMATION COLLECTED APPLIES TO FARMERS WHOM YOU WORK WITH DIRECTLY. YOU WORK WITH THE FARMER TO 'FIT' AN AREA-WIDE DIAGNOSIS TO HIS SPECIFIC SET OF CIRCUMSTANCES. THEN YOU HELP HIM SEE THE REASONS AND THE MEANS FOR ACTING TO IMPROVE HIS SITUATION.

By the time you have finished these training activities, you will appreciate that, although there are distinctions between diagnosis for knowledge-building and diagnosis for motivation, the two are part of the same process. There is never a clear distinction between a project's learning and action phases. The two are components of the on-going project Diagnosis and Design.



DIAGNOSIS PART 2.

The lessons in this Part of Module 5 will involve your extension trainees in planning and implementing a profile of social and physical characteristics of your area. If this training occurs after the project has completed a baseline assessment, you may prefer to place less emphasis on methods for doing an area profile, and focus on the content of the existing profile.

The six lessons in this part require about one and one half days to conduct, excluding preparation time. This does not include the time that may be required to actually write the project area profile (Lesson 8).

Lesson 3 IDENTIFYING INFORMATION NEEDS FOR A PROJECT AREA PROFILE

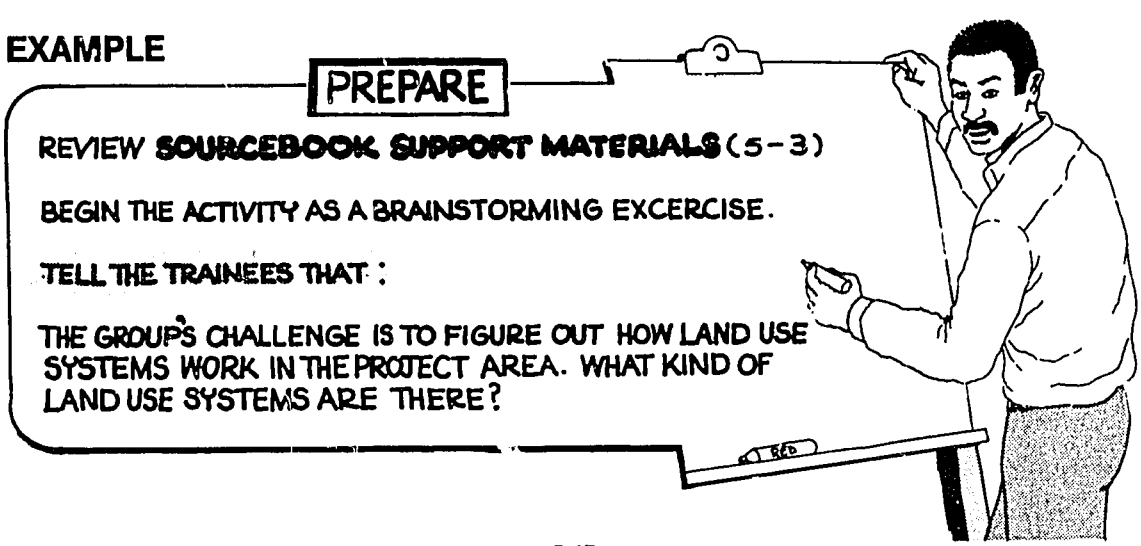
OBJECTIVE

Trainees will be able to list and categorize types of information needed to develop a profile of the project area for Diagnosis and Design purposes.

METHOD

The lesson consists of a facilitated brainstorming exercise. Have newsprint and markers available to record ideas. About an hour is required.

EXAMPLE



With this information, we will begin to determine what kinds of changes in land use are desirable or feasible and how we can make them work better. We will also determine what role agroforestry could or should have in the project area.

We need to consider what kind of information we need to describe and assess land use systems for this purpose.

Facilitate

Organize the trainees into pairs. Have them discuss, for about 15 minutes, what information is required. Each pair should record what information is required.

Use newsprint to record each group's list of information required to learn about land use systems. Synthesize all the lists into a common list. Feel free to contribute yourself. Make sure that trainees understand why each piece of information is included. Facilitate discussion as necessary.

Have the entire group assign each item on the list to one of the following categories:

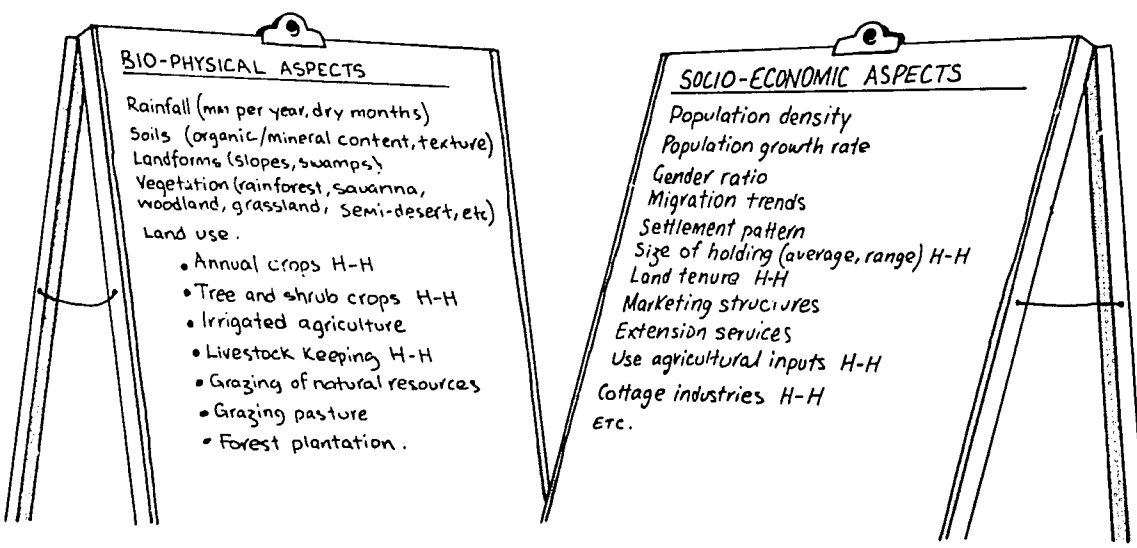
1. BIO-PHYSICAL ASPECTS

2. SOCIO-ECONOMIC ASPECTS.

Then, consider which information is particularly relevant at the household level. Indicate these with an H-H next to each item. These are aspects for which information may best be collected during the Agroforestry Diagnosis Survey, rather than during this stage.

Summarize

Your output should be two lists, with certain items on each marked with an H-H. Tell trainees that in the next lesson they will determine which of these many aspects of a land use system are really important for our purposes.



Lesson 4 RANKING INFORMATION NEEDS FOR A PROJECT AREA PROFILE

OBJECTIVE

TRAINEES WILL BE ABLE TO DESCRIBE WHICH INFORMATION ABOUT A PROJECT AREA IS MOST ESSENTIAL TO HAVE. THEY WILL ALSO IDENTIFY WHICH INFORMATION WOULD BE 'NICE' BUT LESS NECESSARY TO KNOW FOR THE PURPOSE OF AGROFORESTRY DIAGNOSIS AND DESIGN.

METHOD

The lesson consists of a small group exercise and a presentation by the trainer. The trainer also provides a synthesis of small group outputs. Have newsprint and markers available. The lesson requires about one and one half hours.

Prepare

Obtain the list produced during Lesson 3 of this Part. Examine SOURCEBOOK SUPPORT MATERIALS (5-4).

Facilitate

Tell trainees that the task is to rank each item on the list, on a scale of 1 to 3, with respect to priority of importance for the project's Diagnosis and Design purposes.

Before they begin, remind them of the purposes for generating the information

1 To distinguish between land use systems in our project area. We want to describe, generally, if land use practices within the area vary to a significant extent and how.

2 To make our first assessment of constraints and problems associated with each important land use system.

3 To make our first assessment of agroforestry potential for each important land use system.

4 To help us begin to formulate questions about characteristics and problems of different land use systems for the next stage of Agroforestry Diagnosis. For which aspects will household information be important?

Ask pairs of trainees to rank each bio-physical and socio-economic aspect on a scale of importance, where 1 is highest and 3, lowest. This task should take about 15 minutes.

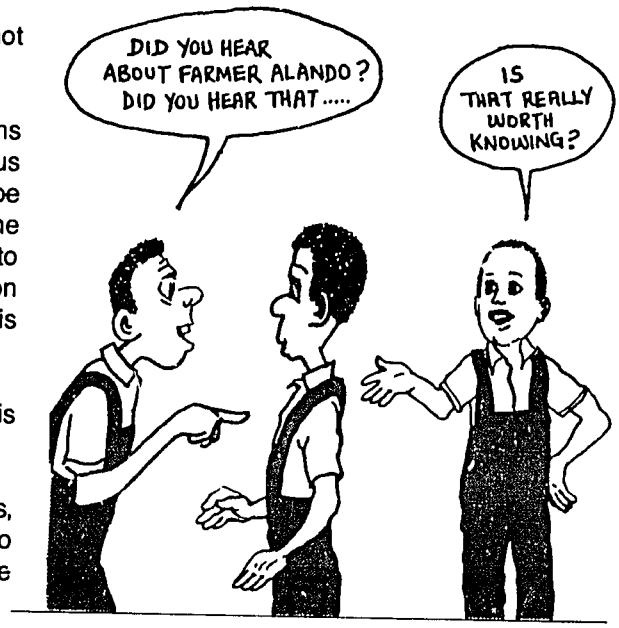
Assemble the group again.

Introduce the concept of...knowing what is not worth knowing. Explain:

To describe and characterize land use systems in all their detail would require enormous amounts of information. A lot of time can be used to get this information. Since project time for this type of activity is limited, it is important to consider the difference between information that is NICE to have, and information that is NECESSARY to have.

Ask them to keep the idea of knowing what is not worth knowing in mind as you continue.

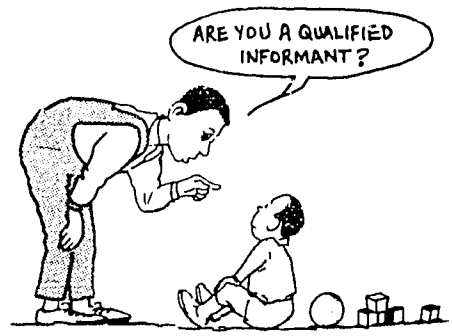
Using the outputs of the small group tasks, create a common list of ranked factors. Try to reach consensus among the groups. Contribute your own thoughts and reasoning as well.



Summarize

Now that we know our information requirements, the next task is to obtain this information about our project environment.

Lesson 5 IDENTIFYING INFORMATION SOURCES AND COLLECTING INFORMATION FOR PROJECT AREA PROFILE



OBJECTIVE

Trainees will be able to list information sources for aspects of land use systems identified in Lessons 3 and 4. They will be able to describe strategies and demonstrate techniques for obtaining information from qualified informants.

METHOD

Brainstorming, facilitated discussion and role plays are used in this lesson. LEARNING NOTES and ROLE PLAY SCRIPTS are provided. Have newsprint and markers available for brainstorming. The lesson requires about two and one half hours.

EXAMPLE

Prepare

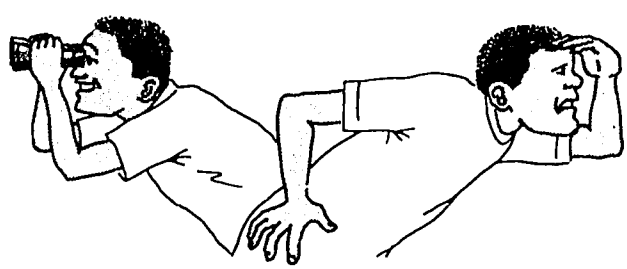
Review the LEARNING NOTES of this lesson, Using Qualified Informants to Develop a Land Use Profile of your Project Area. Review, also, SOURCEBOOK SUPPORT MATERIALS (5-4).

Facilitate

Have the trainees brainstorm a list of information sources for the land use system characteristics identified in Lessons 3 and 4. Record these on newsprint.

Fit the sources suggested into the following three categories:

OBSERVING; WATCHING WHAT PEOPLE DO AND WHAT LANDSCAPES / FARMING SYSTEMS LOOK LIKE.



ASKING PEOPLE QUESTIONS.

EXAMINING RECORDS AND DOCUMENTS.

Ask the trainees:

What do you consider to be advantages and disadvantages of each method?

List their responses.

Help them summarize their responses in terms of:

AVAILABILITY

EXPENSE (COST/TIME)

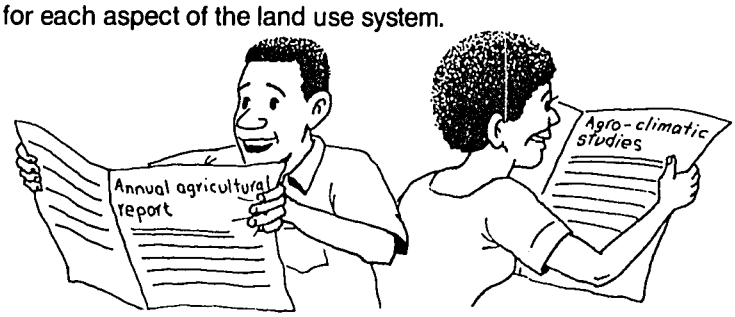
RELIABILITY

Stress the need for efficient information collection, especially during the project area profile stage.

List the best sources of information for each aspect of the land use system.

Have your trainees consider:

regional land use studies/plans
energy/woodfuel surveys
annual agricultural reports
agro-climatic studies
forest resource inventories, etc.



There may also be documents associated with studies or plans that have little to do, directly, with agroforestry. These can contain very useful information about land use systems in your project area.

Introduce the concept of **qualified informants**. Base your presentation on the first two pages of the LEARNING NOTES in this lesson. Present the NOTES after the Role Play has been conducted.

Organize a Role Play from the ROLE PLAY SCRIPT for this lesson, Interviewing a Group of Qualified Informants.

When the Role Play is finished, have the actors and the rest of the training group critique it. You can use the points highlighted in the LEARNING NOTES as guidelines for the critique.

Organize another Role Play to illustrate a more positive approach to information collection.

After the second Role Play, arrange for trainees to practice conducting interviews of qualified informants. In your practice sessions, focus on introducing yourself and on dealing with people who have their "own agenda" in interview meetings. Use the same Role Play setting, and try an improved approach.

INTERVIEWING A GROUP OF QUALIFIED INFORMANTS

Setting

The role play shows a project staff member seeking information for the project area profile. He is using a group of "qualified informants" from the area whom he organized for a group interview. Members of the group have been selected on the basis of their titles. They appear the types of people who should be able to help supply information. He has met some of them, but has not had in-depth discussions with any of them.

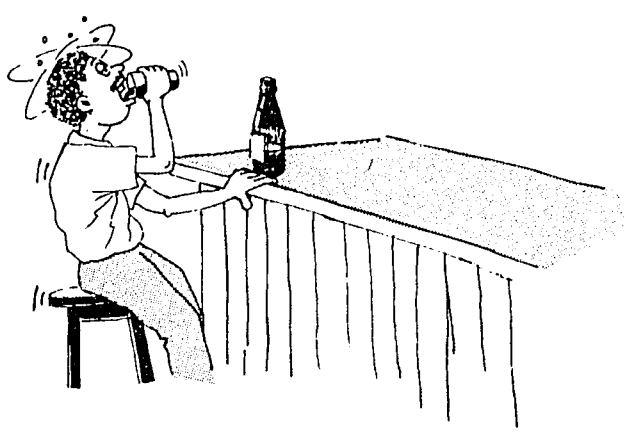
Role of Agroforestry Project Staff Member

You arrive at the meeting with your interview schedule and begin immediately to ask questions rapidly. You are interested in information about:

- climatic (rainfall and temperature) patterns in the area, how they have changed over time and current status
- population patterns and recent trends
- the land tenure situation
- major and minor cash crops, and subsistence crops grown in the area, and changes in production over time
- agricultural development projects operating in the area
- the fuelwood supply situation in the area

Role of interviewees in the group

Trainees should act these roles.

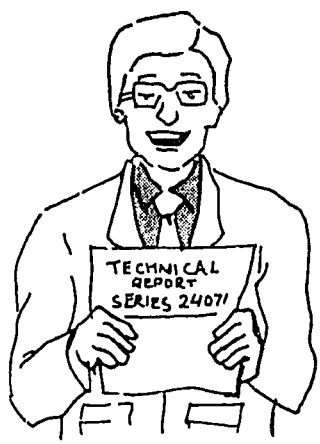


An Agricultural Development Officer. You spend most of your time in bars.

A Home Economics Officer. You have organized a local women's group to promote tree-raising as an income generation activity. You are having trouble with the Community Development Assistant, who is trying to take over the group for his own purposes.

A Community Development Assistant. You are interested in starting a water project in this area. You have heard the interviewer's project assists water projects. You plan to use the meeting to seek support.

A local Chief or other Official. You want to be in control of everything and claim to know everything.



A "European" Agroforestry Researcher. You mainly look at technical details. You do not know much about the people the agroforestry project is designed to help.

LEARNING NOTES

USING QUALIFIED INFORMANTS TO DEVELOP A LAND USE PROFILE OF YOUR PROJECT AREA

Qualified informants are people who have in-depth, personal knowledge about important aspects of your project area. They may or may not reside in your project area. They have studied about it or worked in it. They may include officials, planners, researchers, teachers or other professionals. They may also be farmers.

Agroforestry project staff may find it useful to rely heavily on these people for obtaining information because:

- It is often easier than trying to discover documentation on your own. If the informants know of documents to support their statements, they will refer them to you.
- Their information is likely to be more up-to-date than documented information.
- You are likely to get more information about current problems or issues in the area.
- You encourage the participation of important figures with knowledge about and/or interest in the area. You are developing opportunities to obtain their guidance and support of the project.

Some disadvantages of relying too much on qualified informants include:

- The possibility that there is no one available with information about certain topics or issues.
- The possibility of bias in the information you receive. Qualified informants can have different points of view.
- The information they have will not be as broad or in-depth as you may desire. It may not be based on facts that you need for objective information gathering.

WE CAN OVERCOME POTENTIAL DISADVANTAGES OF USING QUALIFIED INFORMANTS BY TRYING THE FOLLOWING STRATEGY:

STRUCTURE YOUR INTERVIEW

Request the same information in several ways.Use Active Listening techniques (see Module 4). These techniques will help you detect bias in your informants' responses. It is important to recognize bias and understand the informants' point of view. Other interviews can then be arranged to help you balance the biased point of view.

INTERVIEW QUALIFIED INFORMANTS IN GROUPS

Your objective should be to obtain a broad view of the topics or issues of interest. You should try and get them to reach agreement on topics or issues.

Think about the Role Play you did, Interviewing a Group of Qualified Informants. Remember these points about interviewing:

THINK ABOUT THE ROLE PLAY YOU DID, INTERVIEWING A GROUP OF QUALIFIED INFORMANTS. REMEMBER THESE POINTS ABOUT INTERVIEWING.

PROVIDE A GOOD INTRODUCTION

You need to offer a good introduction of yourself and the purpose of the interview. Explain:

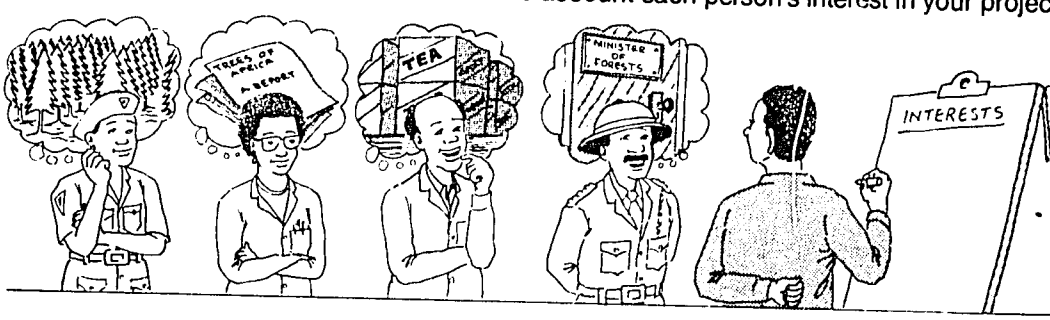
- who you are
- what you want from the interview
- why you have invited particular people
- and how you plan to conduct the interview

Use your introduction to bring the interviewees into the purpose of the interview. Make them feel part of something important. You establish the rules and the expectations for an interview during your introduction. Your introduction must help them think about and address specific topics of interest.

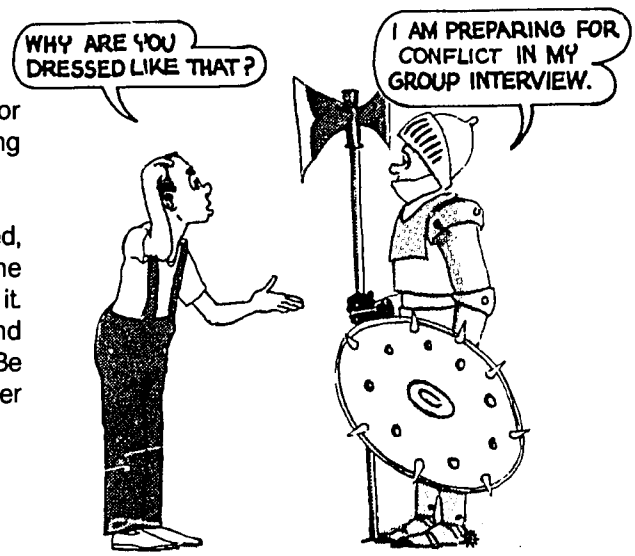
ANTICIPATE PERSONAL INTERESTS

You should attempt to anticipate personal interests of each informant beforehand. Know what information you want from each person being interviewed.

Learn to anticipate each person's potential bias, so you can help correct for it during the interview. Prepare your information and interview to take into account each person's interest in your project.



At the Project area Profile stage your position probably will be that the project team has not yet decided on specific project activities, sites or selected groups for assistance. The information you are seeking will help you make this decision.



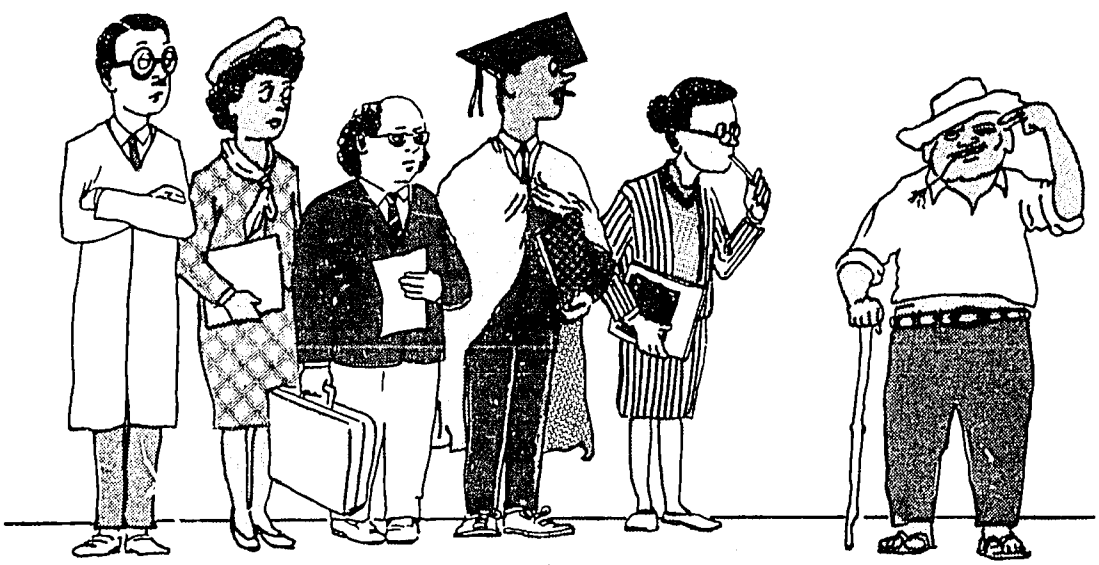
You should also anticipate and prepare for possible conflict that may arise among members of the group being interviewed.

Some sort of group hierarchy is to be expected, especially if officials are involved in the interview. Respect this and learn to work with it. If a meeting appears to be slowing down and becomes difficult, try and bring it to an end. Be respectful and diplomatic. Organize another meeting and try a different approach.

INVITE KNOWLEDGEABLE PEOPLE

Invite knowledgeable people to your interview; people who are likely to have the information you need. Focus your questions towards the person whom you expect will have the information on that topic. If it appears she/he does not have it, do not confront her/him. Do not embarrass anyone.

Your interview agenda should be kept simple and clear. Do not overwhelm the group with too many topics all at once. You can always organize another interview.



THE MOST KNOWLEDGEABLE PERSON IN YOUR GROUP MAY BE THE FARMER.

Lesson 6 CONDUCTING INTERVIEWS OF QUALIFIED INFORMANTS

OBJECTIVE

Trainees will be able to conduct an interview of qualified informant(s) to obtain information for the project area profile.

METHOD

This lesson consists of a trainee practice session on interviewing qualified informants. Trainees and trainer critique the practice efforts. The lesson should take one to two hours.

EXAMPLE

Prepare

Prepare for this lesson by agreeing on an interview agenda. Organize an appropriate group in order to practice your information collection. Select one or two of the best qualified trainees to conduct the group interview. Other trainees should attend as interview participants or observers.

Facilitate

Facilitate a discussion among trainees after the interview. Discussion should focus on a review and critique of the interview and how the interviewers conducted the group interview. Avoid personal attacks of the interviewers. Critique should be positive and constructive. It should be based on points listed about good interviewing in the LEARNING NOTES from Lesson 5.

Allow the interviewer to summarize his opinions and feelings about how things went. Then ask the observers for their input. Try to get a discussion going among the trainees on the "dynamics" of the interview.

Summarize

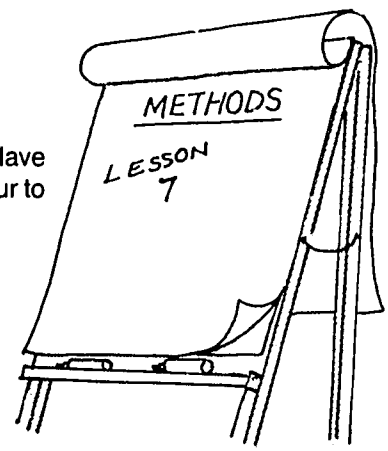
Summarize the qualities of good group interviewing, highlighting what went well and which areas need improvement.

Lesson 7 CLASSIFYING AGRICULTURAL LAND USE SYSTEMS

OBJECTIVE

Trainees will be able to describe the reason for classifying agricultural land use systems as part of project area profile activities. They will be able to describe criteria for classifying the agricultural land use systems in your area.

METHOD



The lesson consists of a presentation and facilitated discussion. Have newsprint and markers available. The lesson requires about an hour to conduct.

EXAMPLE

Prepare

Review SOURCEBOOK SUPPORT MATERIALS (5-2) and (5-3). Focus especially on ICRAF's Working Paper #7, pages 6-12 and page 65. On the basis of these, prepare to lead a group discussion.

Facilitate

Ask the group what different types of agricultural land use systems they think there are in your project area. In other words, what are major differences in the types of farms and farming practices that can be identified?

Once you have a list of types of agricultural land use in the project area, ask trainees what makes one different from another. Encourage the group to discuss criteria for distinguishing between different agricultural land use systems.

Contribute to the discussion with knowledge you have about your project area. Prov de examples.

Summarize

Agricultural land use systems need to be classified for agroforestry diagnosis only if there are major differences in farm conditions or practices in your project area. If you decide farms are generally of similar types (after going through this exercise) then your project's task to design appropriate agroforestry interventions will be easier. Why?

Lesson 8 TRAINING PROJECT AREA PROFILE REPORT WRITER(S)

OBJECTIVE

One or more individuals from among the group will be able to make a major contribution towards putting together a project area profile report for your project area.

METHOD

The lesson involves providing selected trainees with supervision and guidance over a one or two week period in how to prepare a project area profile. Presentation and discussion of the profile, with the trainees, will require an hour or two later in the training period.

EXAMPLE

Prepare

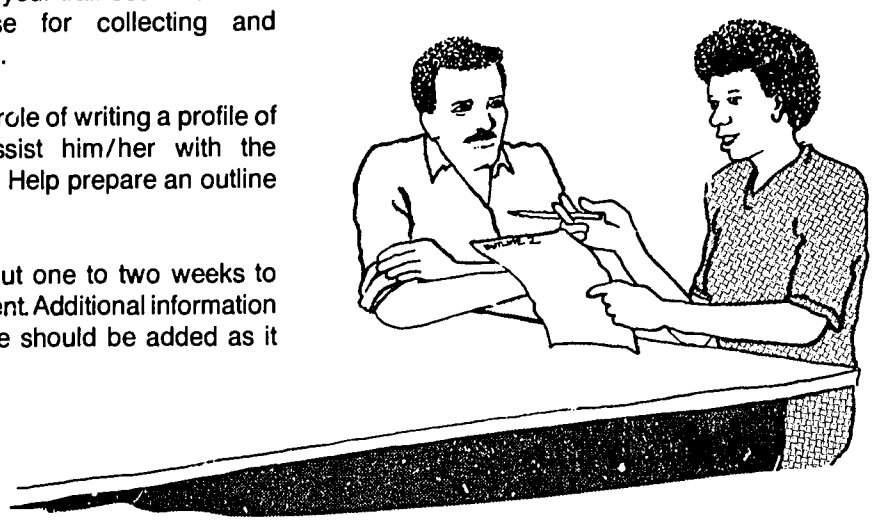
Review the SOURCEBOOK SUPPORT MATERIALS (5-5), especially ICRAF's Working Paper #7, pages 13-18 and 67-70. Also rely on your project document and supporting documents, relevant plans and reports, and interviews of qualified informants.

Facilitate

Select one or more of your trainees who show the greatest promise for collecting and organizing information.

Assign him or her the role of writing a profile of the project area. Assist him/her with the materials listed above. Help prepare an outline for the report.

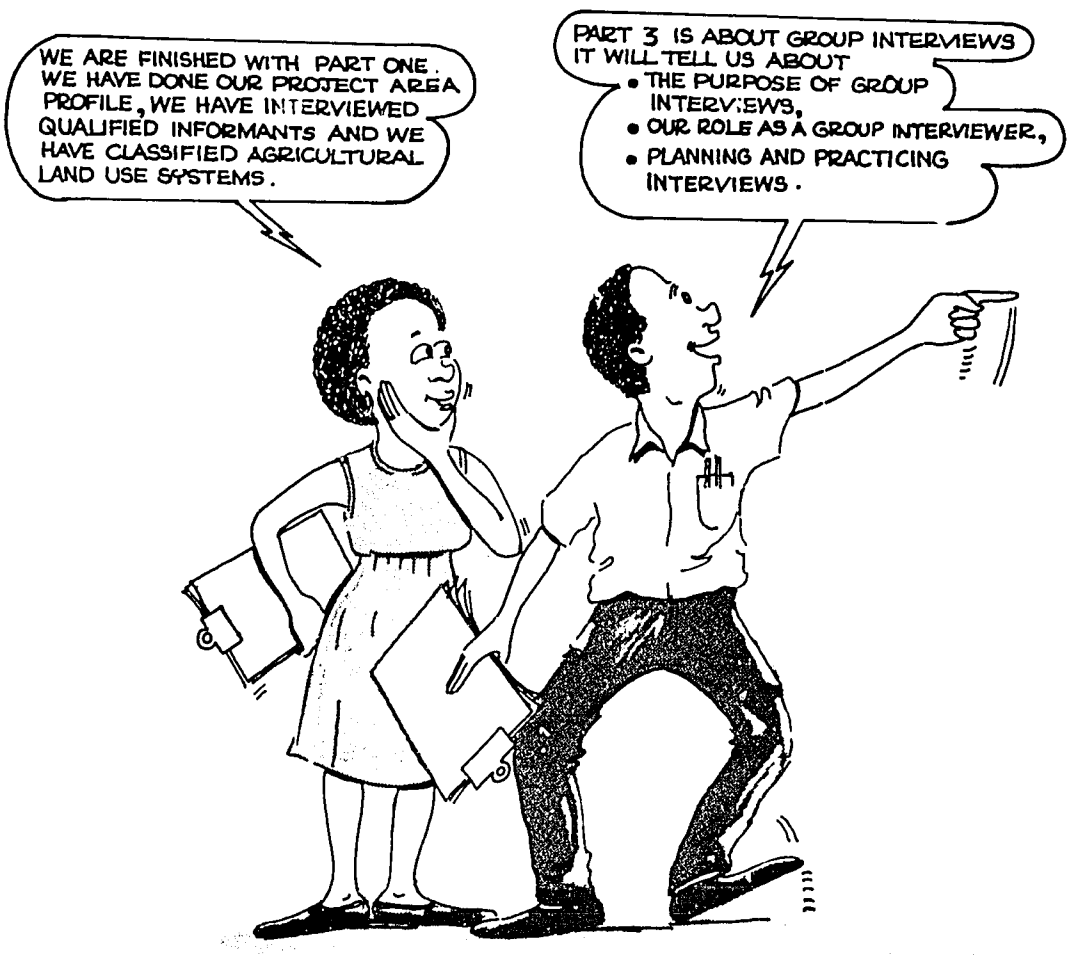
Allow the trainee about one to two weeks to complete the assignment. Additional information required for the profile should be added as it becomes available.



Summarize

Once the profile of your project area is complete, give a copy to each trainee to review and comment on. You should allow the trainees time to discuss its contents and what additional information is still required.

This discussion and review of the project area profile should prepare trainees for the next part of the Agroforestry Diagnosis process, The Group Interview.



DIAGNOSIS PART 3.

The Group Interview represents the first stage of the Agroforestry Diagnosis Survey. The aim of the survey is to identify problems that farmers have in trying to make their living from the land, and the factors that contribute to these problems.

Group Interviews involve talking with members of the farmer community to get their insights into farming problems and their causes. Group Interviews provide information about trees, their present uses and values in local farming systems.

The material and lessons in Part 3 will prepare your trainees to conduct effective Group Interviews.

Guidelines for conducting effective Group Interviews depend on whether the interview is being conducted primarily for knowledge-building or for motivation purposes. The primary purpose depends on the project's stage of development.

When the project is new in an area, Diagnosis activities are mainly a means for Extension Staff to learn about the project environment. Through collecting and analyzing information, ideas about agroforestry interventions are generated. After this, Group Interviews are used to motivate farmers and to promote, refine and adapt ideas about agroforestry development.

Different emphases during the Group Interview are required for the knowledge-building and the motivation phases. Lessons 9 through 11 in this Part focus on Group Interviews for knowledge-building, which we will call Stage 1. Lessons 12 and 13 focus on Stage 2 Group Interviews for motivation.

The lessons require about one and one half days to conduct, exclusive of preparation time.

Lesson 9 PURPOSE OF GROUP INTERVIEWS AND THE ROLES OF THE INTERVIEWER

OBJECTIVE

Trainees will be able to give at least six reasons why the Group Interview is a useful means of collecting information for Agroforestry Diagnosis. They will be able to discuss important aspects of their roles in a Group Interview for Agroforestry Diagnosis.

METHOD

The lesson consists of a facilitated discussion. Use a question and answer approach to encourage trainee participation and discovery. This lesson requires about one and one half hours to conduct. Have newsprint and markers available.

EXAMPLE

Prepare

Read the LEARNING NOTES for this lesson, purpose of the Group Interview in Agroforestry Diagnosis and the Roles of Interviewers.

Facilitate

Explain the purpose of a Group Interview using the NOTES as a guideline. Facilitate a discussion using the points covered in the LEARNING NOTES.

Discuss reasons for using a Group Interview to collect information during the project's Diagnosis phase. Ask trainees to consider their role as interviewer in these groups.

Note key points on newsprint. Give trainees a copy of the LEARNING NOTES following the lesson.

Summarize

The Group Interview can be an excellent way to encourage farmer participation in your project. An effective Group Interview is an extremely important building block in participatory agroforestry diagnosis and design. Use your best effort to make it work.

LEARNING NOTES

PURPOSE OF THE GROUP INTERVIEW IN AGROFORESTRY DIAGNOSIS AND THE ROLES OF INTERVIEWERS

The Group Interview is the first stage of the Agroforestry Diagnosis Survey. We use Group Interviews to find out the kinds of problems that farmers have in trying to make their living from their land. From the Group Interview we get answers to the following questions:

- Do members of the farming community/group produce enough food to meet their needs?
- Are there deficiencies or shortfalls?
- If there are, what kind?
- Is there enough fuelwood?
- Is there enough fodder for their livestock?
- Are there enough building materials to expand or improve their homestead?
- Do they produce enough to have a surplus? Does this surplus generate enough cash to cover their important expenses?
- What are the causes of their production problems?
- If they do not produce enough to meet their needs, why not? What are the factors or constraints that keep production lower than desired?
- Are problems getting better or worse?

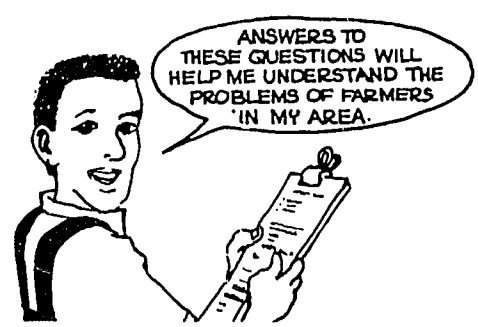
The Group Interview involves talking with members of the project's farmer community to get their insights into farming problems and their causes. Group Interviews also provide information about trees and their uses in local farming systems.

Group Interviews are an effective way to:

Determine farmers' production problems

Understand their successes and failures

Test how eager or receptive they are to change and to agroforestry



The Group Interview provides an opportunity to obtain information efficiently. Group Interviews often cover a wide range of experiences and perspectives. They can be conducted in a relatively short period of time and with minimal staff input. They can be used to collect information on:

- LAND TENURE AND SIZE OF HOLDINGS.
- FOOD AND CASH CROPS.
- CROPPING PRACTICES.
- CROPPING PROBLEMS.
- LIVESTOCK.
- LIVESTOCK FEEDING PRACTICES AND PROBLEMS.
- WOODFUEL COLLECTION STRATEGIES AND PROBLEMS.
- BUILDING MATERIAL PRODUCTION STRATEGIES AND PROBLEMS.
- COTTAGE INDUSTRIES AND THEIR RAW MATERIAL OR FUEL PROBLEMS.

Importantly, the Interview creates an opportunity for community members to discuss issues related to agroforestry. Group Interviews help project staff see the differences and similarities in a group of farmers. This helps the staff to judge where it can best help farmers in the problem-solving process.

Differences in perspective and rights between men and women often can be addressed through Group Interviews. The perspectives and rights of women are particularly important to look for with respect to:

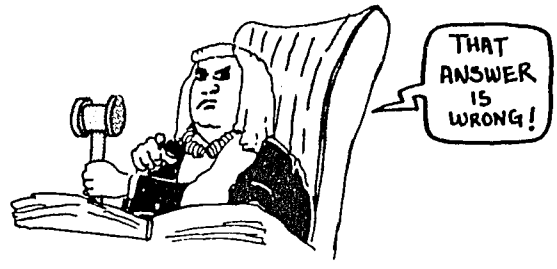
- FIREWOOD AND WATER AVAILABILITY.
- COLLECTION PRACTICES.
- HERDING.
- FODDER AVAILABILITY.
- COLLECTION OF FOODS, FIBERS AND MEDICINAL PLANTS.
- TREE OWNERSHIP, RIGHTS AND RESPONSIBILITIES.

The Group Interview also provides a good opportunity to obtain perspectives on issues or problems affecting land productivity. The memory and experiences of a group are more reliable than those of a single person.

The Interviewer's Role

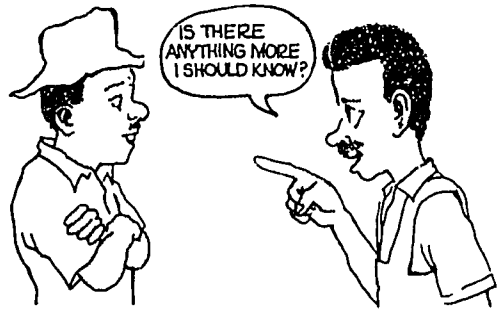
The interviewer is primarily a facilitator. He or she should initiate discussion on topics listed on the interview agenda. Guidelines for good facilitation in a Group Interview include:

AVOID JUDGING ANSWERS
You are there to learn from the group, not to judge the accuracy of what the group says, and whether it is right or wrong.



ACTIVE LISTENING
Using this technique will help ensure that questions are accurately understood by the group. Active Listening will also help you understand information and ideas correctly.

PROBE FOR EXPLANATIONS
You should probe for more information when different responses to your question are obvious. Perhaps different responses mean your question was not understood. Check to see if you were understood clearly.



ANTICIPATE REASONABLE RESPONSES
You should anticipate what you are likely to hear before the interview. This can be done by reviewing information obtained from the project area profile. You are then more aware of what to expect and can probe for explanations.

ENCOURAGE PARTICIPATION

You should attempt to broaden the group's participation in the interview when most questions are answered by one or two members. Try to encourage greater participation of the group by encouraging an open and friendly atmosphere. If this does not work, offer what you know to be a different opinion.

Try and encourage the silent or reluctant group members to speak out and participate. If women are reluctant to speak honestly in the presence of men, arrange for separate Group Interviews with women farmers only.

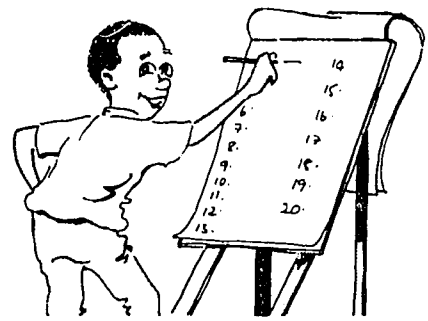
Lesson 10

INFORMATION FOR A GROUP INTERVIEW

(STAGE 1: KNOWLEDGE-BUILDING)

OBJECTIVE

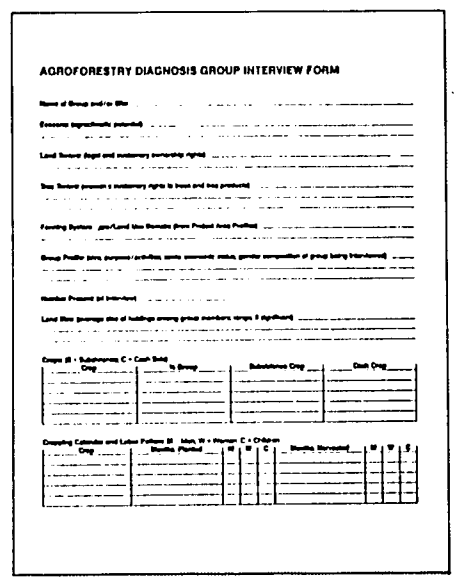
Trainees will be able to list more than 20 categories of information that are useful to include in a Group Interview for Agroforestry Diagnosis.



METHOD

The lesson consists of a small group exercise and facilitated discussion. Have newsprint and markers available. Allow about one and one half hours.

EXAMPLE


AGROFORESTRY DIAGNOSIS GROUP INTERVIEW FORM

Prepare

Review the Agroforestry Diagnosis, Group Interview Form on the following pages. Consider its appropriateness for your project. Make notes about modifications you may want to suggest.

Facilitate

STEP 1

Inform the trainees that they will have an opportunity to design Group Interview Guidelines for their project. Assign them to work in pairs or small groups. The task is to develop a list of information categories the group feels should be included in a Group Interview. These will be used as guidelines when conducting a Group Interview.

STEP 2

After about half an hour of small group work, have the pairs or group(s) report on their discussions. Have the group explain specifically what type of information it is looking for and why it was included, for each category.

STEP 3

Facilitate a discussion among the entire group about their ideas and need for information. Have them consider the time and cost involved in obtaining the information they want. Have them compare this to the usefulness on the information.

The output of this lesson should be a "first draft" of an Agroforestry Diagnosis Group Interview Guideline appropriate for your project. The Guideline can also serve as a summary form for your Group Interview responses.

AGROFORESTRY DIAGNOSIS GROUP INTERVIEW FORM

Name of Group and/or Site: _____

Ecozone: (agroclimatic potential) _____

Land Tenure: (legal and customary ownership rights) _____

Tree Tenure: (women's customary rights to trees and tree products) _____

Farming System Type/Land Use Domain: (from Project Area Profiles) _____

Group Profile: (size, purpose/activities, socio-economic status, gender composition of group being interviewed) _____

Number Present: (at interview) _____

Land Size: (average size of holdings among group members; range, if significant) _____

Crops: (S = Subsistence; C = Cash Sale)

Crop	% Group	Subsistence Crop	Cash Crop

Cropping Calendar and Labor Pattern: **M** = Men, W = Women, C = Children

Crop	Months. Planted	M	W	C	Months. Harvested	M	W	C

Livestock: (list types)	**% Group Owning**

Cropping/Livestock System: (on-farm/off-farm grazing; manuring; fallow; livestock marketing)

Cropping/Livestock System Problems:

Fodder Trees/Shrubs/Grasses: (rank by preference)

Fodder Species	**Year-Round Feeding**	**Drought Selected**

Fuelwood Collection Strategies: (on-farm/off-farm; public/ communal/private land; free/borrow/buy; distance to collect)

Fuelwood Problems:

Fuelwood Species: (rank by preference)

Charcoal-Making and Marketing:

Charcoal Species: (rank by preference)

Building and Construction Materials Strategies:
(If pole-constructed houses, poles from own land/neighbors land public land/market place; pole prices. If not poles, alternative strategy. Timber requirements.)

Pole Species: (rank by preference)

_____ _____
_____ _____
_____ _____

Timber Species: (rank by preference)

_____ _____
_____ _____
_____ _____

Building and Construction Material Problems:

_____
_____

Home Industry:

Type	% Group	Fuelwood

(N = none, W = wood, C = Charcoal)

Handicrafts: (S = Sale; H = Home Use)

Type	S	H	Plant Species Used	Collected on-farm or off-farm

Medicine and Wild Food: (M = Medicine; F = Food)

Species	M	F	Collected on-farm or off-farm

Household Subsystem Problem Summary: (rank from most to least important)

_____
_____

Tree Species Tolerated or Planted on Cropland: (T = Tolerated; P = Planted)

Species	T	P

Tree Species on Borders:

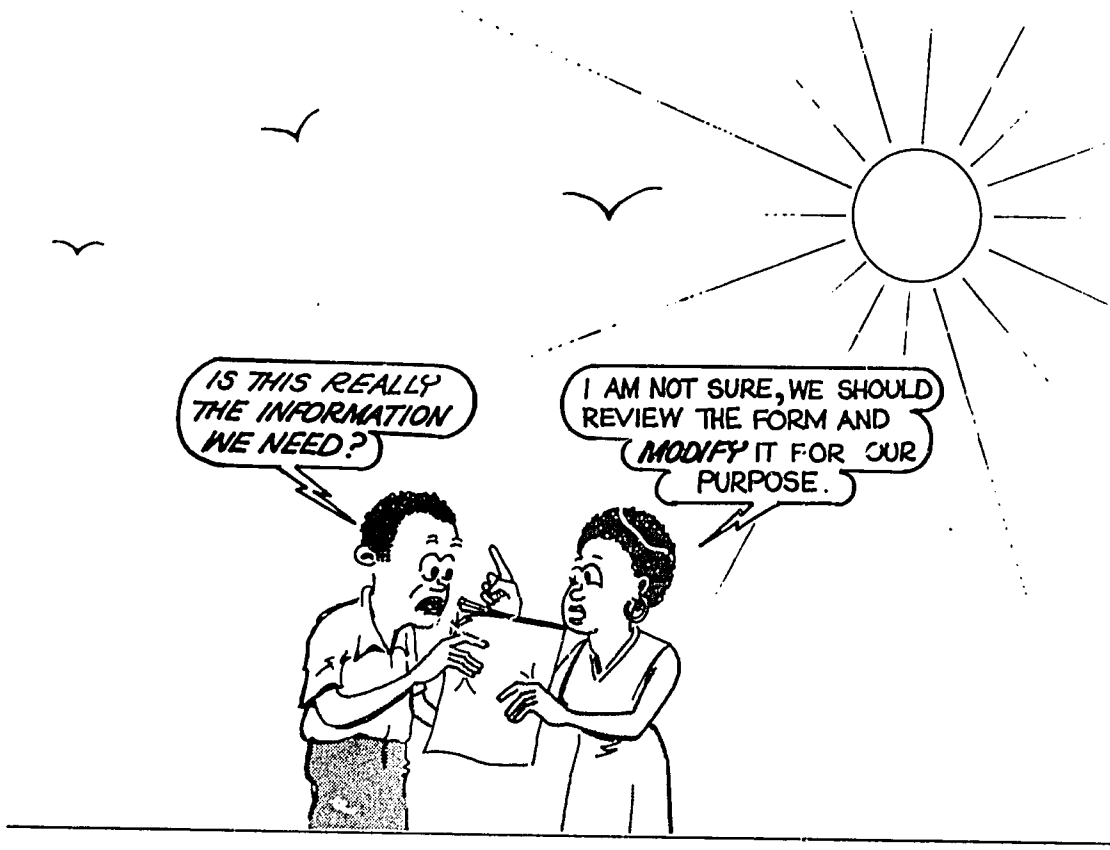
Species	T	P

Tree Species in Homestead:

Species	T	P

Tree Species in Woodlots:

Species	**Managed/sold for what products** (rank order for importance)



Lesson 11

PRACTICING THE GROUP INTERVIEW

(STAGE 1: KNOWLEDGE-BUILDING)

OBJECTIVE

Trainees will be able to distinguish between good and poor group interview techniques and to demonstrate good techniques.

METHOD

The lesson is based on demonstration and critique of interviewing techniques. Demonstration may be in the form of a Role Play. Plan a half day for the lesson. Have newsprint and markers available for the critique.

EXAMPLE

Prepare

Prepare for two different group interview demonstrations; one representing good interviewing techniques and one, poor techniques. Review the LEARNING NOTES, Guidelines for Conducting a Good, Agroforestry Diagnosis Group Interview.

Facilitate

STEP 1

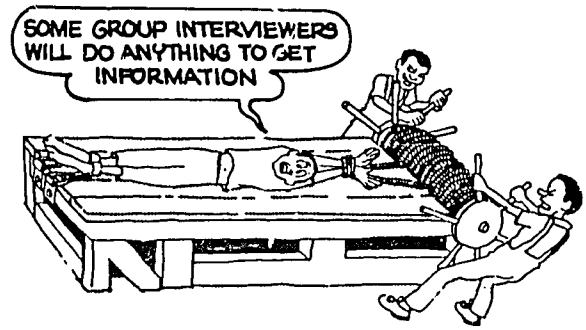
Plan the first demonstration to be as effective and realistic as possible. The purpose is to show how a good interview facilitator operates and to help the trainees become familiar with the interview questions.

You, or a previously trained team member, acts as the facilitator. Assign a trainee as the secretary, to record group responses. The remaining trainees act as group members.

The demonstration should illustrate aspects of the group interview referred to in the LEARNING NOTES.

STEP 2

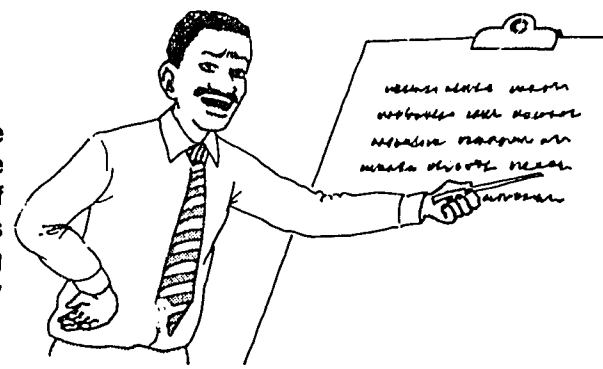
Organize a second demonstration that illustrates poor facilitation techniques and the effect these will have on group participation, and on the quality of information you are able to gather.



Assign a trainee to act out the facilitator's role for Step 2, as follows:

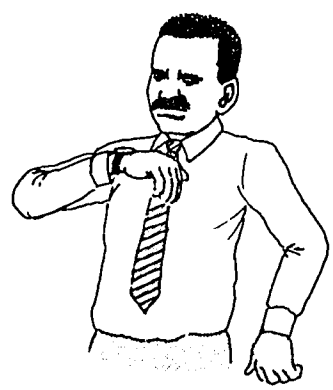
ROLE PLAY APPROACH

Adopt a formal, business-like tone at the beginning. Warn the group that there is no time for incorrect answers. Tell them the project staff is in no position to provide assistance at this point, so they should not ask for it. Begin asking questions without a good explanation of why the information is being collected. When members ask questions, behave impatiently. Provide abrupt answers that contain little useful information.



INTERVIEW AGENDA

Stick to it. If someone provides information out of order, correct them and let them know you will get to that topic when you are ready. If answers are not forthcoming, scold them for not being more aware and informative. Suggest that maybe they are not a group worthy of assistance.



SUMMARY

Thank them. Make yourself unavailable for questions about the future. Tell them they will find out when they need to know, and that you are busy now and need to go.

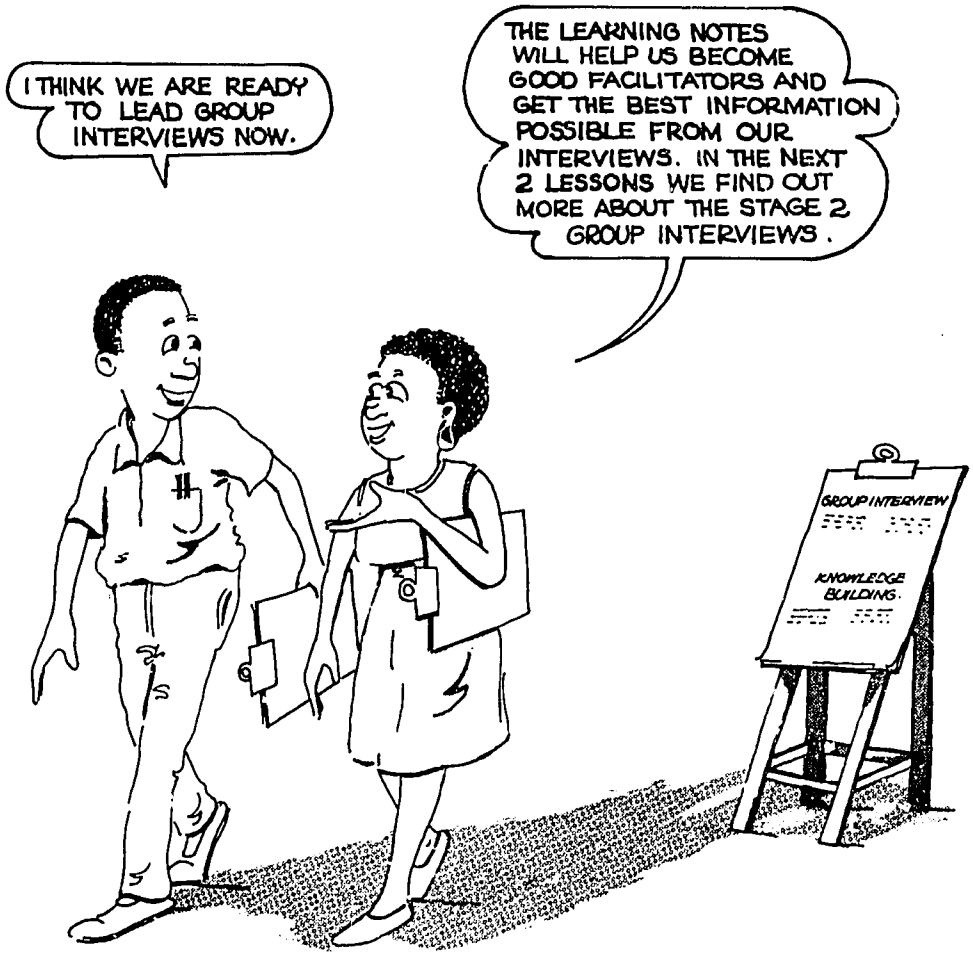
STEP 3

Have the trainees critique both demonstrations from Steps 1 and 2. Use newsprint to record observations about the different communication techniques used in Demonstrations 1 and 2, their effect on the group and on project/group interaction. Ask the trainees what made the first interview relatively successful and the second one poor?

Following discussion, give trainees copies of the LEARNING NOTES for their Training Workbooks.

Summarize

Your role as facilitator will determine whether or not farmers trust and respect you enough to give honest information, and to participate in another project event. Practice with fellow trainees until you feel confident that they are ready to lead and facilitate Group Interviews.



LEARNING NOTES

GUIDELINES FOR CONDUCTING A GOOD, AGROFORESTRY DIAGNOSIS GROUP INTERVIEW (STAGE 1: KNOWLEDGE-BUILDING)

Your main role as an interviewer is to facilitate discussion among the group on special topics to generate the best information possible. You should try to establish where the group agrees, and where they differ on information specific to each topic. The following guidelines should help you become an effective interview facilitator.

INTRODUCTION

Your introduction provides the setting for the rest of the interview. Act interested, relaxed and informal. At the beginning of the interview, explain:

What the project team is doing in the area

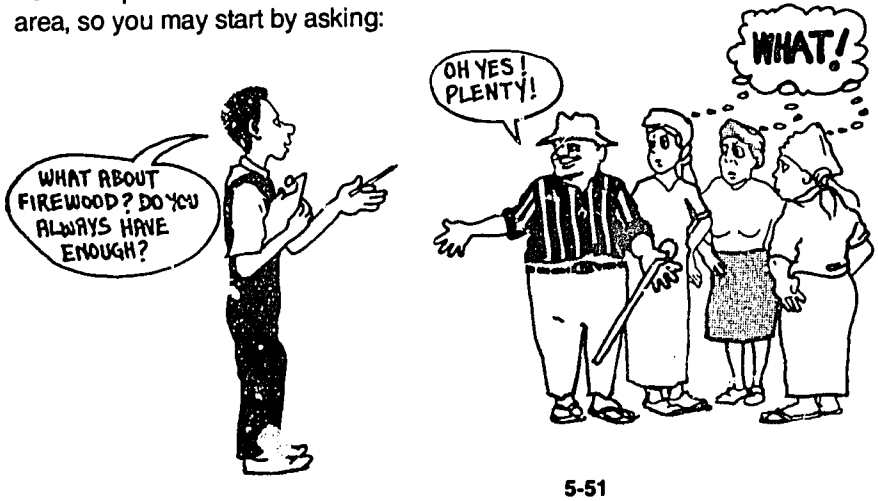
Why the project is interested in agroforestry

The purpose of the interview and the importance to the project of getting good information to help develop the types of agroforestry activities that will best serve the group's needs.

ASKING QUESTIONS

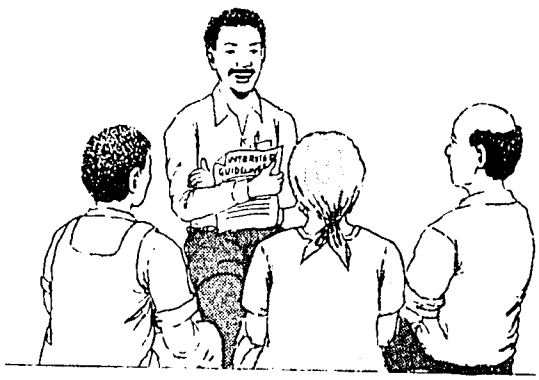
Ask the group questions about how they produce food, energy, building materials, raw materials, etc. on their land. These questions should focus on problems or constraints in these different production systems.

For example: You are interested in knowing about fuelwood production strategies and problems in the area, so you may start by asking:



If men in the group are controlling the discussion, you may get answers that there is no problem getting enough firewood. In probing further for women's views, you may learn there is a problem and that they expect things to get worse in the future.

Once you have learned there is a problem, go on to find out more about firewood collection, and how current problems are affecting traditional practices.

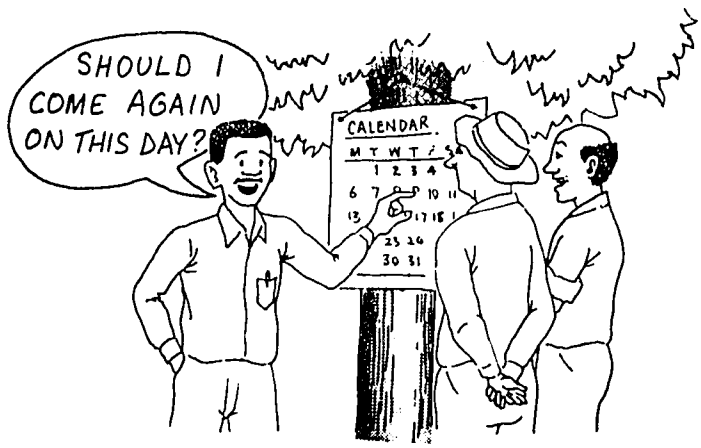


USING THE INTERVIEW GUIDELINES

The Guidelines should be used to guide the discussion, but not to dictate what is discussed. Sometimes it helps to ask questions out of order. A good facilitator allows the group freedom to explore answers to a particular topic. Sometimes you can move on to another topic that helps clarify the earlier topic.

SUMMARIZE

At the end of the interview the group will want to know what assistance it can expect from the project. You may need to make clear that the project cannot commit itself at this point. Conditions, however, under which assistance may be provided should be discussed. You may want to give some idea of the general time frame for project activities that might include assistance to the group.



Lesson 12

CHARACTERISTICS OF THE GROUP INTERVIEW

(STAGE 2: MOTIVATION)

OBJECTIVE

Trainees will be able to list at least five potential purposes and outcomes of the second stage of the group interview. They will be able to describe the Group Interview strategy and explain three main components of this Interview.

METHOD

The lesson consists of a presentation and facilitated discussion. Use newsprint and markers to record the points you want to make. The lesson requires about an hour.

EXAMPLE

Prepare

Prepare a presentation from the LEARNING NOTES, Guidelines for Conducting an Effective Agroforestry Diagnosis Group Interview, Stage 2.

Facilitate

Facilitate a discussion to cover the points in the LEARNING NOTES. Give the trainees a copy of the NOTES for their Training Workbooks, at the end of the discussion.

Summarize

Though you may become bored with the information coming from Stage 2 Group Interviews after a while, (it can become repetitive) it is important to remember the importance of your role as motivator and to remain open and enthusiastic with farmers.

LEARNING NOTES

GUIDELINES FOR CONDUCTING AN EFFECTIVE AGROFORESTRY DIAGNOSIS GROUP INTERVIEW (STAGE 2, MOTIVATION)

The Stage 2 Group Interview may be conducted by any of the project's staff. This stage of the project is designed to motivate groups to get involved in agroforestry activities. At this point in the Agroforestry Diagnosis, the group has been identified as a candidate for assistance.

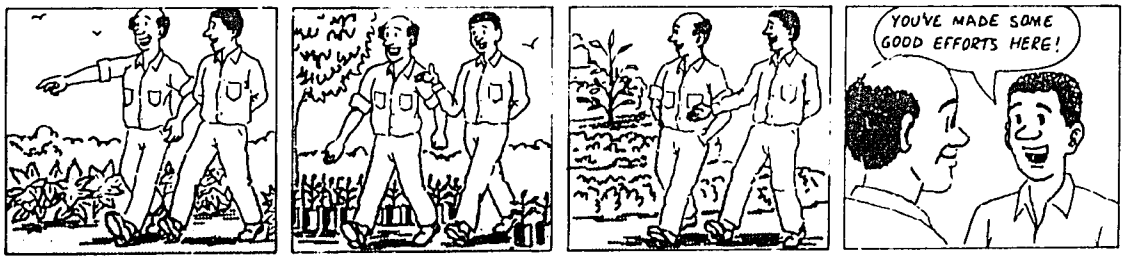
Specifically, this stage of the group interview should:

- MAKE MEMBERS AWARE THAT THEY PRACTICE AGROFORESTRY ALREADY.
- IDENTIFY LOCAL INNOVATORS / INNOVATIONS RELATED TO AGROFORESTRY.
- SUGGEST THAT MORE INTENSIVE PLANTING AND MANAGEMENT OF TREES ON THE FARM SHOULD YIELD HIGHER RETURNS, DESPITE MORE INTENSIVE LABOUR REQUIREMENTS.
- PROVIDE INFORMATION TO THE TEAM ABOUT PRIORITY USES AND NEEDS FOR TREES. IT SHOULD ALSO PROVIDE GOOD INFORMATION ABOUT WHAT SPECIES ARE PREFERRED FOR NURSERY PLANNING.

Your strategy for conducting the interview should be to lead group members through a process of discovery about agroforestry and its potential benefits. Use questions and answers with the group. Avoid lecturing or preaching to the group.

The group should be encouraged to determine the most important uses and values of trees.

The interview should be used to encourage pride in the group's existing agroforestry efforts, e.g. tolerating, planting and/or managing specific species. The interview team should use recognition and praise to help the group appreciate their existing management of trees on farms. Remember, agroforestry is just a name for something many people have been doing for ages.



HERE ARE SOME *GUIDELINES* FOR CONDUCTING AN EFFECTIVE, STAGE 2 GROUP INTERVIEW

INTRODUCTION

Explain who you are, what the project is doing in the area, the types of activities you can assist, and that you have come to discuss how you can work together with the group.

Your introduction will vary depending on whether the group was interviewed earlier in the Agroforestry Diagnosis process, or has already been exposed to your organization.

ROLES OF TREES AND DEFINITION OF AGROFORESTRY

Introduce the concept of agroforestry to the group. Draw on local agroforestry practices, even though they may not be known as such. Encourage the group to give examples of trees and shrubs on their farms. Recall the lesson in Module 4 on communicating with groups about agroforestry.

Once the topic of agroforestry has been introduced, describe the different production systems you listed on the Group Interview Guidelines at Stage 1. Focus on problems of production. The main purpose in focusing on problems of production is to generate awareness about common problems and to relate these to agroforestry.

When the group has identified a production problem, try and offer a possible solution using your knowledge of agroforestry and traditional practices. Allow group members to ask questions. Active Listening will help provide a clear and more effective understanding about both production problems and of possible activities, for you both.

ENDING THE INTERVIEW

Finish the interview by telling the group you have learned a lot about how specific trees are used and valued in the area. Tell them that you will take the information back to the project staff to discuss. Confirm that you will be working together on agroforestry activities. Provide the group with information on what support they can expect to receive from the project and what support and effort the project is expecting of them. Make an appointment to meet them again, soon, so that you can begin trec-raising activities. Help them with an appropriate nursery planning assignment in the meantime.

Lesson 13

PRACTICING THE STAGE 2 GROUP INTERVIEW

OBJECTIVE

Trainees will be able to differentiate between good and poor group interview facilitation techniques and to demonstrate good ones.

METHOD

The lesson consists of demonstrating and critiquing interview techniques. It will require about two hours.

EXAMPLE

Prepare

Organize a demonstration that illustrates good interview techniques. It may be most effective to have you take the role of the interviewer, so the trainees can try to put themselves in the farmers' position. This way they can feel what it is like to be in the presence of a good facilitator.

Facilitate

Conduct the demonstration. Afterward, assign a trainee the role of demonstrating how a poor group facilitator conducts the interview. In her demonstration, she forgets most of her introduction, she preaches, she gets impatient with the groups' questions, etc.

Facilitate a critique and review of the two demonstrations.

Summarize

Summarize the qualities and approaches supporting good group interview techniques.

Allow each trainee to practice conducting a good Group Interview before trying it with groups in the project area.

DIAGNOSIS PART 4.

The On-Farm Problem Identification Survey is the next part of the Agroforestry Diagnosis survey. It follows the Group Interview. Like the Group Interview, it functions both as a knowledge-building and a motivation tool for your agroforestry extension project.

The On-Farm Survey is best done during a project's early stages. Well-trained, senior extension staff are best suited to do this. Once the appropriate agroforestry techniques have been defined by the project, more junior-level Extension Workers should be well suited to implement the On-Farm Surveys.

The six lessons in this Part require four to five days to conduct in addition to preparation time.

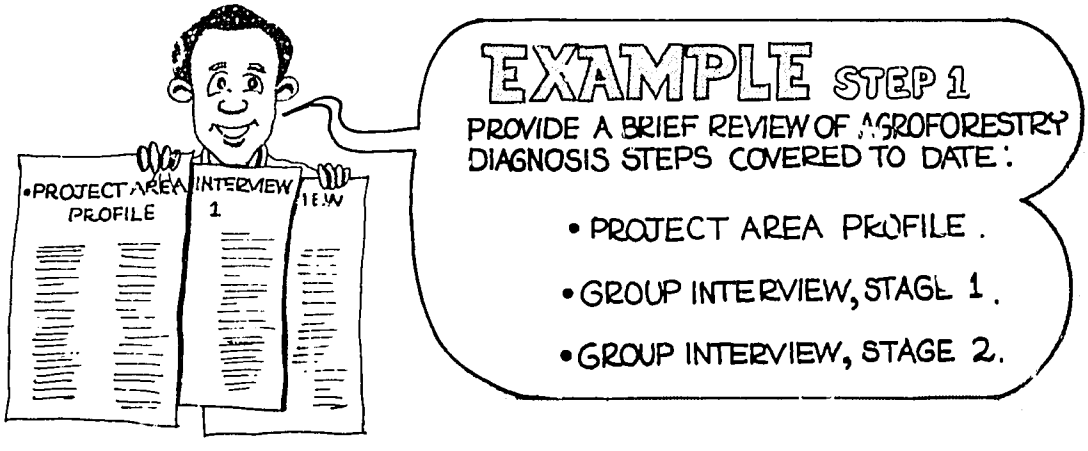
Lesson 14 PURPOSE OF THE ON-FARM SURVEY

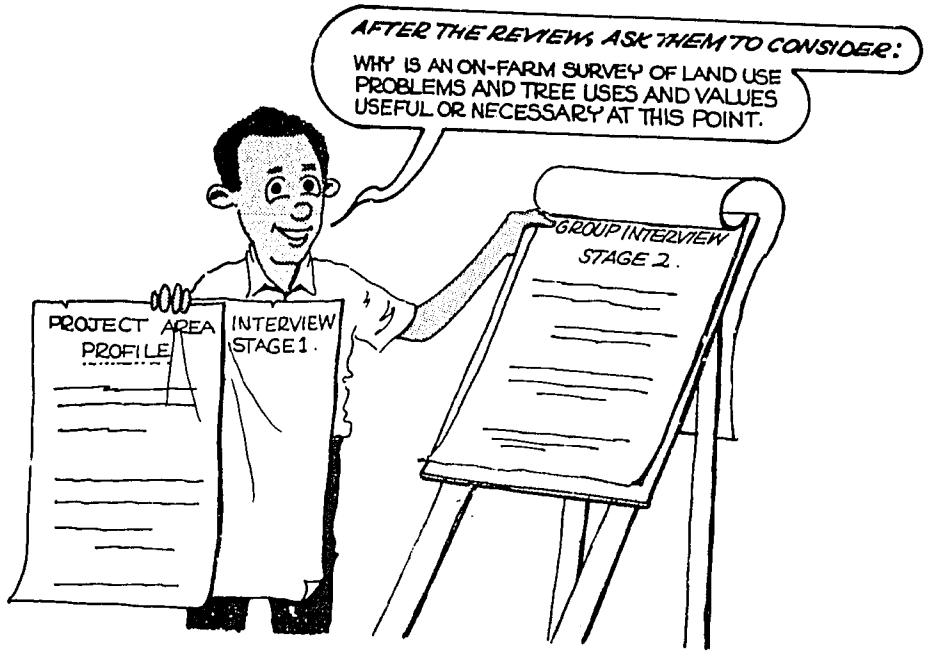
OBJECTIVE

Trainees will be able to describe four major purposes of the On-Farm Survey, as part of Agroforestry Diagnosis.

METHOD

The lesson consists of a presentation, a review of Diagnosis Steps covered so far, and a facilitated discussion about uses of the On-Farm Survey. Plan about two hours. Have newsprint and markers available.





STEP 2

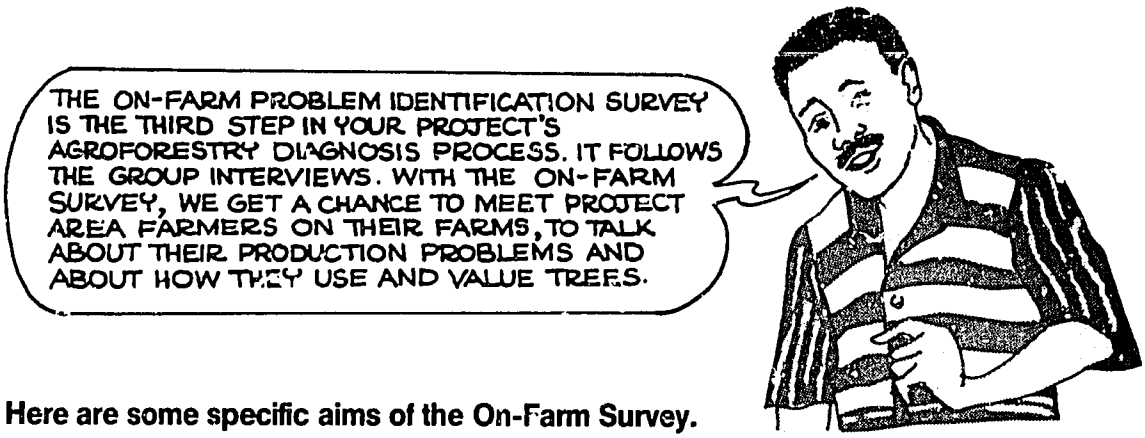
Facilitate a discussion on this topic, based on the material in the LEARNING NOTES.

Summarize

The On-Farm Survey provides an opportunity to visit project area farms. Next we must learn how to make the best use of these visits.

LEARNING NOTES

PURPOSE OF THE ON-FARM SURVEY



Here are some specific aims of the On-Farm Survey.

The On-Farm Survey helps to verify information from the Group Interview, about:

- Land use problems
- Production constraints
- Uses, values and awareness about trees and tree management practices.

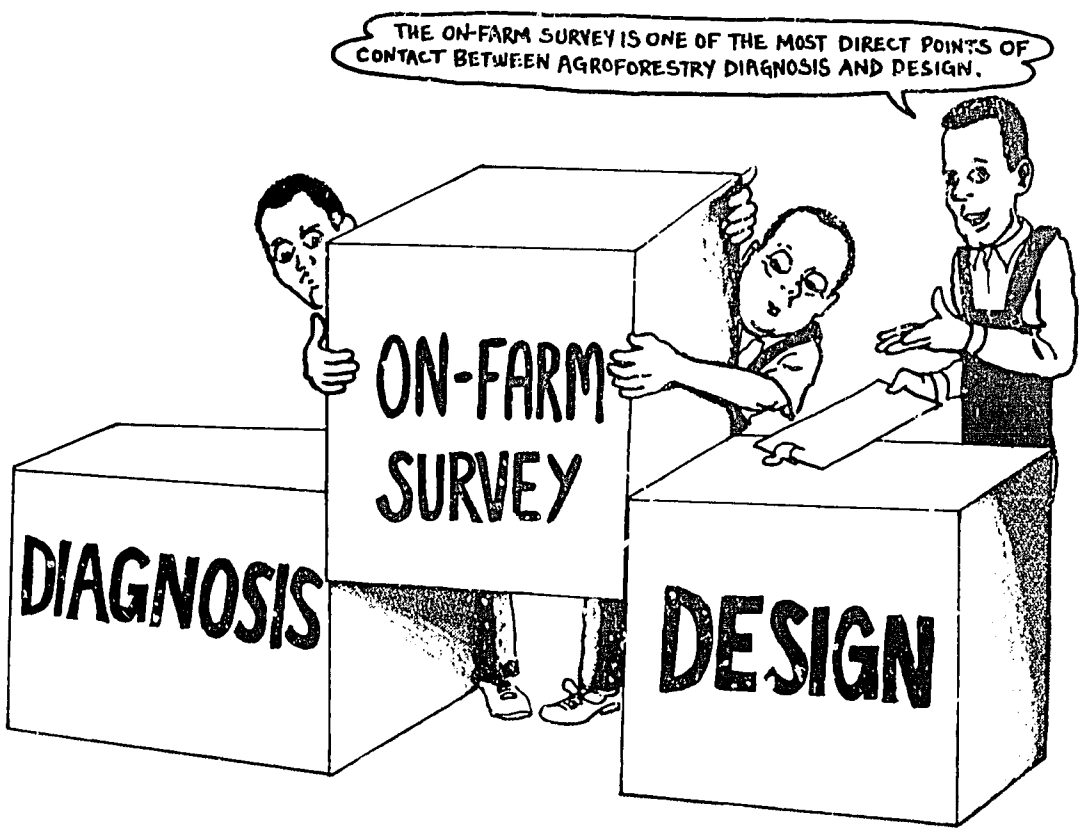
Problems of sustainability (or problems likely to arise in the future) are identified through on-farm observation and discussion. You are able to see better the problems of different production systems on each farm, their causes and their relationships. Understanding this is important for an effective agroforestry design for each farm.

The results of the On-Farm Survey provide a basis for systematically relating household production problems to factors such as:

- LAND USE
- LAND SIZE.
- LAND DEGRADATION.
- LABOUR AVAILABILITY.
- PLANTING AND MANAGEMENT PRACTICES.

If we are able to recognize these different factors, we can group types or classes of households. Agroforestry designs, then, can be described and fit to meet the needs and circumstances of these different classifications.

The On-Farm Survey provides opportunities to assess farmers' interest in trees and their use of trees, and to praise them for their interest. We can look for indications of land/soil conservation and talk to farmers about linking trees to such practices. The On-Farm Survey provides the opportunity to brainstorm with individual farmers about problems and constraints that trees might address. We are able to begin discussion about interventions farmers would consider adopting.



Lesson 15 DESIGNING THE ON-FARM SURVEY

OBJECTIVE

Trainees will be able to list the information categories that are useful to include in the survey and the reasons for including them.

METHOD

Methods for this lesson include brainstorming and facilitated discussion. Use newsprint and markers. Allow at least two hours.

EXAMPLE

Prepare

Review the SOURCEBOOK SUPPORT MATERIALS (5-6) and (5-8), Basic Needs Approach to Diagnosis, and Sample Survey Forms.

Facilitate

Tell the trainees that the aim of the lesson is to design an On-Farm Survey Questionnaire.

Review with them, using newsprint and markers, the Agroforestry Diagnosis approach for analyzing land use systems.

Production outputs can be grouped into categories corresponding to basic needs for household well-being (food, water, energy, shelter, raw materials for local industries, cash, savings/investment).

Ask trainees:

Which production outputs at the household level are most **important** for the project to consider?

Brainstorm a list that corresponds with the "Basic Needs" list in SOURCEBOOK SUPPORT MATERIALS (5-6). Explain the list, as described in this paper.

On the basis of the list, look at the categories of basic needs. Ask:

Is there anything that trees can do to improve the performance of each of the subsystems?

Generate lists on newsprint, which correspond generally to SOURCEBOOK SUPPORT MATERIALS (5-6), "Potential Contribution of Trees to Basic Needs Subsystems".

Summarize the brainstorming session by suggesting that:

The relationship between Agroforestry Diagnosis and (possible) agroforestry activities should now be apparent. With this awareness, the questionnaire should make sense to the staff and be easier to use effectively.

Give each trainee a copy of the questionnaire from SOURCEBOOK SUPPORT MATERIALS (5-8). This is a sample. They will develop a similar questionnaire for their project.

Read each question aloud. Trainees should follow, using their copies. Explain each question and discuss what information it is designed to collect.

Give special attention to questions where ranking or ordering is called for. Consider coded abbreviations to make recording easier.

Ask trainees to consider aspects of the sample questionnaire they think inappropriate to your project. What additional information should be included for your purposes?

List their responses on newsprint. Have the group consider each response. Give your own response if you feel the questionnaire should be modified in any respect.

Modifications to questionnaires should be considered carefully. It is very difficult to put together a good questionnaire. Consider your questionnaire and the information you want to collect over the course of one or two days.

Summarize

Trainees are now ready to approve the questionnaire you will use and practice its use.

Lesson 16 ON-FARM SURVEY INTERVIEW TECHNIQUES

OBJECTIVE

Trainees will be able to describe and demonstrate techniques for effectively administering on-farm survey questionnaires.

METHOD

Methods for this lesson include an interview role playing exercise and a presentation. Use newsprint and markers for your presentation. The lesson should take about half a day.

EXAMPLE

Prepare

Prepare for this activity by reviewing and preparing a presentation from the material in the LEARNING NOTES, Guidelines for Conducting an On-Farm Survey. Use SOURCEBOOK SUPPORT MATERIAL (5-9), especially pages 185-192, for additional information.

Facilitate

STEP 1

Trainees should select partners. Tell each pair of trainees to take a turn at administering the questionnaire and at playing the role of the farmer.

Tell them the purpose of this exercise is to become more familiar with the questions. Have trainees identify questions that are difficult to ask.

STEP 2

After everyone has had a chance to practice use of the questionnaire, ask with which questions they had problems, first as administers of the questionnaire and second as respondents. Record the lists of problems on newsprint. Do not address these problems specifically at this point.

STEP 3

Make your presentation about how to conduct successful, on-farm interviews with questionnaires. Use the LEARNING NOTES and SOURCEBOOK SUPPORT MATERIALS indicated above.

STEP 4

Following your presentation, give the trainees copies of the LEARNING NOTES for their Training Workbooks.

GUIDELINES FOR CONDUCTING AN ON-FARM SURVEY

The On-Farm Survey puts you, together with members of the farming community, on representative farms of interest to the project. The Survey is the project's best opportunity to find out more about the community of farmers whom the project is trying to serve.

As this is your first opportunity to interact with individual farmers, you should be aware that this meeting will establish the relationship for future interactions. The quality of your meeting with the farmer is just as important as the information you will collect.

Here are some guidelines to bear in mind for conducting an effective On-Farm Survey.

INTRODUCTION

A good introduction is essential to setting the tone of the interview and winning the farmer's interest and confidence.

You should know whether you have met the farmer before or whether this is your first contact with him. If you have met before, your introduction will be easier. Your visit to his farm is a follow-up to the promise you made during the Group Interview. You should be pleased to see him again.

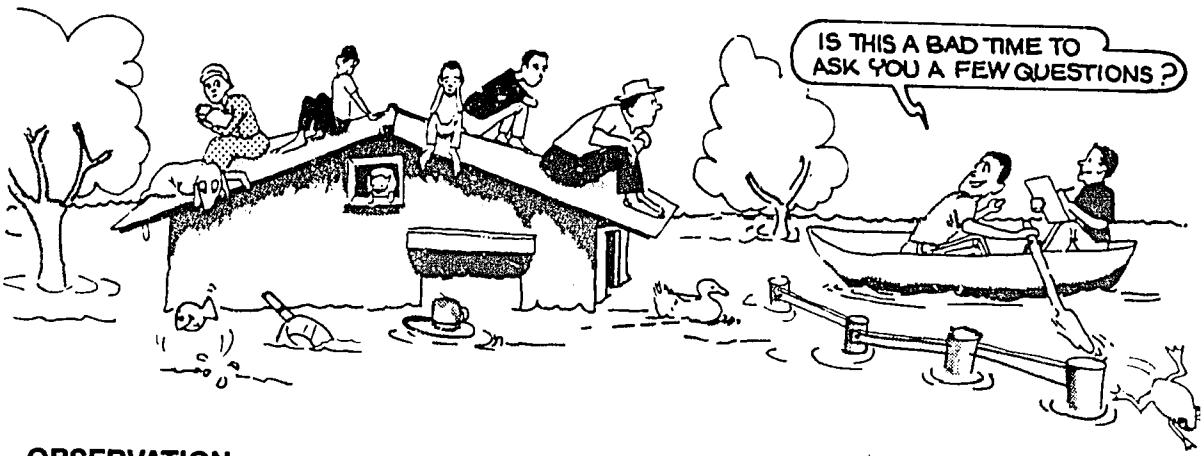
If you are meeting the farmer for the first time, you should tell:

- Your name
- Where you come from
- Who you are working with
- That your project aims to assist farmers to grow and manage trees as a means of improving the productivity of the land; and other information about the project that seems pertinent.
- That in order to make good judgments about what trees and combinations of trees may be best for the area, you need more information from farmers. They are very familiar with their farm and the area. They know the problems and the needs.

Ask the farmer, if she/he minds if you ask some questions and look around the farm.

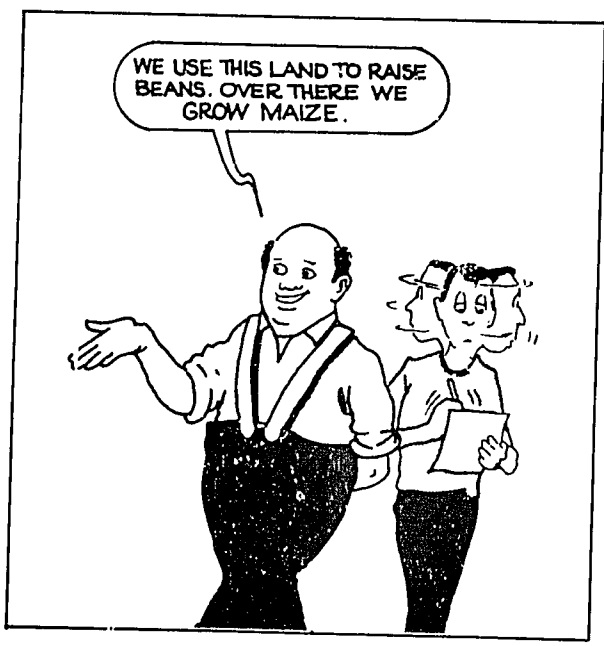
Indicate that you are interested in views of both men and women adult members of the household. Request that the two be interviewed separately or together, depending on your project's strategy for obtaining women's views about land use problems.

Tell the farmer that the interview will take about an hour of his/her time. Try to persuade the farmer to let you do the interview now. Do not demand to interview. Arrange to come back another time if the farmer is busy, but interested in assisting you.



OBSERVATION

The quality of information you obtain from your interview depends on your ability to observe as well as to ask questions.



Once the farmer has agreed to help, ask him if you may walk around the farm with him "to get a feeling for it". You may begin asking questions about history, size and ownership while you are walking. Tell him you will be taking notes about land uses on the farm, including relative size and quality of cropland, grazing land, fallow, homestead borders, indications of degradation, prominent landscape features, etc.

Relate the farmer's responses to your questions to what you see on the farm. Develop an eye for seeing detail.

In the early part of your project's development, it is best for Extension Staff to go to farms in pairs. You then have a "team-mate" who can support and assist you, help ask questions, and with whom you can discuss observations. Two pairs of eyes and two heads are better than one.

ASKING QUESTIONS

The best strategy to use for gathering information is to ask the farmer about his different production problems.

Example:

> What about crop production? Did you produce enough last year to meet your family's needs for food? Did you have enough to sell as surplus? And so on.....

The point of your questions is to get the farmer's judgement about whether or not there is a problem. Our efforts in collecting information need to focus on more than counting and making our own judgments. The farming system is too complex for us to make these judgments on our own.

USING THE INTERVIEW QUESTIONNAIRE

It is important for you to be familiar with your interview questionnaire, the information you require, and the general order of questions.

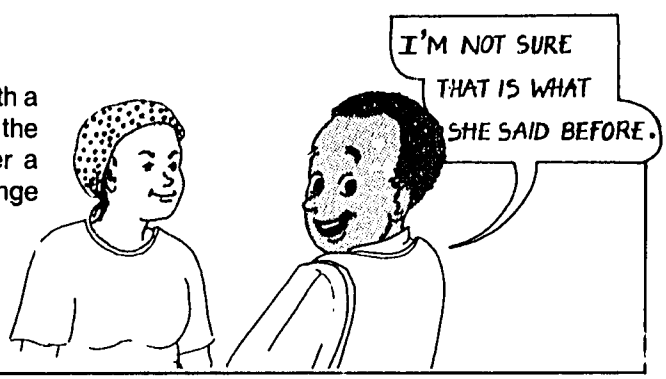
Use your interview questionnaire as a guideline for discussion. This will help make the interview more informal and help put the farmer at ease. Using a discussion approach with the farmer often provides more information of better quality, than if you were just to read the farmer each question.

PROBING

If you do not understand what is being said, or if you doubt you are getting the "full story", ask the farmer related questions. Related questions help you probe for information and are useful for getting more complete and accurate answers. Probing for information also helps you get a more complete "picture" about the farm. Active Listening is an important technique for testing if what you heard was correct and if your conclusions are accurate.

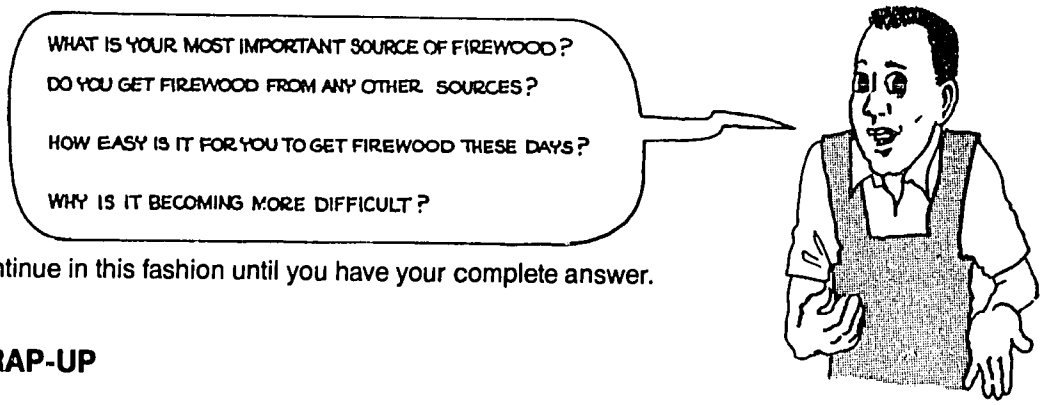
CROSS-CHECKING

If a farmer's answer appears to disagree with a statement made earlier, rephrase the question(s) and ask again. Give the farmer a chance to explain more fully. Do not challenge or embarrass him or her.



RANK ORDERING

Do not ask the farmer, "Please rank the following sources of firewood for me in order of importance". Instead, ask:



Continue in this fashion until you have your complete answer.

WRAP-UP

Before leaving, let the farmer know how much you appreciate the donation of his valuable time for the interview. Remind him/her how the information will be used, to help create appropriate Agroforestry Designs. Tell him/her you look forward to meeting again to consider agroforestry improvements for his/her farm.

Lesson 17 CONDUCTING AN ON-FARM SURVEY

OBJECTIVE

Trainees will be able to confidently conduct good, on-farm interviews.

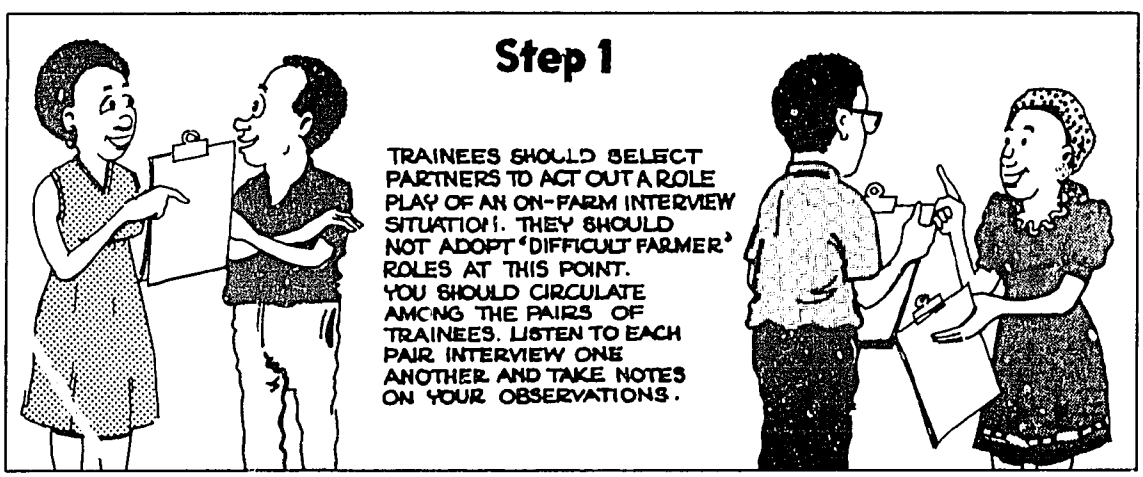
METHOD

The method consists of classroom Role Plays, facilitated discussion and on-farm practice with the Survey Questionnaire. At least two days should be required.

EXAMPLE

Prepare

Read through the lesson and arrange for the field trip to visit farmers.



STEP 2

Lead a group discussion on this interview practice session after everyone has had a chance to practice with partners. Share your observations of the Role Plays and the aspects you overheard that seem to need clarification or further assistance.

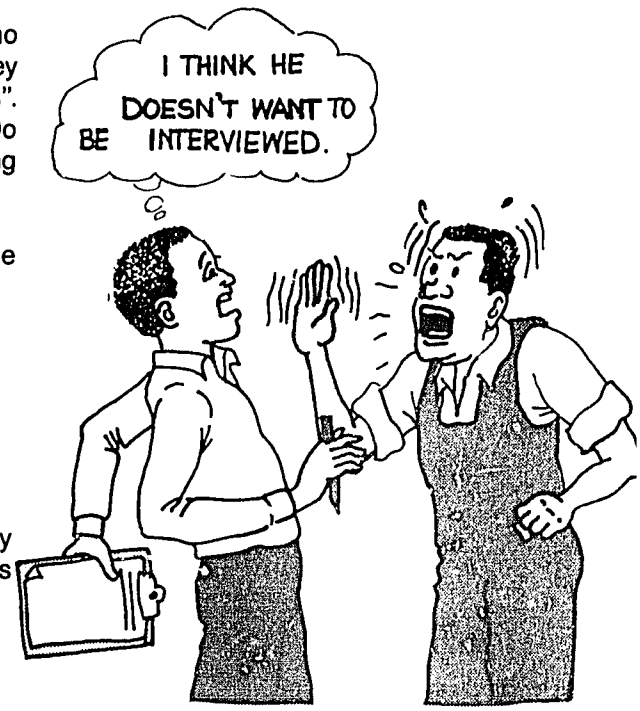
Most problems that arise will have to do with lack of familiarity with the questionnaire. Assure the trainees that using the questionnaire will get easier.

STEP 3

Trainees should now select new partners. Have them role play again. Suggest that those trainees playing the role of the farmer should adopt "difficult farmer" roles. This means that for some reason the farmer is reluctant to give you the information you want.

Conduct another critique. Ask trainees who acted as interviewers to indicate problems they found when interviewing "difficult farmers". What did they do to try to overcome them? Do they understand why the farmer is being "difficult"? Explore reasons such as:

- lack of understanding of who the interviewers are
- what the information is for
- poor timing
- the farmer is tired of being interviewed
- farmer is not being "difficult", but simply does not understand your questions and is unable to reply effectively



STEP 4

Take the trainees to farms, in groups of three or four. They should be accompanied either by the trainer or an assistant who can act as an observer and critic. Pairs of trainees should now conduct an interview with the farmer, with one taking the lead and the others a supportive role.

Allow each trainee the opportunity to take the lead role in conducting an On-Farm Survey. Observe each trainee as she/he conducts the interview. The other trainees who are watching and listening, but do not participate, will benefit by hearing the questions and responses repeated.

Try to ensure that trainees practice interviewing with different types of farmers found in your project area.

STEP 5

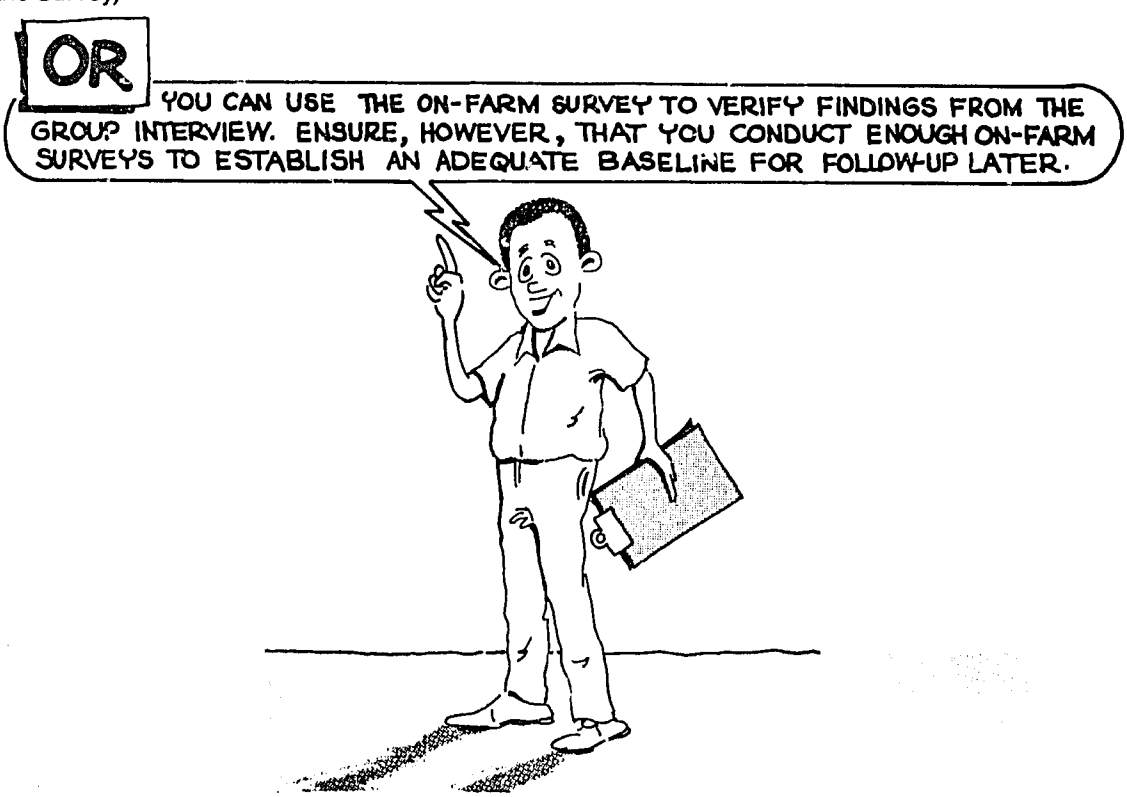
Critique the trainees' performance back in the classroom. Use your practical interview sessions on the farm and your critique to determine if trainees need more practice. Are trainees becoming comfortable with the interview situation? What aspects need change or practice to allow the interviews to go better?

Pairs, or teams, of trainees should critique one another as on-farm practice continues. After each trainee has practiced with at least two farmers, return to the classroom and have them critique the performance of one another. By then they should be ready to start on their own.

Summarize

NOTE: Interview Sampling

The sample size will depend on the amount of variability there is in the types of land use systems found in your project area. In addition, if you make good use of the Group Interview (Stage 1) for obtaining information about your project area you will not need to contact a representative sample of farmers for the Survey,



Lesson 18 CODING THE QUESTIONNAIRE

OBJECTIVE

Trainees will be able to code the data they obtain from the On-Farm Survey Questionnaires.

METHOD

The lesson involves a trainer presentation and trainee practice session. Allow at least half a day for the session.

EXAMPLE

Prepare

Prepare for this activity by creating a coding form for the survey questionnaire. See SOURCEBOOK SUPPORT MATERIALS (5-7).

Facilitate

Explain the importance of coding information obtained from the questionnaire. Coding is a way of abbreviating information so it is easier to use. Information must be coded so it can be analyzed. Coding helps us to relate different factors to one another. With coded information we can compile a data-base of important facts and relationships about farming communities in our project area.

Give each trainee a copy of the coding form. Go through each item on the form with the group. Explain how sections on the coding form relate to sections of the questionnaire.

Explain the difference between pre-coded and open-coded questions. Give examples of the types of answers that may be included for the open-ended answers.

Have the trainees practice coding the data they obtained from their practice surveys. Review coding with each trainee to ensure they understand the procedures.

NOTE:
Coding data may be difficult and cumbersome for many Extension Workers. Though it is useful for them to be aware of the procedures involved, it may be more practical to assign selected project staff to code survey data from the actual survey questionnaires.

DIAGNOSIS PART 5.

INTRODUCTION

Land Use Diagnosis for Agroforestry also involves assessing existing agroforestry potential and opportunities. Assessing agroforestry potential is begun during the Project Area Profile, Land Use Classification exercises. Assessment is continued during the Group and On-Farm Interviews. During each of these steps, we are looking for information about the existence, uses and values of trees in the farming landscape.

This part of Land Use Diagnosis for Agroforestry involves creating a special inventory of trees and shrubs in the project area. We are looking for trees and shrubs which have agroforestry potential. Project staff need this information as a basis for sharing ideas with the farming community about tree development opportunities. We also need this inventory to evaluate information obtained from interviews with farming groups and individual farmers.

The two lessons in this Part require three to seven days, depending on the amount of training time devoted to fill inventories.

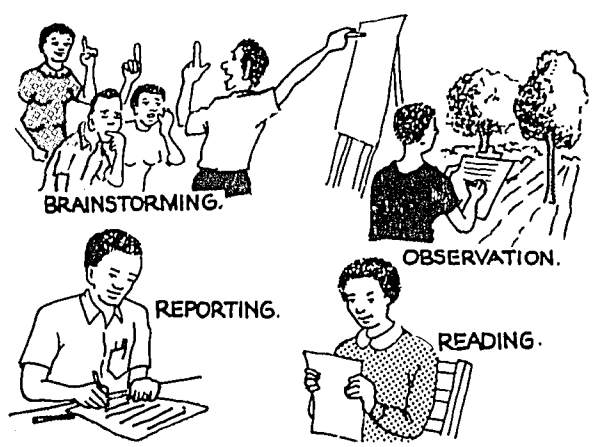
Lesson 19 IDENTIFYING AND DESCRIBING LOCAL AGROFORESTRY SPECIES

OBJECTIVE

Trainees will be able to describe and record physical characteristics and uses of locally growing tree species with agroforestry potential, based on information obtained from local farmers and others.

METHOD

The lesson includes brainstorming, observation and reporting, reading, facilitated discussion and practical data handling exercises. It should take two days to a week to conduct, depending on the richness of your project environment and the information that is already known and available to the project about trees with agroforestry potential.

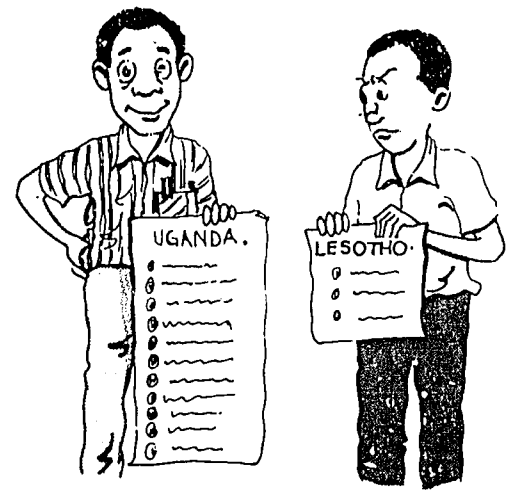


EXAMPLE

Prepare

Prepare for the lesson by reviewing the LEARNING NOTES, Guidelines for Agroforestry Tree Species Inventory. Make plans to visit farmers in the project area to interview them for information about local trees. Review sample formats for documenting information about agroforestry tree species, in SOURCEBOOK SUPPORT MATERIALS (5-10). See also SOURCEBOOK SUPPORT MATERIALS (5-11).

Facilitate



STEP 1

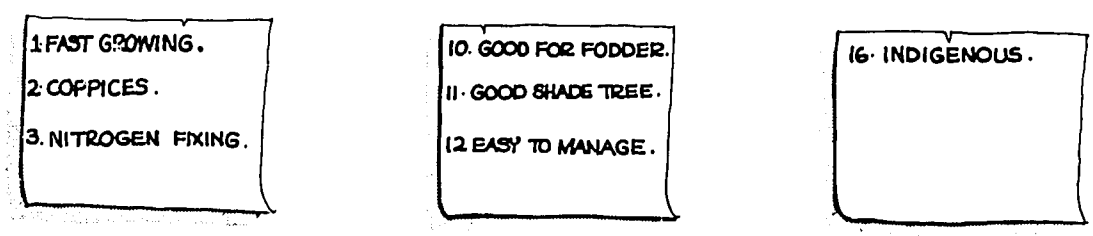
Each trainee should develop a list of potential agroforestry trees and shrubs from among species growing in the area. The length of the list will depend on the richness of the local vegetative environment. It could range from about five species (Lesotho) up to 30 species or more (Uganda). This list is based on trainees' own knowledge of the local environment.

STEP 2

Have each trainee contribute to the development of a group list of species using their individual lists. Record the group list on newsprint.

STEP 3

Have the group develop a list of characteristics needed to assess a species for agroforestry potential. Record this list on a separate sheet of newsprint.



STEP 4

Give each trainee the LEARNING NOTES. Compare the list generated by the trainees with the NOTES. Create a single list that satisfies the group. Then decide which information you can get from observation and/or existing field guides, and which information is best obtained from the farmer. Indicate your key sources of information for each characteristic on the list.

STEP 5

Create a project Tree Species Information Form which can serve for all species. Use SOURCEBOOK SUPPORT MATERIALS (5-11), for guidance.

STEP 6

For the field exercise, divide trainees into pairs or trios. Give them a day to practice taking inventory of existing tree species.

A good approach is simply to look at the landscape for trees of potential interest. Then go to farmers whose land the tree is on, and ask if you may observe the tree more closely. Alternatively, you may assess physical characteristics from places where direct contact with the farmers is not necessary.

Next, request farmers to talk with you about selected trees, how they use them and how they like them. Remind trainees about techniques for good interviewing from previous lessons. Give them copies of the Project Tree Species Information Recording Form, from the LEARNING NOTES, to use during the interviews.

STEP 7

Facilitate a group discussion about the findings of the tree inventory, the next morning.

List the trees of which an inventory was made, on newsprint.

For each species, indicate the number of trainees who included it on their list, with ticks.

Create a species matrix from the information obtained. List the species in the left column and uses and characteristics in columns across the page(s).

SPECIES	BIOPHYSICAL CHARACTERISTICS						USES				
	LOCATION	SOIL	GROWTH FORM	GROWTH RATE	NITROGEN FIXING	COPPICING	FUEL WOOD	ANIMAL FODDER	HUMAN FOOD	POLES	MEDICINES OTHER
Cassia siamea	h	sl	t	f	X	X	X			X	
Grevillea robusta	h	sa	t	m			X			X	X
Leucaena leucocephala	h	cl	t/sh	f	X	X	X			X	X
Markhamia platycalyx	V	sa	t	s		X	X	X	X	X	X

CODES:
h = hillside
V = valley
t = tree
sh = shrub
f = fast
m = medium
s = slow
sl = sandy loam
Sa = sand
cl = clay

When synthesizing the information collected, encourage trainees to discuss what they were told, what they observed, and what they know from other sources about the trees.

Summarize

STEP 8

As a final exercise, the group should rank the species listed in terms of their overall value as agroforestry species. The group can make up its own criteria for ranking these species.

This activity usually produces considerable enthusiasm for trees and the project. It might also tell you whether or not you have "tree lovers" on your staff.

LEARNING NOTES

GUIDELINES FOR AGROFORESTRY TREE SPECIES INVENTORY

SOURCES OF INFORMATION

You should plan to interview several farmers for information about trees. Consider beginning with a farmer whom you have interviewed already, when you did the On-Farm Survey. Other sources of information may include shopkeepers, school teachers or others who frequent public areas where potential agroforestry trees and shrubs are located.

Remember that your contacts with the farmers serve a motivation purpose as much as a knowledge-building purpose. As you collect more information about trees, you will be more and more dependent on the farmer. It helps to show interest and appreciation for farmers' efforts with trees and to respect their information about them.

Introduce yourself to the farmer by giving your name and what you and the project are doing in the area. Explain why you need information about trees to help you, and the project, promote good agroforestry development.

ASK QUESTIONS

Begin talking about better known or more common trees you see on the farmer's land.

Sample:

Can you tell me what kinds of trees you have on your farm? What are their names? (Record their names both in local language and their scientific or common name if you know it.) Local names are likely to be provided. Record them.

Did you plant any of these trees?

Why did you plant these trees/shrubs? Are they useful to you? What are they used for? How are they used?

These questions should encourage the farmer to talk about trees on his land. Your use of questions will help you gain more information about trees and shrubs both common and unusual to the project area. Questions will also help you determine the farmer's interest or pride in his trees. Try and sense how he "feels" about trees, his preferences and dislikes.

WRAP-UP

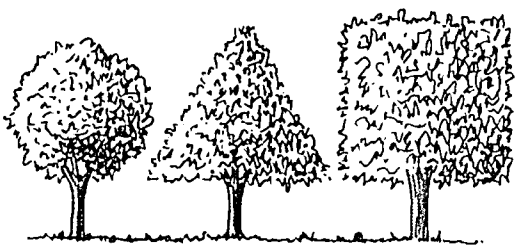
Thank him very much for his information and important contribution to the project's agroforestry work. If appropriate, congratulate him for what you consider to be very important efforts with trees on his land.

PHYSICAL CHARACTERISTICS OF TREES/SHRUBS

Physical characteristics of interest in describing trees and shrubs and assessing their potential for agroforestry include the following:

Relative size

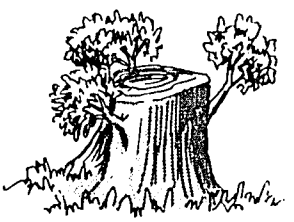
Growth rate



Form and shape

Leaf type

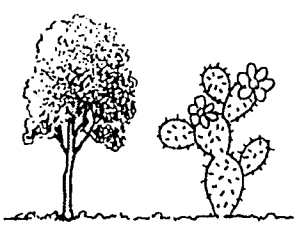
Flowering/Fruiting/seedling habit



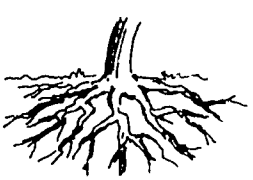
Coppiceability

Occurrence in the landscape

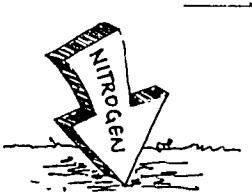
Susceptibility to termites



Indigenous/Exotic



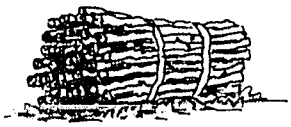
Rooting pattern



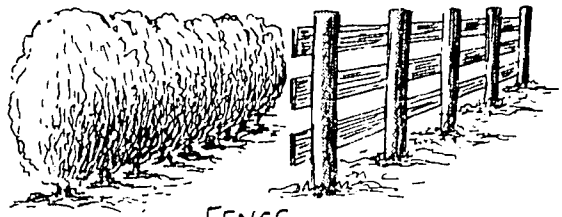
Nodulating nitrogen fixing.

CHARACTERISTICS OF TREES/SHRUBS

The following uses of trees and shrubs are of interest in agroforestry:



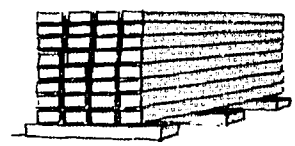
FIREWOOD



FENCE

FRUIT

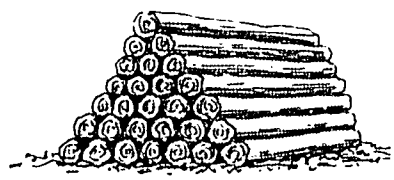
WINDBREAK



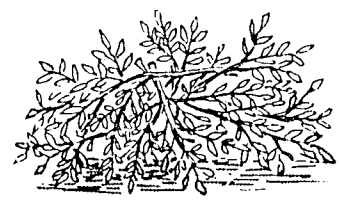
CONSTRUCTION TIMBER

MEDICINE

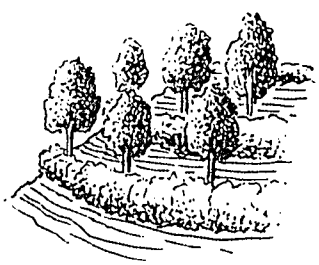
FIBER



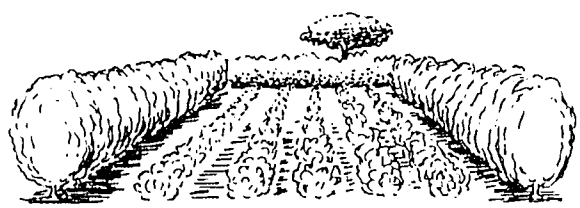
BUILDING POLES



FODDER

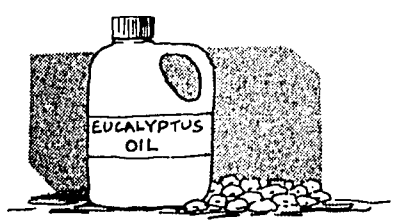


SOIL CONSERVATION



SOIL FERTILITY

PREFERENCE BY MEN OR WOMEN



OIL

SHADE

SAMPLE AGROFORESTRY TREE SPECIES INFORMATION RECORDING FORM FOR EACH SPECIES

SPECIES _____

COMMON NAMES _____

NAME OF AREA _____

PHYSICAL CHARACTERISTICS (circle items when appropriate)

SIZE	Bush	Small Tree	Medium Tree	Large Tree
FORM	High Branching	Low Branching	Full Crown	Flat Crown
SEED (describe color, shape and size of pod and seed)				
GROWTH RATE	Fast	Medium	Slow	
COPPICE	Yes	No	Sometimes	
ROOTS	Deep	Lateral		
TERMITE RESISTANCE	High	Medium	Low	
LANDSCAPE PREFERENCE	Valley Bottoms	Slopes	Ridges	
SOIL PREFERENCE	Sands	Clays	Loams	
NITROGEN FIXING	Good	Fair	No	
HOW COMMON?	Very Common	Common	Uncommon	

COMMENTS: _____

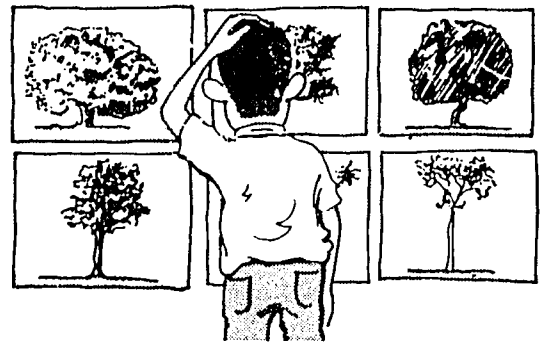
USES OF TREES (Use for each species identified)

SPECIES _____

COMMON NAMES _____

FIREWOOD	Excellent	Good	Fair	Poor
FRUIT	Commercial	Household	Children	Inedible
TIMBER	Excellent	Good	Fair	Poor
FIBER	Excellent	Good	Fair	Poor
FODDER	Good Cattle	Good Goats/Sheep	Fair Cattle	Fair No Goats/Sheep
FENCE	Live Fence Poles	Good Hedges	Fair Hedges	No
WINDBREAK	Single Story	Upper Story	Lower Story	No
MEDICINE	Important	Potential	Unknown	No
BUILDING POLES	Excellent	Good	Fair	Poor
SHADE	Excellent	Good	Fair	Poor
SOIL FERTILITY IMPROVING	Good	Fair	No	
SOIL CONSERVING	Good	Fair	No	
GENDER PREFERENCE	Men	Women	Both	
POPULARITY WITH FARMERS	High	Medium	Low	

Lesson 20 MAKING AN INVENTORY OF AGROFORESTRY SPECIES



OBJECTIVE

Trainees will be able to recognize all species identified in Lesson 19 of Part 5 and describe uses and places in the farming landscape where they grow.

METHOD

The lesson consists of a field trip involving observation of trees and informal discussion with farmers and other local people. The field trip is followed by a facilitated discussion in the classroom. The field trip and classroom discussion require a day.

The lesson continues beyond this period through additional trainee field visits and reporting sessions.

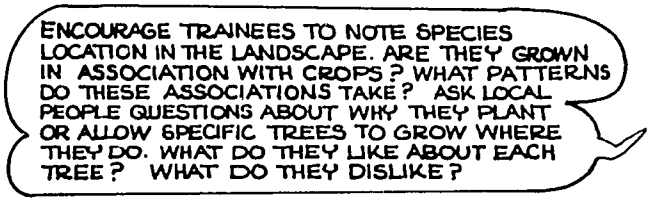
EXAMPLE

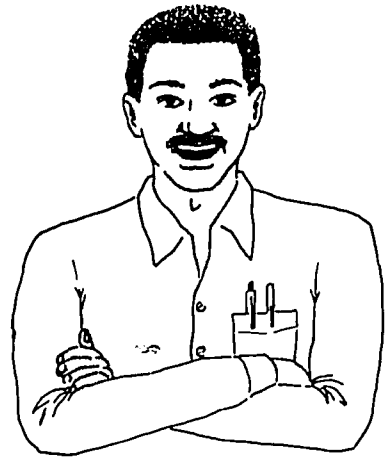
Prepare

Soon after developing the tree species matrix, (Lesson 19, Part 5), organize a field trip to identify examples of each species listed on the matrix. The group should attempt to find examples of all species mentioned.

Facilitate

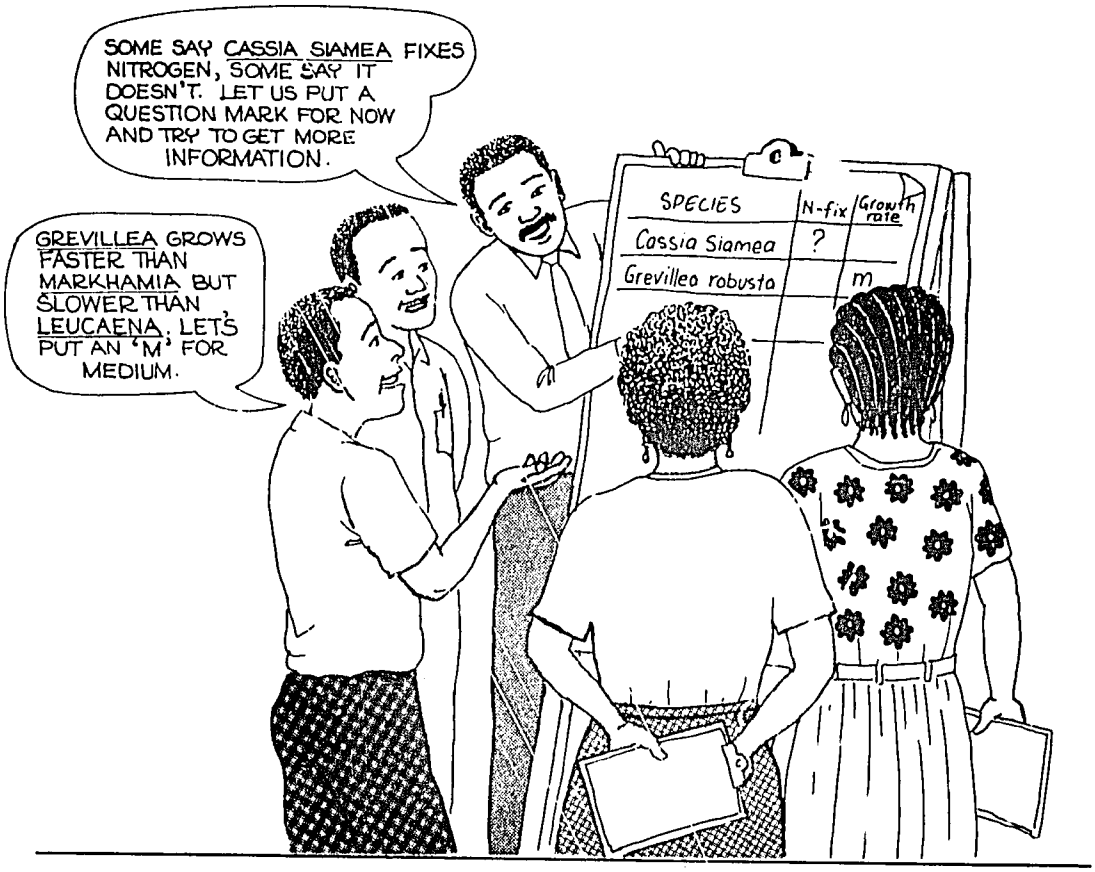
On the field trip emphasize recognition of specific species by shape, size, branching habit and leaf structure.





Encourage trainees to look for additional trees, not on their lists. Have them discuss what they know about these. This discussion will help you determine the level of group knowledge about local trees. It will also help you identify key tree resource people among the trainees.

After the field trip, return to the classroom to continue building your project-specific Agroforestry Tree Species Matrix. Add to the list and fill in details about characteristics according to the information obtained.



Summarize

Suggest that the trainees use any field opportunities to continue making observations and asking questions about trees. Have them record any new information they obtain.

Remember to set aside time during staff meetings for sharing information and observations about trees. This is particularly important for staff early in the project's development.

DIAGNOSIS PART 6.

Analysis of the information obtained from our Agroforestry Diagnosis activities so far involves three steps.

1 Summarize the problems and the contributing factors identified through the surveys, for each land use type.

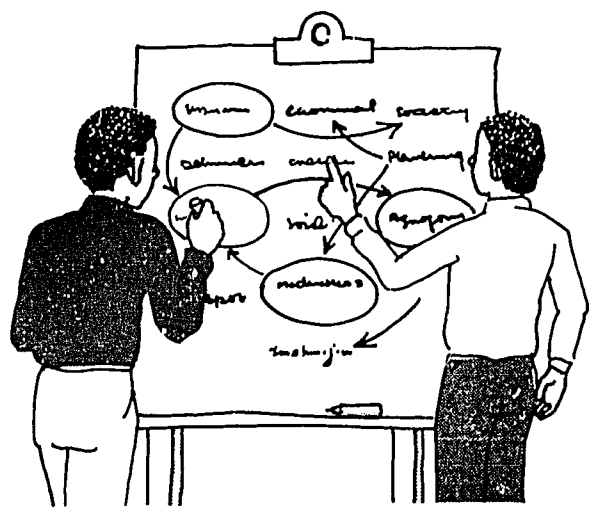
2 Examine the relationship among factors which contribute to problems on different land use types.

3 Make an initial assessment of where trees and agroforestry might be used to address land use problems. We are looking for opportunities where agroforestry can address a variety of different land use problems and their causes, directly and simultaneously.

These three steps are combined in a single, extensive training lesson which follows, called Causal Diagramming. The lesson requires a half day or more.

Lesson 21

CAUSAL DIAGRAMMING



OBJECTIVE

Trainees will be able to explain why causal diagramming is a useful analytical technique in Agroforestry Diagnosis and Design. They will be able to develop causal diagrams from the data obtained from their practice surveys. They will be able to select possible agroforestry interventions to address land use problems.

METHOD

The lesson consists of a facilitated discussion and brainstorming. It requires at least half a day to conduct.

EXAMPLE

Prepare

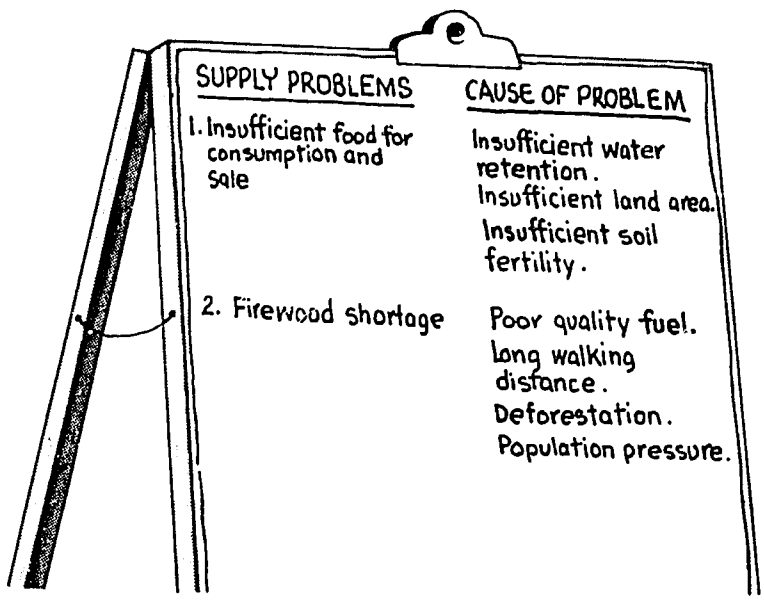
Prepare for your presentation and discussion by reading the step-by-step instructions on Causal Diagramming in SOURCEBOOK SUPPORT MATERIALS (5-12). See also the Guidelines for teaching this lesson, Guidelines for Creating a Causal Diagram. Obtain the group's summary of On-Farm Surveys from one of the land use types in your project area.

Facilitate

From the On-Farm Survey summary and analysis, list supply problems in the left hand column on a piece of newsprint. Next to each, list contributing causes, as in the following example.

Sample

SUMMARY OF HOUSEHOLD SUPPLY PROBLEMS AND CAUSES



SUPPLY PROBLEMS	CAUSE OF PROBLEM
1. Insufficient food for consumption and sale	Insufficient water retention. Insufficient land area. Insufficient soil fertility.
2. Firewood shortage	Poor quality fuel. Long walking distance. Deforestation. Population pressure.

Have trainees brainstorm additional causes of household supply problems if the list does not seem complete or detailed enough. Based on these preparations and on the Guidelines on the following page, lead the trainees in creating a Causal Diagram.

Summarize

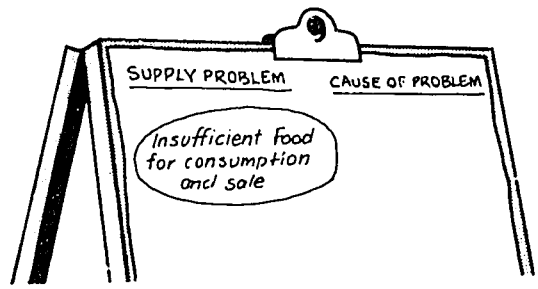
When finished creating the Diagram, emphasize that the exercise of doing it is more important than the end result. Causal Diagramming is foremost a thinking tool. Give trainees copies of the Guidelines if you wish.

GUIDELINES FOR CREATING A CAUSAL DIAGRAM

It is most effective to introduce causal diagramming by example. Proceed as follows.

STEP 1

On the left side of a sheet of newsprint, write the name of a household supply problem identified through your group interviews and On-Farm Surveys. Draw a circle around it.

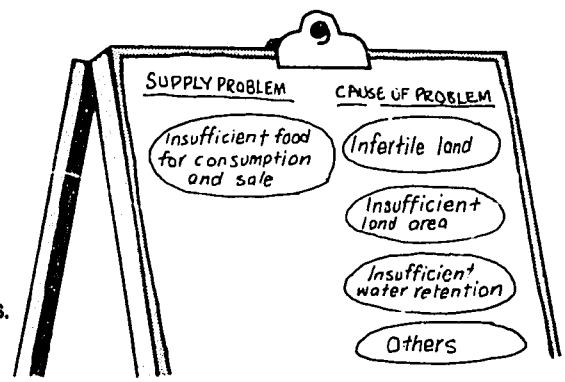


STEP 2

Ask trainees to list causes that contribute to the supply problem. Arrange the names of contributing causes to the right.

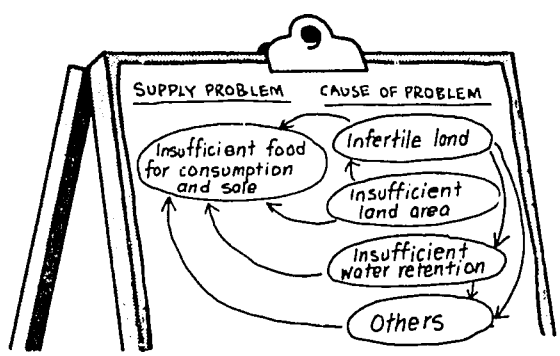
Do not be concerned with prioritizing the causes.

Draw circles around each cause.

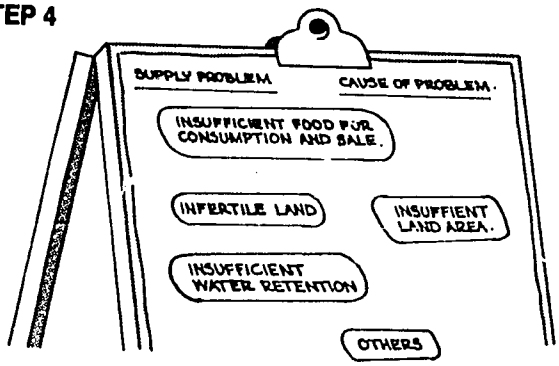


STEP 3

After completing the list of major factors, ask the trainees how each factor relates to other factors in terms of cause and effect. Draw arrows between the circles, with arrows pointing to the cause from the effect.



STEP 4



Redraw the diagram on a clean sheet of newsprint. This time, organize the factors so that those that contribute to the problem most directly are drawn closest to the problem, toward the left. Those that are more indirectly related to the problem are put to the right.

STEP 5

Repeat the exercise, using another piece of paper and using another household supply problem. Consider having a trainee lead the exercise.

STEP 6

Repeat the exercise for each household supply problem identified, allowing different trainees to lead. Many of the same causes will reappear in each diagram.

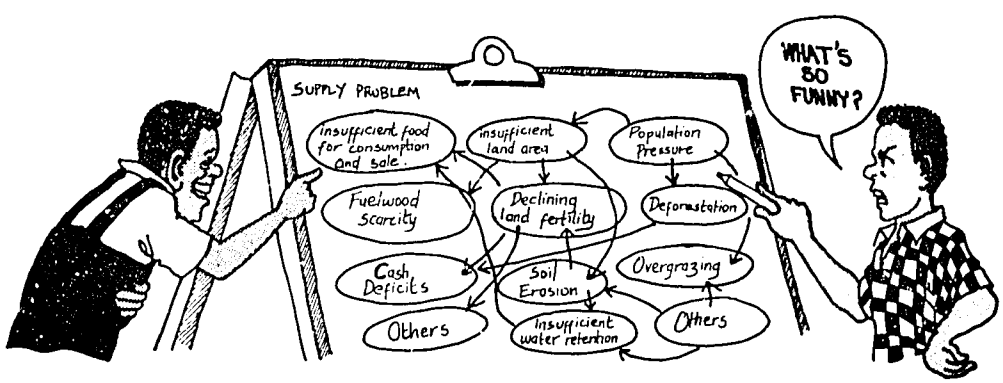
STEP 7

Create from your individual diagrams a single diagram that includes each supply problem and each cause. Attach at least two pieces of newsprint together to provide adequate space.

List the supply problems on the left and circle them. Then list the most immediate contributing factor to the right. Use arrows to show cause and effect relationships among these. List less immediate factors further to the right. Continue to use arrows to point from causes to their effects (problems).

Soon you will have difficulty trying to keep your list of causes on the newsprint. Do not be concerned. Continue to rely on arrows to show relationships among problems and causes as you fill up the paper with competing circles and overlapping lines.

Maintain your sense of humor, above all in this exercise.



STEP 8

The next step is to introduce possible solutions or interventions into the diagrams. Have the group look at each causal factor or constraint, and ask:

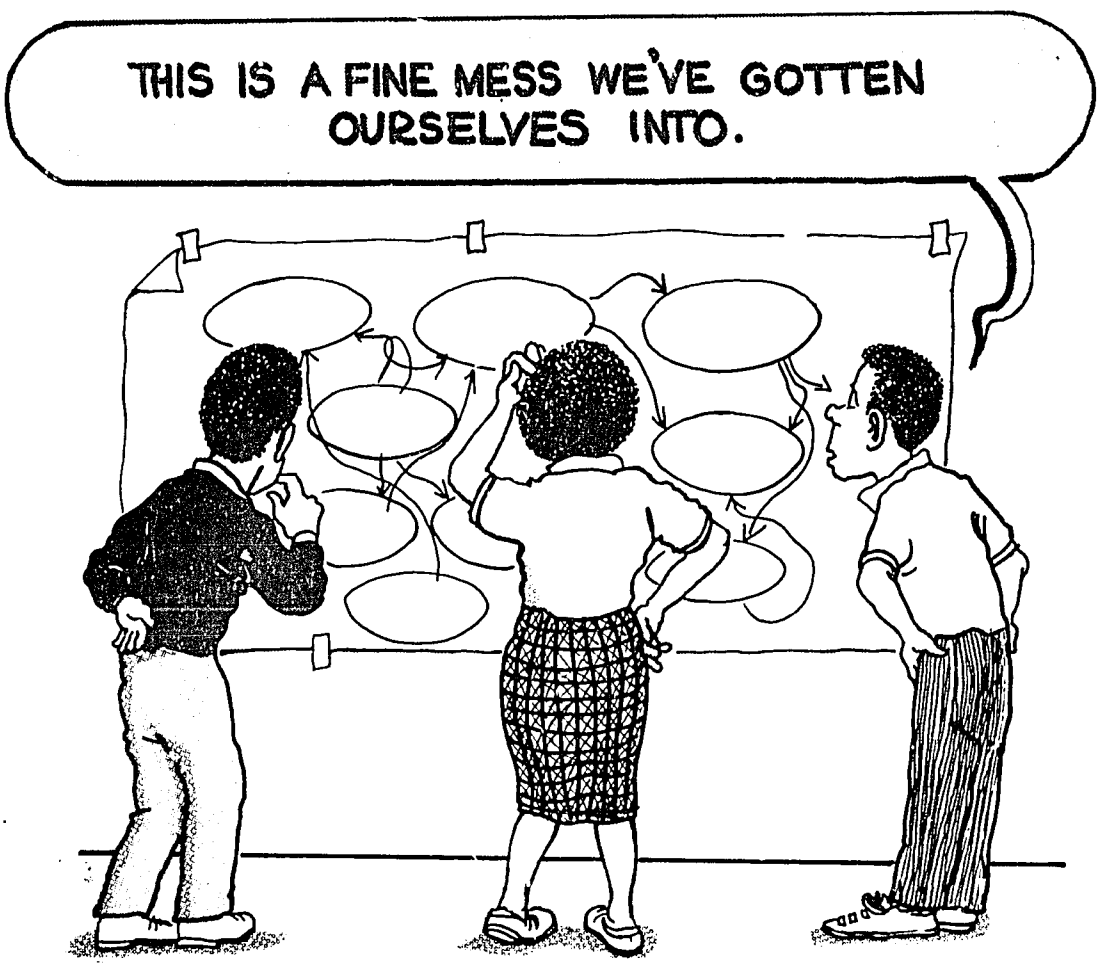
What can we do to remove or reduce the constraint?

What role can agroforestry play to address this cause of our household supply problem?

Encourage trainees to think about roles of trees identified in previous lessons (Modules 2 and 5). Encourage discussion about how intensifying the number of trees on the farm, which provide specific functions, may address the causes of many of our household supply problems.

STEP 9

The end product of this exercise should be a diagram that looks something like the one in the SOURCEBOOK SUPPORT MATERIALS (5-12). However, the process of getting there will create some very nice "messes".

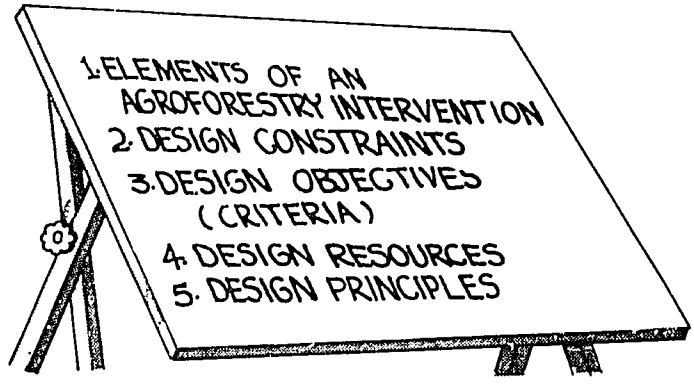


TRAINING MODULE 6 AGROFORESTRY DESIGN

INTRODUCTION

The material in this Module will help you introduce your agroforestry Extension Staff to concepts and guidelines for designing locally appropriate, agroforestry interventions on the farm. Lessons are designed to combine trainees' field experience with important principles for designing agroforestry interventions that farmers can adopt and adapt.

The Module includes two parts. PART 1 provides an overview of the agroforestry design process. The following aspects are defined:



The lessons in PART 2 will assist you in taking the trainees, step by step, through an agroforestry design process. Practical exercises and readings are suggested for developing appropriate design experience.

CONTENTS

The following lessons are contained in the Module:

Part 1.

Lesson 1 Elements of an Agroforestry Design

Lesson 2 Agroforestry Design Strategies and Techniques

Lesson 3 Traditional Agroforestry Systems

Part 2

Lesson 4 Information Collection

Lesson 5 Agroforestry Design Options

Lesson 6 Developing a Species Matrix and Priority List

Lesson 7 Designing On-Farm Configurations

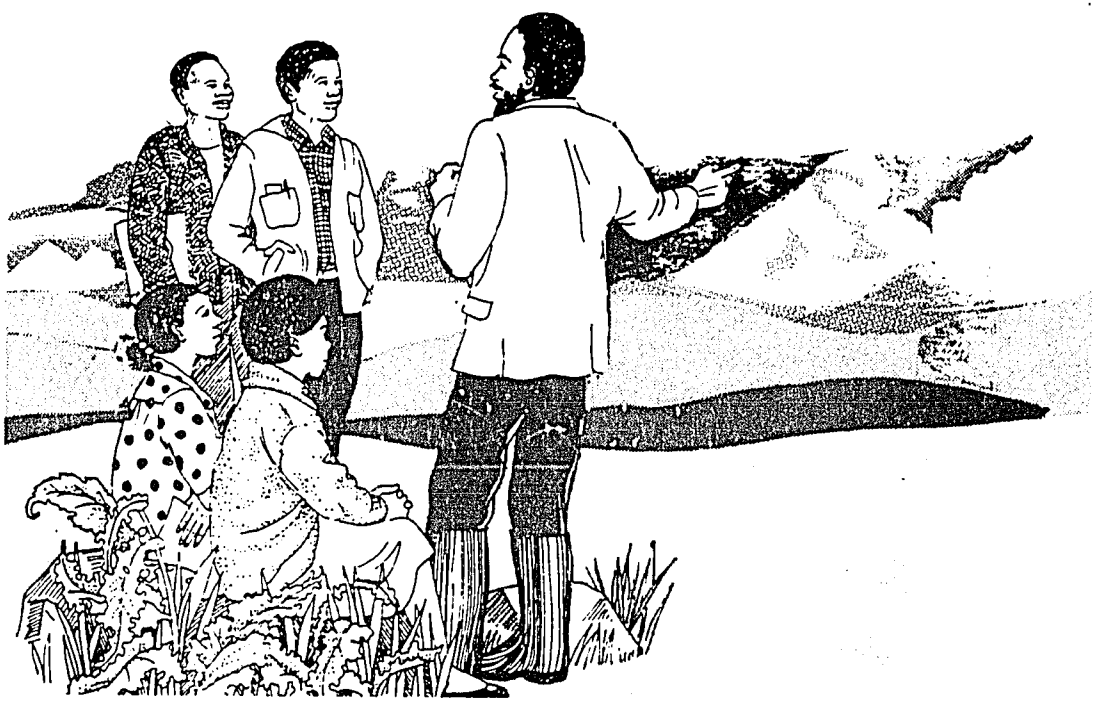
Lesson 8 Tree Spacing and Management Recommendations

Lesson 9 Design Evaluation with Groups (Before Planting)

Lesson 10 Preparing Farm-Specific Designs

Lesson 11 On-Farm Design Evaluation (Before Planting)

Lesson 12 On-Farm Design Evaluation (After Planting)



PART 1. OVERVIEW OF AGROFORESTRY DESIGN

The lessons in PART 1 provide an overview of the Agroforestry Design process. Presentations, readings and discussions are used to help trainees become familiar with what goes into the agroforestry design process to create an appropriate agroforestry technology.

Good Agroforestry Design results in systems that make sense to farmers and provide long-term improvements in the productivity of their land.

The three lessons in Part 1 should require about six hours of classroom time. Allow plenty of time also for trainees to review the LEARNING NOTES and other background materials you select or create on agroforestry techniques.

Lesson 1 ELEMENTS OF AN AGROFORESTRY DESIGN

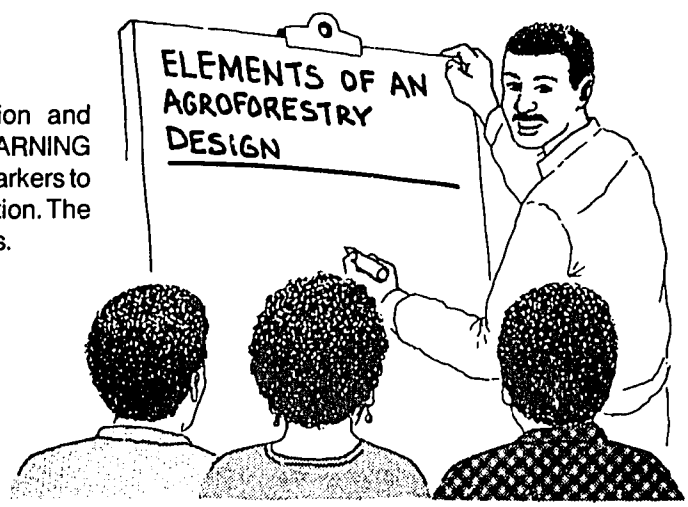
OBJECTIVE

Trainees will be able to describe:

Four elements of an agroforestry design; three agroforestry design constraints; four basic principles of agroforestry design; three design objectives (criteria); and three types of information to use in agroforestry design.

METHOD

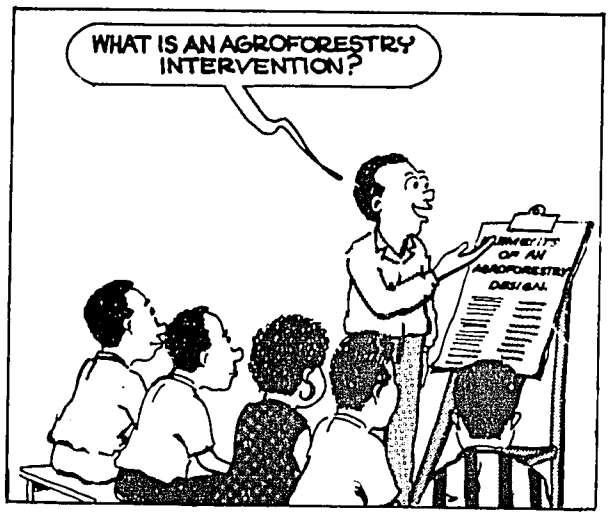
The lesson consists of a presentation and facilitated discussion based on LEARNING NOTES provided. Use newsprint and markers to record important points in the presentation. The lesson should require one to two hours.



EXAMPLE

Prepare

Prepare for the session by reviewing the LEARNING NOTES, Overview of Agroforestry Design. Use the references suggested at the end of the LEARNING NOTES, which you are able to obtain.



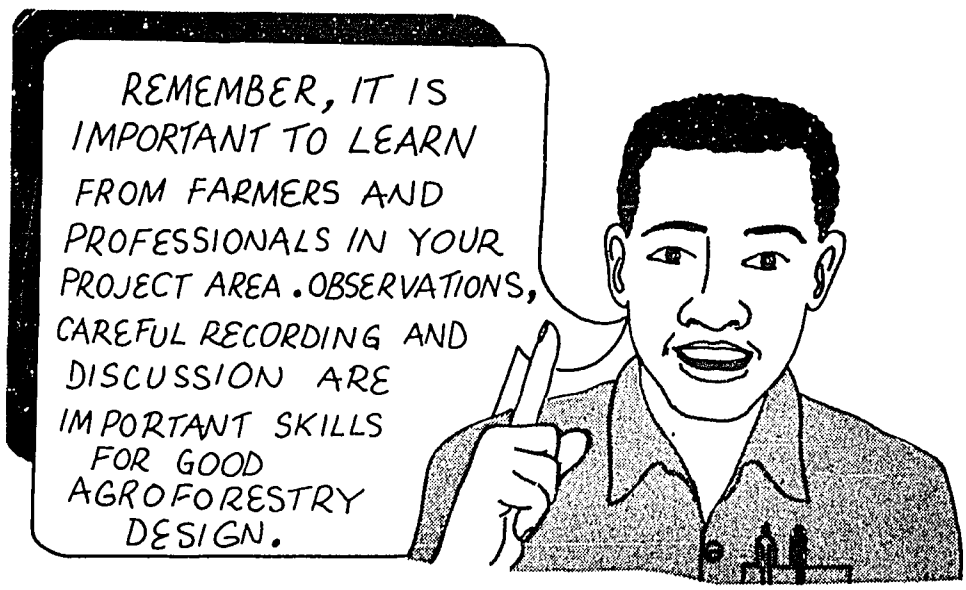
Facilitate

Conduct a presentation, or a series of presentations, based on the NOTES. Begin each topic by asking the trainees questions highlighted in the NOTES.

Guide the discussion using the major parts of each section in, Overview of Agroforestry Design. Record these major points and the response of the trainees on newsprint throughout the presentation and discussion.

Summarize

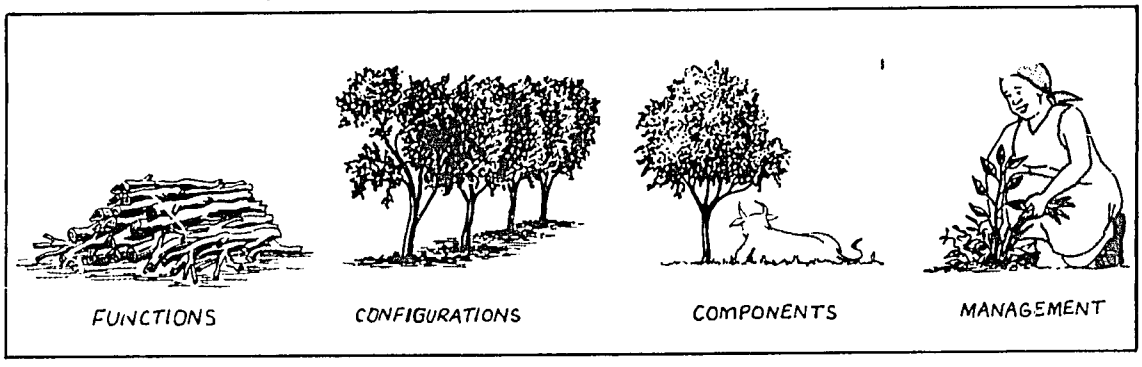
After discussing the material, give the trainees copies of the LEARNING NOTES for their Training Workbooks. Tell them, "now we know what is involved in agroforestry design. Next we will consider what a good agroforestry intervention may look like and what it should do."



OVERVIEW OF AGROFORESTRY DESIGN

WHAT IS AN AGROFORESTRY INTERVENTION?

The purpose of agroforestry design is to create agroforestry interventions which will perform better for the farmer than his existing land management practices. An agroforestry intervention, or technology, consists of the following elements:



FUNCTIONS OF AN AGROFORESTRY INTERVENTION

The function of an agroforestry system describes what it is intended to do or to provide. Functions of agroforestry may be, for example, to make grazing areas more productive, to control soil erosion, or to produce fuelwood. Agroforestry interventions should be designed to function, or provide outputs, according to what the farmer needs from trees.

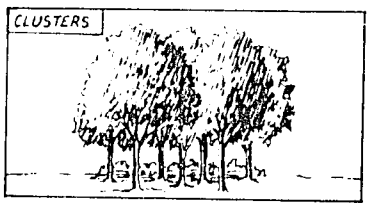
Our ideas about the function of agroforestry interventions should be based on understanding about traditional agroforestry systems and practices. The more we appreciate and build upon what farmers already do with trees and shrubs on their farms, the better we will be able to assist them with techniques for improving their management and use of them.

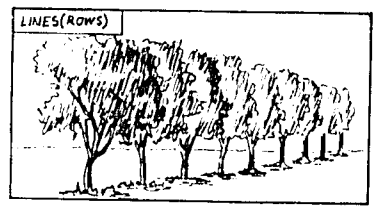
COMPONENTS

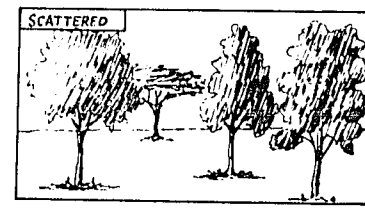
An agroforestry system is made up of components. These are species selected to provide the functions that are needed. Different agroforestry species can be managed for different functions. A single species can also be managed for different functions. But each species has characteristics which are best suited for certain purposes on the farm. When we select a certain species, we must take into account how it will fit into our overall agroforestry design.

CONFIGURATIONS

An agroforestry configuration is its position (location) and its form within the farming landscape. Three key configurations (features) you will use in agroforestry design are:







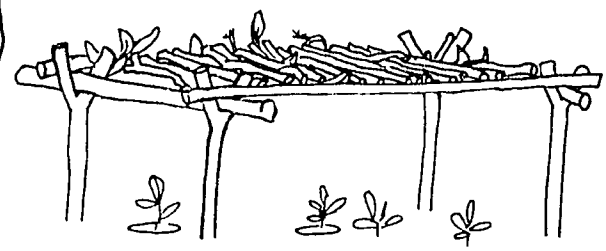
Modern agroforestry systems often involve making better use of line features by planting rows of trees along contours or on borders between farmers' fields.

MANAGEMENT

Management of an agroforestry system concerns how and when the farmer harvests and uses components of the system. Management refers to the techniques farmers use to make sure that each tree and species fulfills their needs. A farmer manages the components (species) in appropriate configurations (forms) to ensure that they provide the functions they were selected for.

Agroforestry Design should therefore, be the careful and considered selection of plant species (components) which can be grouped into configurations that are easily managed by the farmer to provide the functions he specifies. The combination of components, configuration and management should result in the following functions according to the needs of the farmer:

1. PRODUCTS FOR CONSUMPTION.
2. PRODUCTS FOR SALE.
3. PRODUCTS FOR INPUT INTO THE FARMING SYSTEM.
4. PROTECTION OF THE FARM FROM WIND, SUN OR WATER DAMAGE.



WHAT ARE POTENTIAL DESIGN CONSTRAINTS?

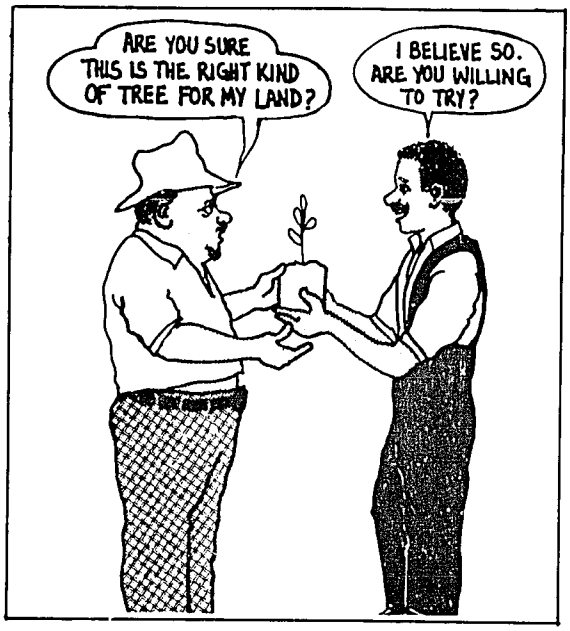
Agroforestry, although an exciting and promising way to address land use and on-farm production problems, still requires a sound understanding and project experience in Agroforestry Design. Here are some important factors to consider when developing Agroforestry Designs.

LIMITED SCIENTIFIC OR PROJECT DATA

Agroforestry systems can be very complex. There are a wide variety of factors to consider when choosing an agroforestry species, leave alone an entire intervention (technology). There is very little research data on plant and plant/agriculture or plant/environment relationships and interactions for farming systems. These relationships and interactions are still very new to agroforestry research.

Despite the lack of research on agroforestry and plant relationships, agroforestry development is still possible. Proper management is important to many tree/agriculture interactions.

As Extension Workers, we must be clear, open and honest with farmers when helping them select agroforestry components (species). Poor designs or poor knowledge of agroforestry systems may cost you and your project the confidence and participation of the farming community.



As Extension Workers, you have the greatest responsibility to help farmers make choices about agroforestry. Confidence and trust in you by farmers is key to helping them learn new skills and techniques, improve traditional ones, and take risks with a technology that is supported by insufficient data. You will have to learn to work with and within local farming systems. You will have to learn how to select and recommend species for trial, adaptation and application to local systems. You will also be responsible for monitoring and evaluating local agroforestry efforts and systems, with farmers, to determine their effectiveness and potential for wider application.

Do not let all of this scare you away from agroforestry. Rather, let it remind you to be open, cautious and diligent in your work to help create new and better ways of doing things.

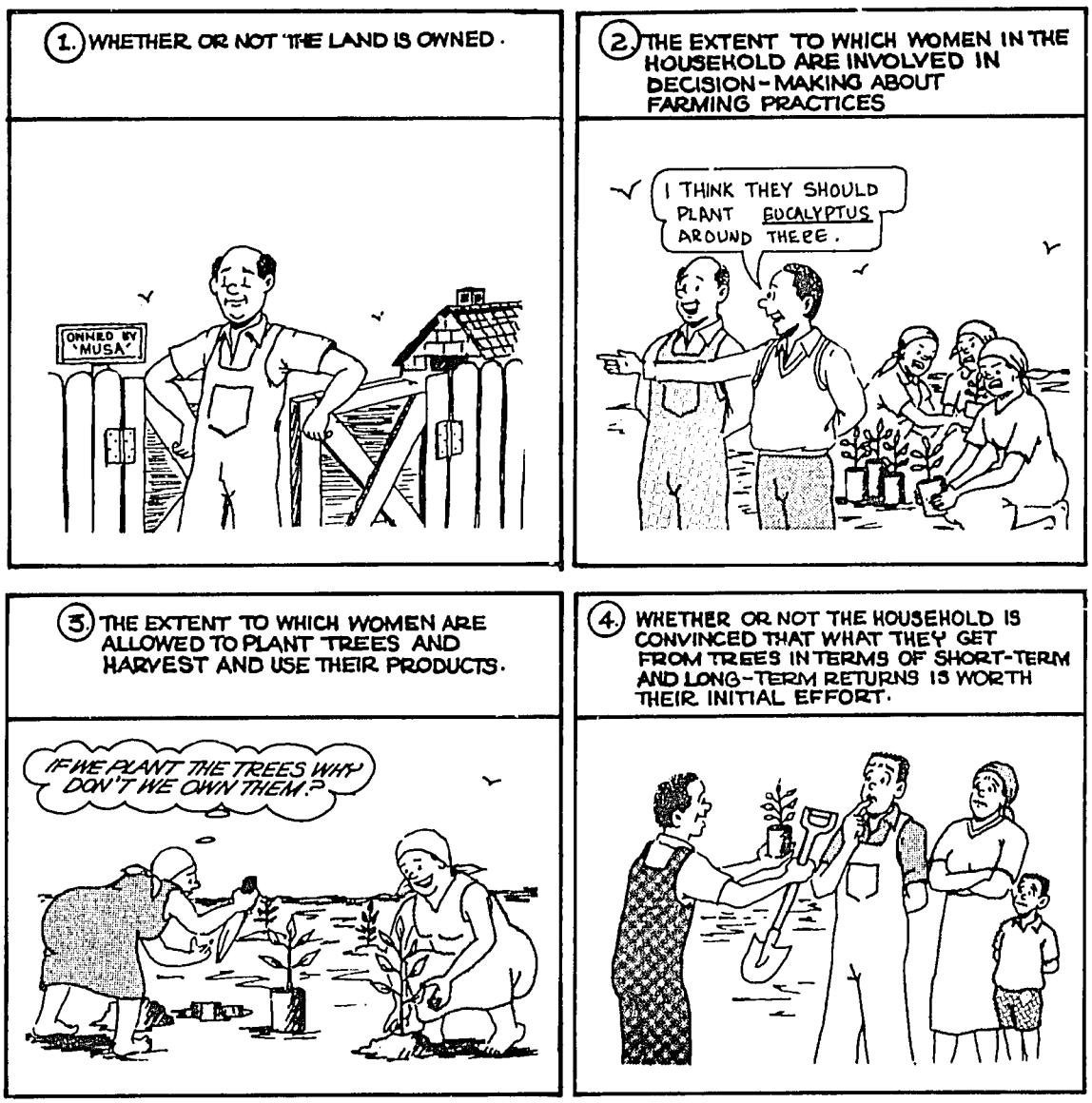
SEED SUPPLY

Another potential design constraint concerns the availability of seed (or other plant propagation material). Some areas are more affected by seed supply constraints than others, but it is a factor to consider in most agroforestry projects. Your project will have to consider where its supply of seeds will come from and how big a supply you will need. This is especially important if you are considering agroforestry species which are not found in your project areas. You can read more about seed supply in Module 8.

LABOR, LAND, AND TREE TENURE

Another potential design constraint that project staff need to be aware of concerns social and management aspects of agroforestry practices. Your great idea about an agroforestry intervention may not be shared by the farming household. They may have to consider how to balance their labor and time, along with other production inputs.

Household decisions about investing labor and time in agroforestry will be affected by:

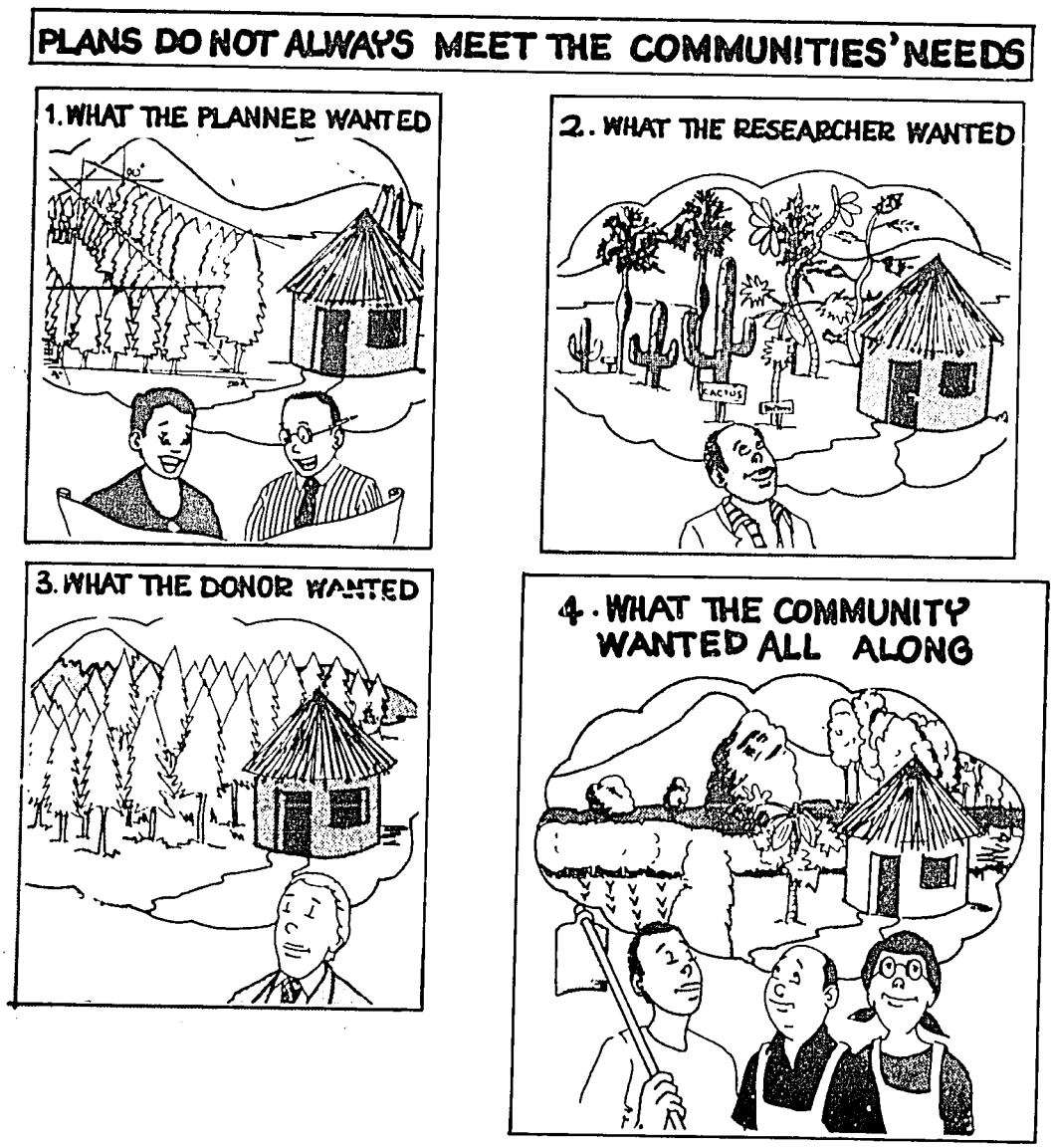


You will have to consider all these potential design constraints when developing agroforestry designs with farmers.

WHAT ARE OUR DESIGN OBJECTIVES

Our design objectives are what we would like our agroforestry interventions ultimately to achieve, to improve the farming system. Specific design objectives stem from our diagnosis of farming system problems (Module 5). General design objectives for most projects, however, probably will include those listed below.

Specific design objectives are important to our project and its participants because they form the basis from which we will evaluate their effectiveness. Our agroforestry designs will be evaluated on the basis of how effectively our selection of agroforestry components, configurations and management recommendations have met the functions they were designed for. Setting our design objectives with farmers also will improve their ability to assess how effective the designs have been in meeting their needs.



GENERAL DESIGN OBJECTIVES FOR IMPROVING A FARMING SYSTEM WITH AGROFORESTRY

MEET BASIC NEEDS

The Agroforestry system should enable the farmers to produce what they require to satisfy their basic needs; food, energy, shelter, etc. from the land they are using. This is for their families' consumption and for exchange with others, or for cash.

INCREASE PRODUCTIVITY WITH AS LITTLE OUTSIDE INPUT AS POSSIBLE

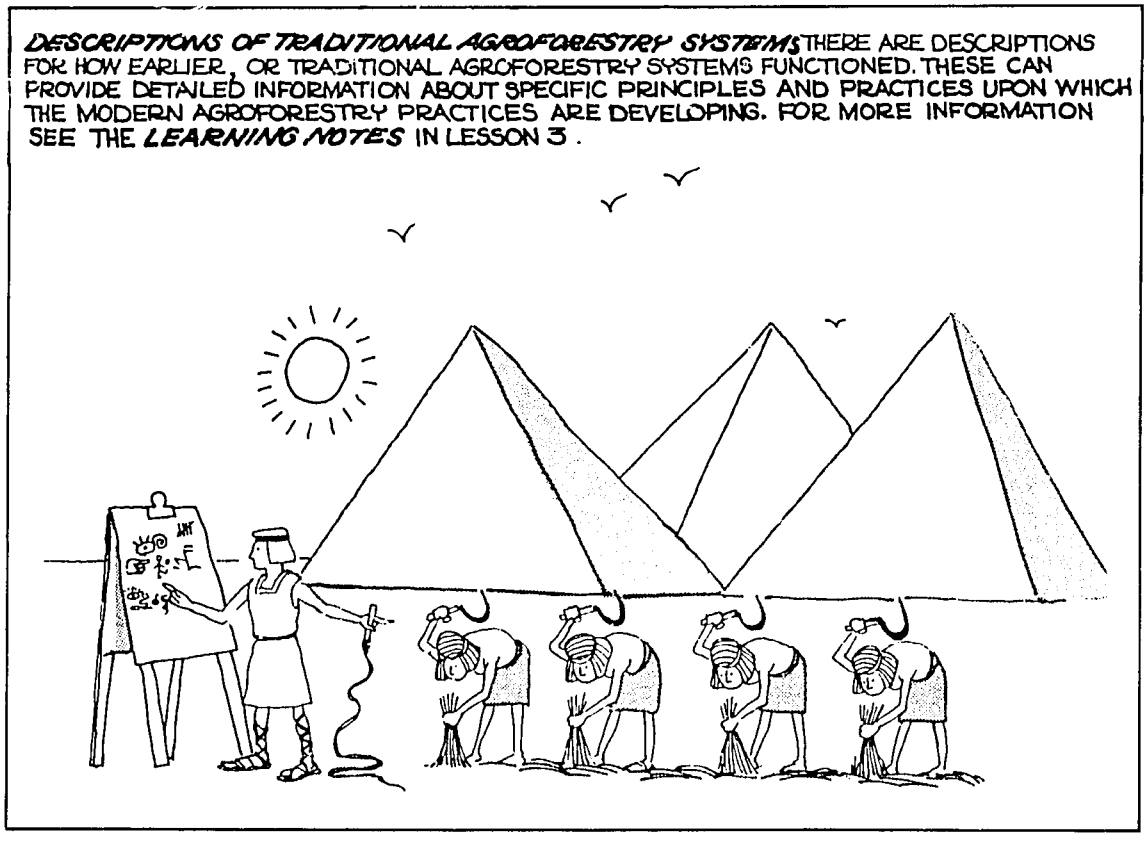
A good agroforestry system should be as self-contained as possible. It should require few external inputs. Farmers should see the benefits when they compare their inputs and the product of their efforts.

IMPROVE SUSTAINABILITY

The system should continue to provide benefits with minimal external inputs, long into the future. It should limit nutrient erosion on the farm from sun, wind and water so that productivity remains sustainable.

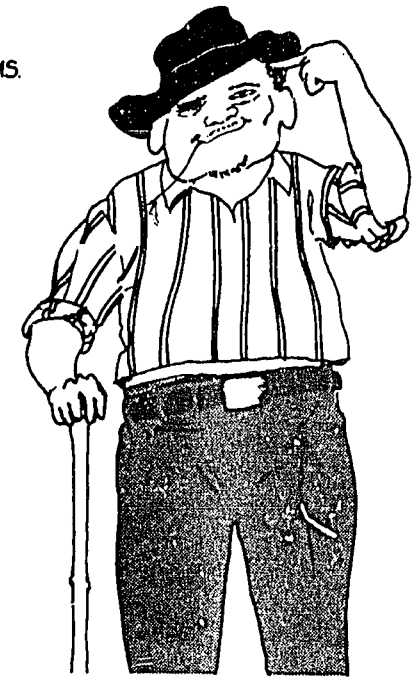
WHAT INFORMATION SOURCES CAN WE USE FOR AGROFORESTRY DESIGN?

There are three major sources of information for designing sound farming systems using agroforestry.



FARMER KNOW-HOW THERE ARE KNOWLEDGE AND SKILLS THAT FARMERS WITHIN YOUR OWN PROJECT AREA ALREADY USE TO COPE WITH PRESENT PROBLEMS. MUCH OF WHAT THEY ARE DOING IS BASED ON GENERATIONS OF EXPERIENCE.

SOMETIMES IT APPEARS THAT FARMERS' PRACTICES ON THE FARM APPEAR POOR OR COUNTER-PRODUCTIVE.
YET THEY OFTEN ARE RESPONDING TO CIRCUMSTANCES OUTSIDE THEIR CONTROL OR EXPERIENCE.
OLD SYSTEMS SIMPLY DO NOT ANSWER MANY OF THEIR CURRENT FARMING PROBLEMS.
STILL, OLD FARMING SYSTEMS CONTAIN VALUABLE ELEMENTS.
THEY CERTAINLY PROVIDE GOOD OPPORTUNITIES FOR DISCUSSION WITH FARMERS IN YOUR PROJECT ABOUT IMPROVING THEIR FARMING SYSTEMS.



RESEARCH BASE THERE IS THE RESEARCH BASE, OR COLLECTION OF DATA ON "MODERN" AGROFORESTRY TECHNOLOGIES. MOST OF THIS DATA FOCUSES ON MULTI-PURPOSE TREES (TREES WHICH CAN BE USED TO ADDRESS MANY ON-FARM FUNCTIONS). THERE IS ALSO A GROWING NUMBER OF SUCCESSFUL AGROFORESTRY DEVELOPMENT PROJECTS FROM WHICH IDEAS AND LESSONS CAN BE LEARNED.

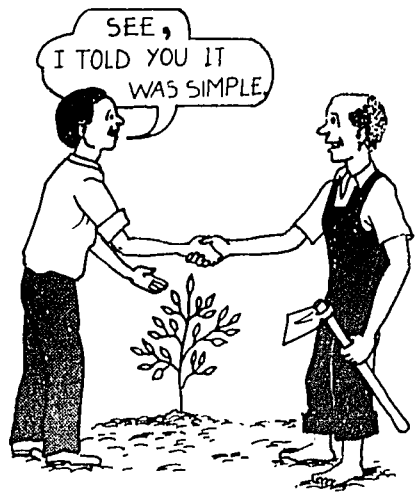
There is more information on modern agroforestry technologies in LEARNING NOTES for lesson 2, and in SOURCEBOOK SUPPORT MATERIALS for this Module.

Remember, it is important to learn from farmers and professionals in your project area. Observations, careful recording and discussion will help you assemble the skills, experience and tools you will need for good agroforestry design and development.

WHAT ARE OUR AGROFORESTRY DESIGN PRINCIPLES?

There are several key principles that should be effective in helping to guide our agroforestry design process. Think about these and try to apply them when designing your project's agroforestry systems.

STEP-BY-STEP Agroforestry Techniques should be introduced and developed gradually, building upon strengths and successes and improving upon mistakes and weaknesses.



SIMPLE Agroforestry Intervention should be kept simple and should be easily understood by the farmers and community members who we are trying to assist.

LOCALLY FAMILIAR Agroforestry Species should be locally familiar to the project environment. Trials with promising, exotic species should not be excluded, but approached cautiously and carefully.

PARTICIPATION Design and design testing (monitoring) should be done in collaboration with local participants (farmers). On-farm management of agroforestry species and features is a critical part of testing designs and determining their success.

REFERENCES

The following publications will provide you with information about agroforestry design. The first reference is especially useful and may be reviewed as a companion volume to Module 6. Many of these publications as well as others to assist your agroforestry design efforts can be obtained by writing to the Publications Department of ICRAF, P.O. Box 30677, Nairobi.

Rocheleau, D., F. Weber and A. Field. In press. Agroforestry in Drylands Africa. ICRAF, Nairobi.

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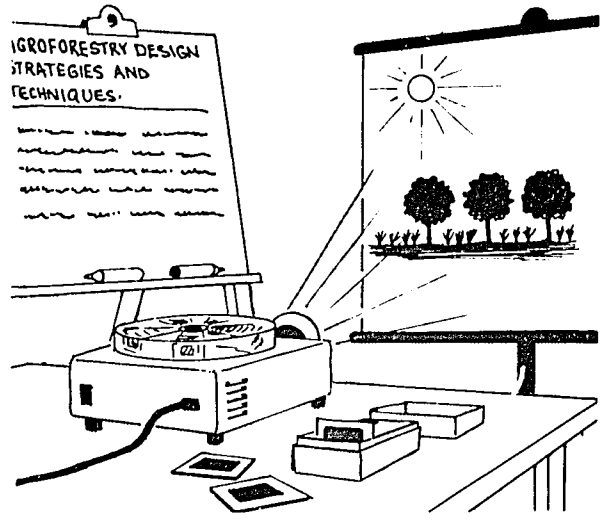
Lesson 2 AGROFORESTRY DESIGN STRATEGIES AND TECHNIQUES

OBJECTIVE

Trainees will be able to explain what is meant by design strategy. They will be able to describe some basic techniques to use in applying their agroforestry design strategy.

METHOD

The lesson consists of a presentation and facilitated discussion based on the LEARNING NOTES, Agroforestry Design Strategy and Techniques. Use newsprint and markers to record important points in the presentation. Complement the presentation with slides if available. The lesson should require one to two hours.



EXAMPLE

Prepare

Prepare a presentation using the LEARNING NOTES, Overview of Agroforestry Design, PART II. You can use reference material listed in this Module's LEARNING NOTES to good effect as well.

Facilitate

Use your presentation as an introduction to Design Strategies and Techniques. Highlight important points or information on newsprint during your presentation. Use illustrations to explain the agroforestry techniques/configurations. Provide time for observations and questions during, or following your presentation.

Summarize

Give copies of the NOTES to your trainees for their Training Workbooks. Tell your trainees, "now we have an idea what agroforestry interventions may look like and how they should perform. Next we will take a closer look at where our ideas about agroforestry designs come from".

AGROFORESTRY DESIGN STRATEGY AND TECHNIQUES

WHAT IS OUR AGROFORESTRY DESIGN STRATEGY?

Our Agroforestry Design Strategy should involve step-by-step consideration of the following elements:

1. Identification of Resources - both written and human, to help us put together a more comprehensive picture of agroforestry design possibilities.

2. Design Objectives - what we hope our agroforestry designs and systems will accomplish in terms of improving farming systems.

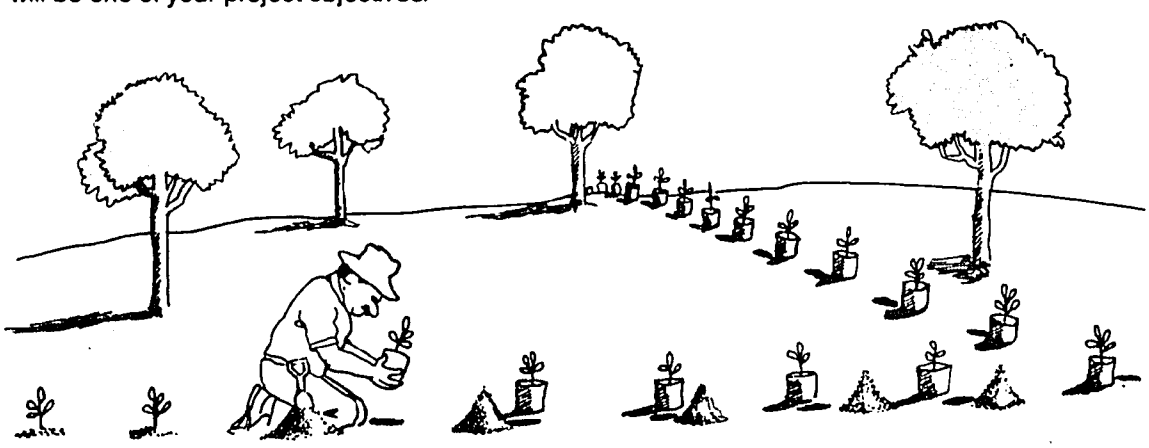
3. Design Principles - guidelines we should use to help us in our attempts to develop a good agroforestry design strategy.

4. Design Constraints - what we recognize as possible drawbacks to an effective agroforestry design and its successful implementation by farmers.

5. Local Opportunities - an appreciation for local conditions, practices, skills and knowledge upon which we can both introduce and promote agroforestry development as a practice, to improve farming systems and farmers' lives.

Here are some basic techniques to use in applying our design strategy:

ACTIVE TREE ESTABLISHMENT Part of our design strategy may be the introduction of active tree establishment and management on farms and grazing areas. Many traditional farming systems only tolerate the presence of trees; they do not actively establish new ones. Most likely, tree establishment will be one of your project objectives.



TREE TOLERANCE In most traditional farming systems, trees exist in the landscape because they are allowed to remain there, not because they are planted. They are considered more useful standing than cut because they provide one or more of the following benefits:

- **They improve soil fertility through nutrient recycling**
- **They improve soil structure through organic decomposition**
- **They provide shade or wind breaks**
- **They provide food, fodder, and/or wood products for consumption**

Through modern agroforestry technologies, active tree establishment and management are being introduced for similar benefits. The most successful agroforestry interventions recognized to date are the hedge and the multi-purpose tree.

WHAT IS A HEDGE?

The hedge is a basic agroforestry configuration (feature) which can be easily and readily managed by farmers. A hedge-based design involves selection of plant species which can be placed in a line and which have beneficial functions on the farm.

The hedge is a multi-purpose feature that is likely to win acceptance by farmers because of the following characteristics:

EASILY ESTABLISHED	It can be introduced on a small scale and is easily established.
REQUIRES LITTLE SPACE	It takes up relatively little space and will not significantly reduce the size of the land available for cropping.
FAMILIAR MANAGEMENT	Hedge management is known to most farmers. Hedge management can be controlled with locally available tools and techniques.
CONTROLS EROSION	Hedges can help control erosion on slopes.
PRODUCTIVE	Hedges can produce leaves for fodder or mulch and small diameter wood.

WHAT IS A MULTI-PURPOSE TREE?

The multi-purpose tree is a basic agroforestry component. Multi-purpose trees are species which can be managed for more than one product, such as fuelwood, building poles and fodder. Multi-purpose trees are also important for soil protection, soil restoration, erosion control, etc.

Multi-purpose trees in the legume family of tree species are most promising and popular because they are so versatile. The following characteristics are typical of many legumes:

NITROGEN FIXING They help restore soil fertility through their ability to take nitrogen from the atmosphere and store it within their root system.

FODDER PRODUCING They produce leaves and pods which have both fodder and food value.

FUEL PRODUCING They produce fuelwood of good quality.

ADAPTABLE Many adapt to a wide variety of environmental conditions, and there is a range of widely adaptable species to choose from.

FAST GROWING Many of them are fast growing.

WHAT CAN WE DO WITH HEDGES AND MULTI-PURPOSE TREES?

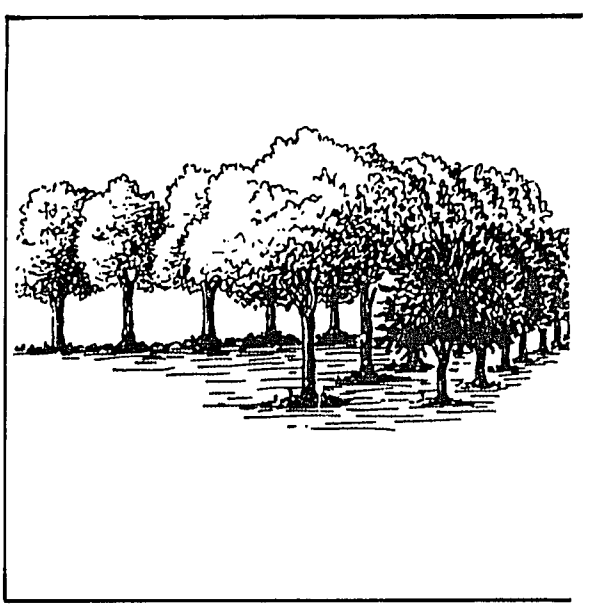
Hedge designs offer a number of different agroforestry configurations. Most of these designs use multi-purpose trees. Here are some examples of hedge designs using multi-purpose trees.

BOUNDARY PLANTINGS

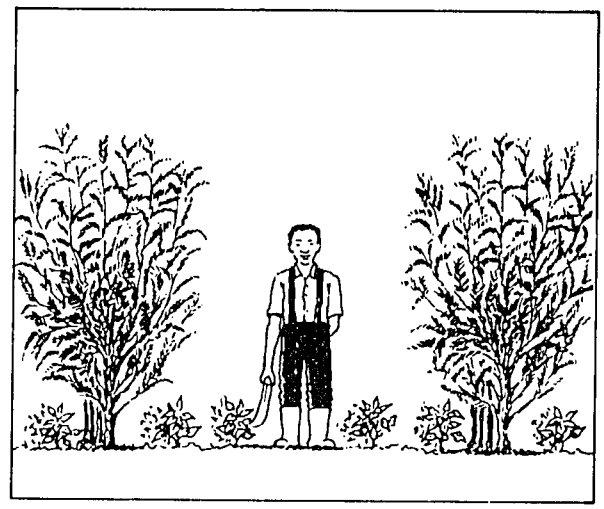
Trees are generally planted in single or double rows as borders around cropland, the farm perimeter, and/or the homestead.

Spacing between trees usually ranges between 0.5 to 2.0 meters, depending on moisture availability, species used and the intended function for the trees.

The best boundary planting consists of a multi-story design. These designs use trees which grow to varying heights and for different purposes. Multiple species are planted for simultaneous production where, for example, fuelwood, building poles and fodder or a leafy mulch are produced. The trees serve also as boundary demarcations and living fences.



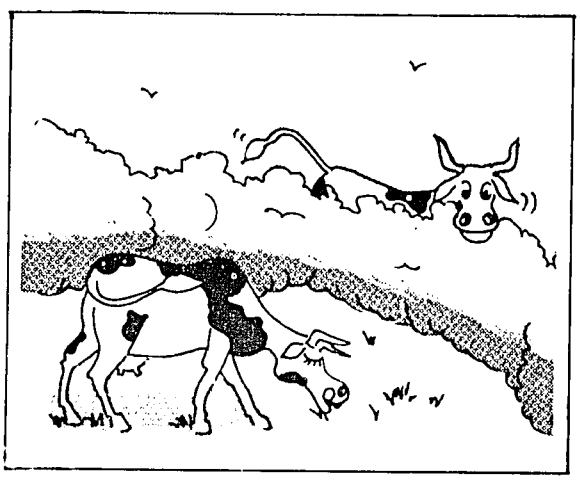
ALLEY CROPPING (STRIP CROPPING OR HEDGEROW INTERCROPPING)



Alley cropping involves establishing trees at very narrow spacings (0.3 to 1.0 m), in rows across the cropland. Intensive alley cropping may involve establishment of a tree row between every second or third row of crops.

A system can be designed and started, however, with just one or two alleys. This increases chances of adoption of the technique by farmers. As their familiarity with management techniques grows, and crop production is not negatively affected, the farmer is likely to increase the number of alleys in his cropland.

Trees in an alley cropping system are managed as a short hedge. They are somewhere between knee and shoulder high. Nitrogen-fixing species normally are used. Trimmings from the hedges are applied to the soil as nitrogen-rich mulch. They may be used also as fodder. Branches too big for mulch or fodder can be used as firewood.



LIVING FENCEROWS

Living fencerows involve very close spacing of trees in rows, along boundaries where fences are desired. Tree/bush species which are eaten by livestock should not be chosen for living fencerows (for obvious reasons).

Trimmings from living fencerows can be used for firewood. Some species can be "woven" into a thicket. One variation on the technique is to plant an "upper story" of a different species every few meters along the row. The tree species selected for the "upper story" can be used to produce building poles or timber.

EROSION CONTROL OR BUFFER STRIPS

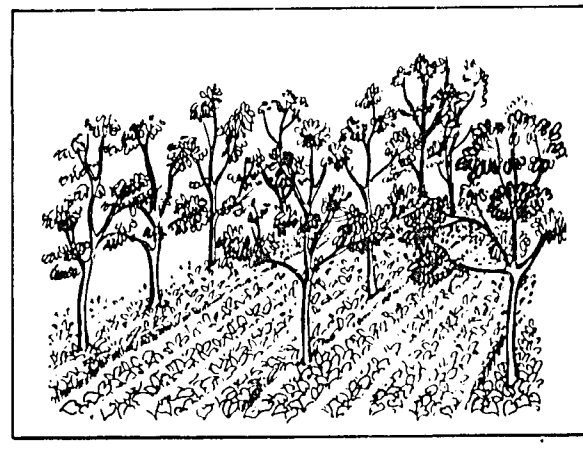
Trees for fuelwood, pole production, or timber may be grown in combination with grass strips established along the contour of the cropland. These help control erosion. Relatively wide spacing between trees should be allowed, to keep the grass strips from becoming too heavily shaded.

Tree crowns can also be managed for shade control, and perhaps the foliage can be used for fodder or mulch. In high potential, humid, tropical areas, dense rows of trees may be planted for erosion control

INTERCROPPING

Intercropping involves wide and even spacing of trees among food crops. There are a number of different ways in which trees are combined with crop production.

One way to intercrop trees with food is to manage trees so that they are allowed to mature. Mature trees are then harvested for a variety of different products. Food crops are phased out after two or three years, as these trees mature. In some cases crops which tolerate shade, such as coffee are planted beneath the trees.



Another intercropping system uses nitrogen-fixing trees which have light canopies. Nitrogen-fixing trees are widely, but uniformly spaced throughout the cropland so that annual crop cycles can continue. These trees can also be cut (lopped) for fodder, fuelwood or timber.

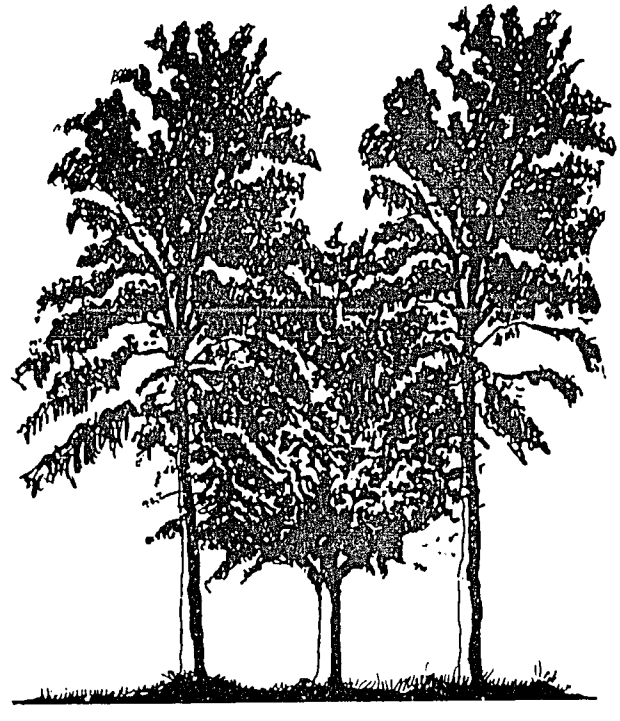
This last type of intercropping is very much like traditional agroforestry systems, where trees are left standing throughout the cropland. The difference between a traditional agroforestry system and modern intercropping systems is that specific tree species are chosen and planted in more regular patterns.

WINDBREAKS OR SHELTERBELTS

Windbreaks are another example of multi-purpose hedge features. Windbreaks often involve a "double story". The main objective in designing a windbreak is to ensure that the trees deflect wind from the cropland, homestead, or another selected area.

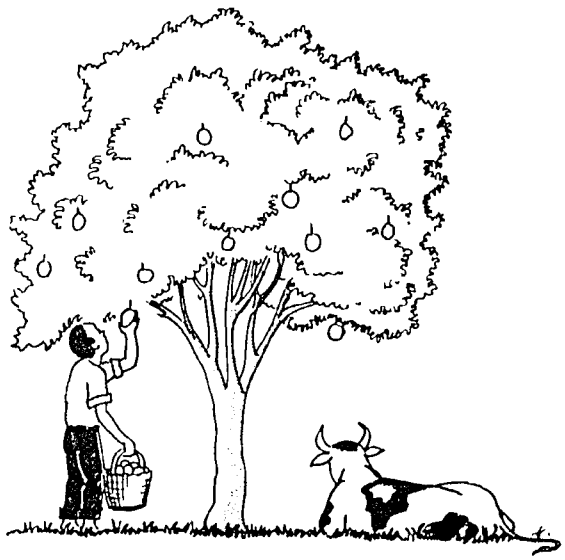
Tree species are required which have low branching habits and narrow crowns. A combination of species can be used that have good density and height to deflect the prevailing winds over crops growing on the side of the windbreak, away from the wind.

Windbreaks are agroforestry features that require special, technical design considerations. If improperly planned and planted, they can have the opposite effect of channeling the wind. Wind which is channeled by trees speeds up and can damage cropland. It is best to have an expert with windbreak design experience help you create windbreak designs for your project.



WHAT ARE OTHER POSSIBLE AGROFORESTRY CONFIGURATIONS?

Besides the hedge in its various forms, other promising agroforestry configurations include fruit trees, small woodlots, and scattered trees for grazing area improvement.



FRUIT TREES

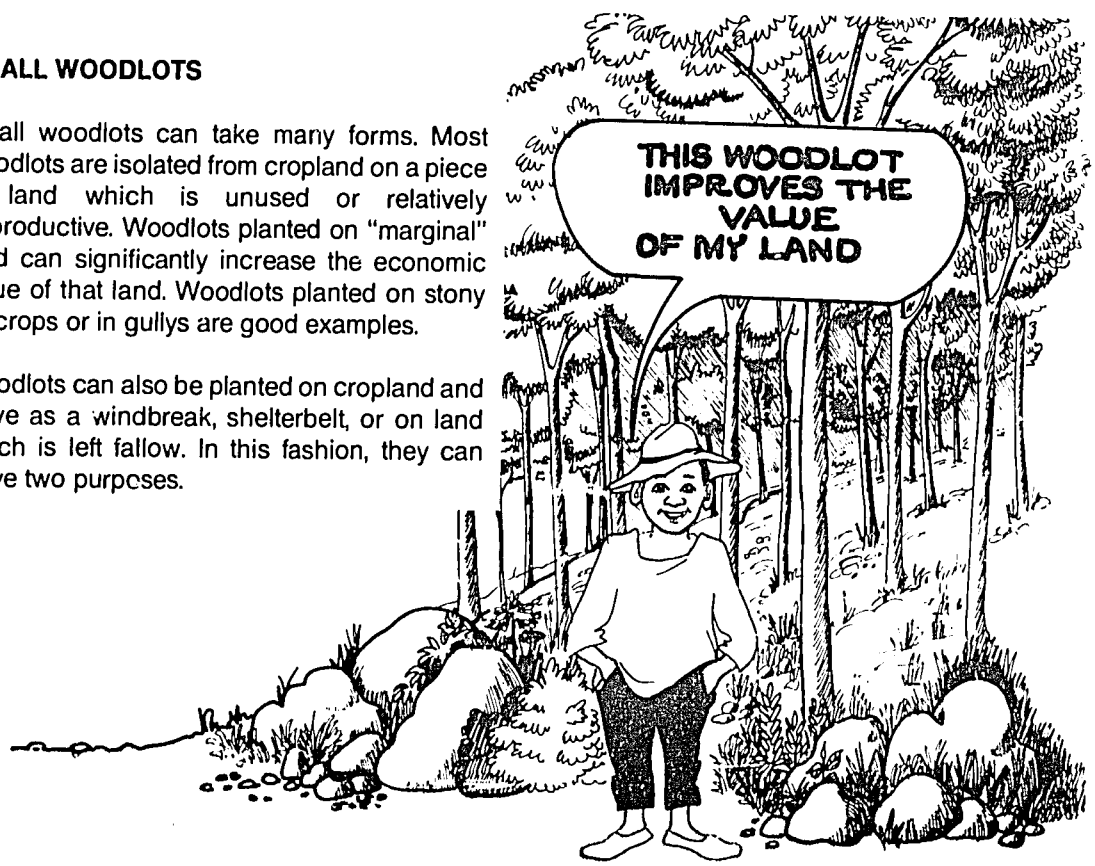
Fruit trees are a welcome addition to many farming households. They are also a good agroforestry feature to promote, as they encourage participation from farmers. Fruit tree planting is normally encouraged around the home where the trees can be easily managed and provide shade.

Fruit trees can also be used in grazing areas or where food crops can be planted beneath them. Fruit trees such as citrus, avocado, mango, papaya, jackfruit, cashew nut, guava, tamarind and passion fruit are some examples.

SMALL WOODLOTS

Small woodlots can take many forms. Most woodlots are isolated from cropland on a piece of land which is unused or relatively unproductive. Woodlots planted on "marginal" land can significantly increase the economic value of that land. Woodlots planted on stony outcrops or in gullys are good examples.

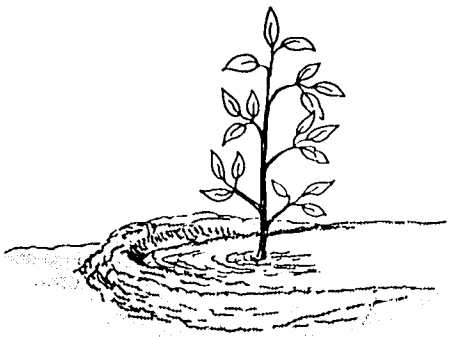
Woodlots can also be planted on cropland and serve as a windbreak, shelterbelt, or on land which is left fallow. In this fashion, they can serve two purposes.



GRAZING AREA IMPROVEMENT

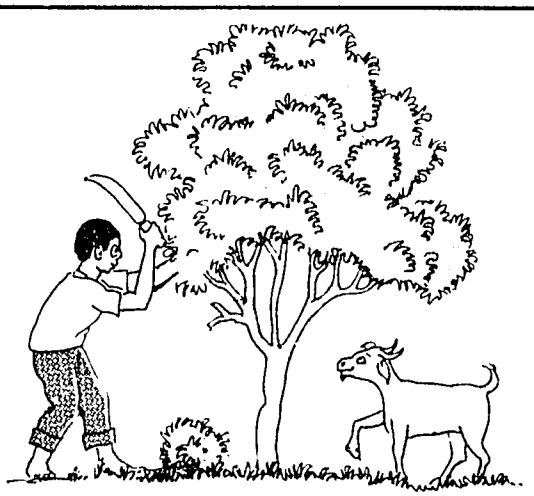
Grazing areas can be improved by protecting and managing existing trees. In grazing areas, it is important to identify trees which help improve the soil and can be managed for fuel, fodder and timber. You can help trees in grazing areas become more productive by:

1. BUILDING MICRO-CATCHMENTS AROUND THE BASE OF SELECTED YOUNG TREES SO THAT THEY HAVE MORE WATER WHEN IT RAINS.



2. BUILDING A FENCE/ BARRIER AROUND THE BASE OF NATURALLY GROWING SEEDLINGS AS PROTECTION FROM BROWSING ANIMALS.

3. PROPPING UP AND OR PRUNING BRANCHES OF MATURE TREES TO KEEP THEM OUT OF REACH OF LIVESTOCK.



Grazing areas can also be improved by planting and protecting tree species which enrich and improve the soil, and are good to use for fodder.

Lesson 3 TRADITIONAL AGROFORESTRY SYSTEMS

OBJECTIVE

Trainees will be able to describe characteristics of traditional agroforestry systems, ranging from extensive (low input) practices to intensive (high input) practices. They will be able to describe similarities and differences between traditional systems and modern techniques.

METHOD

The lesson consists of a presentation and a facilitated discussion based on the LEARNING NOTES, Traditional Agroforestry Systems. Try to obtain slides that illustrate the systems and practices described in the NOTES. Allow one to two hours for the lesson.

EXAMPLE

Prepare

Review the LEARNING NOTES. See also SOURCEBOOK SUPPORT MATERIALS (6-1) for background on agroforestry intensification and classification.

Facilitate

Begin your presentation by telling trainees that one of the most important resources we have to use in creating appropriate agroforestry designs is knowledge about traditional agroforestry systems. Modern techniques stem directly from traditional systems. Therefore, it is important to know as much as possible about characteristics of traditional systems.

Then present the information in the NOTES. Encourage questions and discussion about similarities and differences in the systems described, focusing on the theme of intensification.

Ask trainees to consider similarities and differences between the techniques described in Lesson 2, Agroforestry Design Strategy and Techniques and traditional systems discussed in this lesson. Again, focus on intensification as a key difference which is affected by the choice of components, configurations and management to make them more functional in today's crowded world.

Summarize

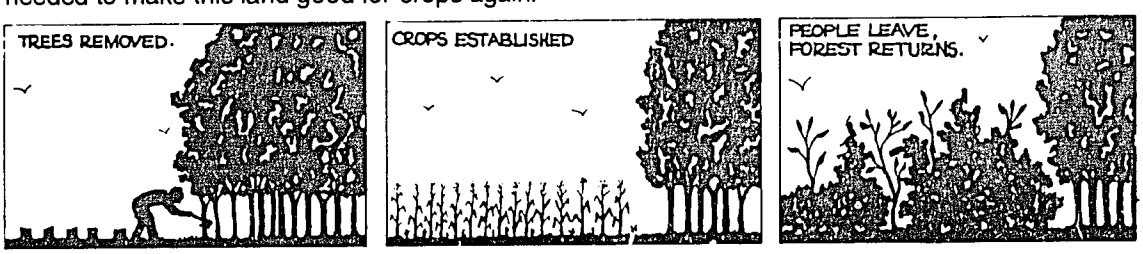
Provide trainees with copies of the LEARNING NOTES for their Training Workbooks. Tell them, "now we have a good idea about what is theoretically possible in agroforestry design. Next let us examine the steps involved in creating a good agroforestry design".

SOME TRADITIONAL AGROFORESTRY SYSTEMS

SHIFTING CULTIVATION AND BUSH FALLOW

One of the best known and most widely practiced forms of traditional agroforestry is known as Shifting Cultivation and Bush Fallow. It is most often practiced by the poorer farmers of the world and is common throughout the tropics. Shifting Cultivation and Bush Fallow uses trees and shrubs, which occur naturally, to help restore soil fertility on land which has already been cultivated. In some cases, trees which are allowed to grow on these areas also provide income and products such as fuel, medicines, gums, building materials, fodder, fruits, etc.

In most examples of shifting cultivation, farmers leave an area they have cleared and grown crops on for several years. They move on to clear a new piece of land, allowing trees and shrubs to grow back on the land they have left. It takes between seven and 15 years to restore the nutrients and organic material needed to make this land good for crops again.

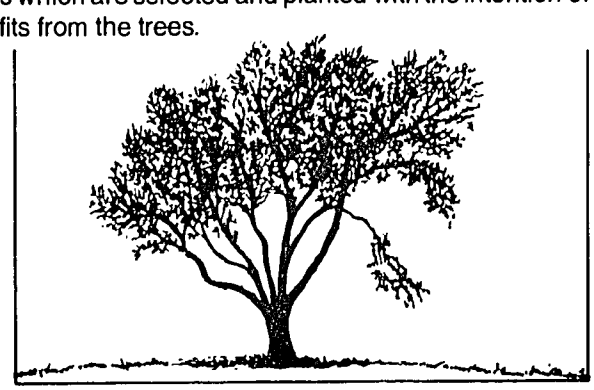


Shifting cultivation is considered a "primitive" form of agroforestry as little or no management is used on the land which is left fallow. It can be an effective land use strategy in forests or woodlands where land scarcity is not a problem.

PLANTED FALLOW

Planted fallow is a form of agroforestry used where population demand for land is great and agricultural land is scarce. Planted fallow uses trees or shrubs which are selected and planted with the intention of restoring soil quality and getting economic benefits from the trees.

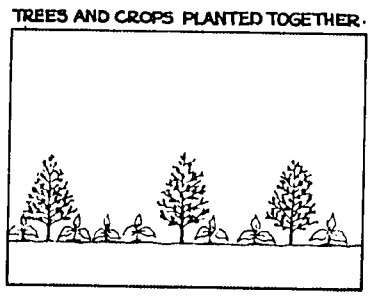
One of the best known examples of planted fallow is the gum gardens of Sudan. Here gum arabic and food crops are produced in a well-managed crop rotation. Acacia senegal is used as the fallow tree and is "tapped" or managed to produce gum arabic, an important cash crop for farmers. One big advantage of this system is that gum arabic is produced during the dry season when the other farm labor needs are lowest.

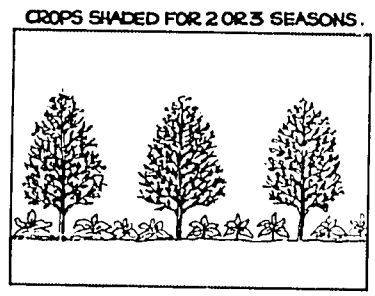


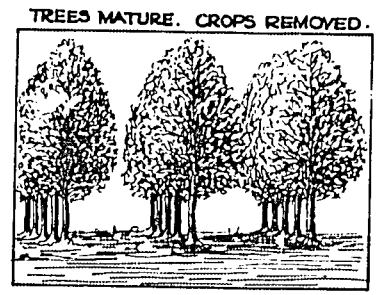
When tree/bush fallow is planted at the same time as crops, there is normally a two to three year period before the tree/bushes begin seriously competing with crops, making crop production too unproductive to continue.

When trees and crops are planted together, the duration of the fallow period can be decreased. Intensive planting of crops and trees together is often called a Taungya system.

Taungya systems involve the planting of trees and crops together for the first two to three years of the trees' lives. After about three years, the trees compete with the crops, providing too much shade and taking more nutrients than the crops. The Taungya system has been adopted by many forest departments in tropical countries as an effective and economical way of establishing forest plantations. People are encouraged to farm on forestry land, while trees are grown at the same time. Some systems allow people to harvest and benefit from the crops; others use the sale of crops for government purposes. In either case, farmers move off the land as the trees mature. This system places a strong emphasis on forestry, and not on agriculture. Agriculture is a by-product which makes timber production more economical.







INTERCROPPING

Success with the Taungya system has encouraged people to consider intercropping trees with agriculture on a regular and sustainable basis. Most agroforestry systems using intercropping have focused on the commercial production of trees or shrubs alongside food crops or pastures. Intercropping systems are another way of making more intensive use of the land.

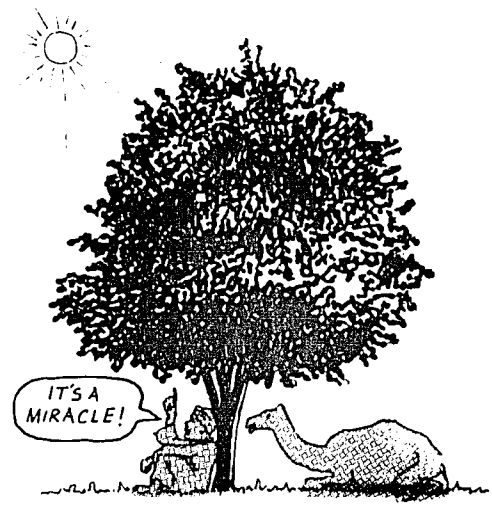
TREE CROPS

Tree crop systems are a widely practiced form of agroforestry throughout the world. Many tree crop systems are a part of smallholder farming systems which produce subsistence crops. Most tree crops are commercial in nature and are mixed with food crops to supplement farmers' incomes. Coffee, oil palm, cocoa, and cardamom are examples of tree crops which can be mixed with food crops. Some tree crops also can be mixed beneficially with an upper story of forest trees. Coffee and cardamon, for example, are known to grow best under shade. Tree crop systems often require intensive management.

MULTI-PURPOSE FARM TREES

There are other tree species which require less intensive management and perform a variety of different functions on farms. These species are often referred to as multi-purpose trees. These trees are often valued by farmers because they can provide a variety of different functions. These include: fruit, food, fibers, medicines, shade, timber, wind breaks, soil improvement, and fodder. Trees which serve these purposes are often left standing around homes or in cropfields even though their placement may be inconvenient. Many farmers have experience and a strong sense for which trees do not compete with crops. Legume trees/bushes are good examples of these.

Perhaps the most famous example of a multi-purpose farm tree species is the Acacia albida. The system that supports its use is found in the Sahel Zone of Africa. Here, Acacia albida is seen as a sacred tree, and some refer to it as a "miracle tree". It is prized for having a long tap root (which is able to reach deep down into nutrient rich soils), fixing nitrogen, and shedding leaves during the agricultural growing season so that it does not compete with crops for light. This species also provides shade during the hot, dry season when other trees have few leaves. Animals cluster beneath the tree for shade, enriching the surrounding soil. The tree improves the quality of the soil through "nutrient-pumping" and nitrogen-fixation, and its pods provide good fodder for livestock.



FODDER TREE HARVESTING

Fodder tree harvesting is another well-known, traditional agroforestry system. In this system, leaves and pods of certain fodder tree species are harvested when they are at their best. Leaves and pods which are not used immediately are dried and stored for later use. An example of this system is used in grazing lands in India with the species Prosopis cineraria.

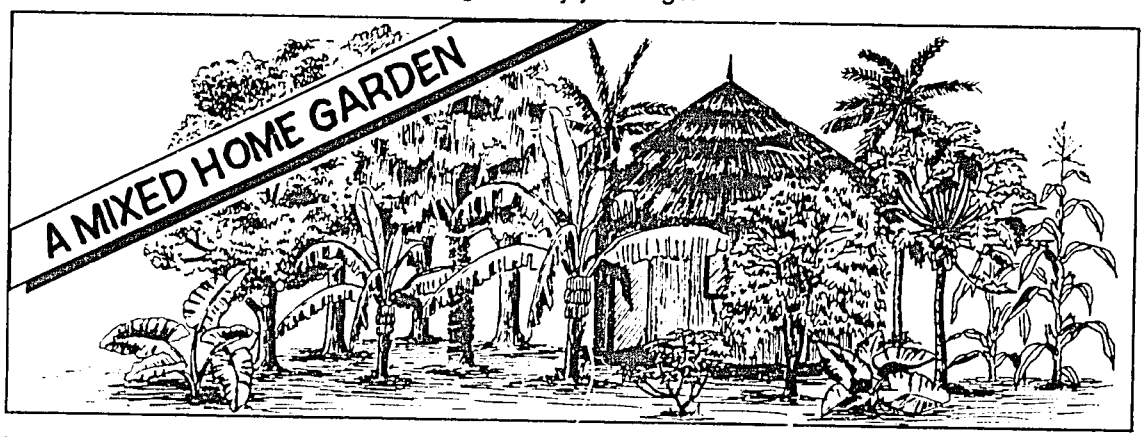
A fodder tree harvesting system of this type is different from many herding systems used in Africa. African herding systems tend to allow livestock to browse fodder; pods are eaten from the ground as they fall or branches are cut off, especially during droughts. Management of fodder trees is more active in the Indian example than in the African one.

Fodder tree harvesting has been receiving a lot of attention over the last 20 years, with researchers and developers focusing on both fodder and fuel production.

MIXED HOME GARDENS

Mixed home gardens are still another example of permanent, traditional agroforestry practices. Mixed home gardens combine different species of trees in a variety of different spacings and features, along with shrubs, vines, palms, tubers and crops. They also include animal husbandry practices, often pigs and poultry, to supplement the food supply. Mixed home gardens require intensive and careful management. The best examples of these are found in Southeast Asia.

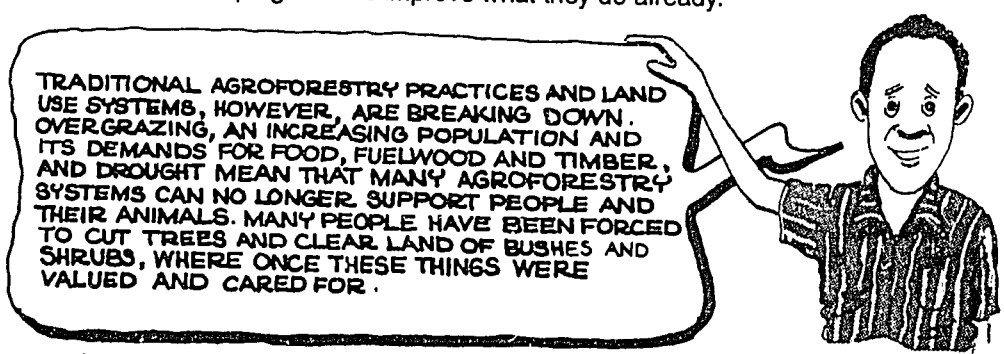
There are also a number of traditional systems in Asia which combine rice production with trees used as living fences for windbreaks, fuelwood and to mark boundaries. These rice and tree systems are an example of intensive land use which began many years ago.



THE FUTURE OF TRADITIONAL SYSTEMS

Traditional systems of farming and grazing, where trees which occur naturally are used extensively, are good sources of information about what makes an agroforestry system beneficial. We benefit from understanding how and why these traditional agroforestry practices work, as well as how they might be applied to local conditions and circumstances.

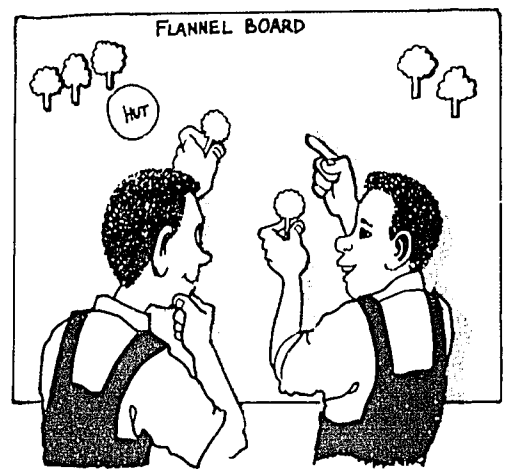
Knowledge about traditional local practices and uses of trees can provide us with good opportunities to intensify agroforestry land use practices. The advantage of introducing improved agroforestry based on local knowledge and practices is that we are introducing something farmers already know and do. Our efforts should focus on helping farmers improve what they do already.



These are only some of the problems people face in a traditional agroforestry system. Our task as Extension Workers is to look for good combinations of tree/shrub species, using improved management techniques, local knowledge and farmer participation to help solve some of the on-farm, land use problems.

PART 2. AGROFORESTRY DESIGN PROCESS

The agroforestry design process continues from the step-by-step agroforestry diagnosis process covered in Module 5. Agroforestry design should be a logical and natural continuation of your trainees' learning and experience in the land use diagnosis lessons.



Consider creating a flannel board to use as a visual aid for tackling the Design Problems addressed throughout the lessons in this Part. A typical farm landscape in your project area would provide the background of the flannel board. Various species and configurations of trees can be created as moveable parts. These can be stuck on to the flannel board to represent different design configurations as the trainees consider them.

One of the most important aspects of the design process is to highlight the need for your project staff's involvement. As they will often represent farmers, their information and its practical application will be essential to the project's effectiveness in helping farmers.

The nine lessons in this part should require five to six days to conduct. Plan on two to three days of classroom time and another three days in the field.

Lesson 4 INFORMATION COLLECTION

OBJECTIVE

Trainees will be able to describe, in general terms, the use of information obtained from the Diagnosis Phase in the design process.

METHOD

The lesson includes a simple review exercise based on information they have generated in previous lessons. It also involves selecting a design problem to work on throughout the remaining lessons in this Part. The lesson should require about one to one and one half hours.

EXAMPLE

Prepare

Collect the information trainees generated from the Problem Identification Survey and the Causal Diagramming Exercise Lessons in Module 5.

Facilitate

Review with your trainees how the information relates to aspects of design.

Consider how:

Farming system problems and constraints are the basis for design objectives, or how the design should help increase on-farm production and best use of resources

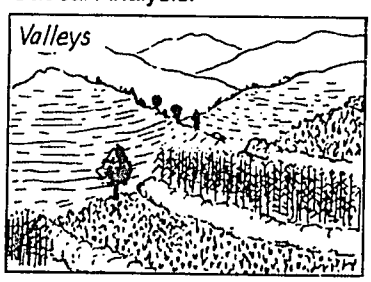
Land resources and constraints help set guidelines for design configurations

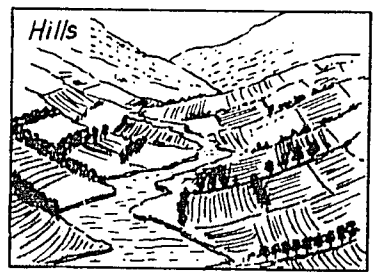
Labor resources and constraints help provide guidelines for management needs and practices

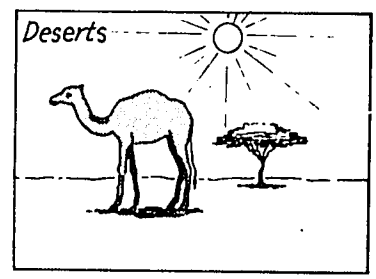
The availability of species in the area suggests which might be best for agroforestry use

The information from the Diagnosis phase of the project should help set the guidelines for creating the best agroforestry designs.

Then select a specific design problem to work on together. Base your design exercise on a typical farm in your project area. If there are a range of farm types, choose a design problem to represent each different type. Choose farms that represent most of the major production constraints identified in your Causal Analysis.







If it is not feasible to use a flannel board, it may be useful to draw a large sketch of the farm(s) so trainees can visualize the design problem. The design problem selected will form the basis for all of the lessons in this Part.

Summarize

Trainees should understand how to use the guidelines suggested above to relate land use problems to design objectives.

Lesson 5 AGROFORESTRY DESIGN OPTIONS

OBJECTIVE

Trainees will be able to suggest realistic options for each key element of an agroforestry design, based on a set of land use problems identified in the diagnosis phase of the project.

METHOD

The lesson is an information review and brainstorming session. Use newsprint and markers. Plan two hours for the lesson.

EXAMPLE

Prepare

Help trainees prepare for the exercise by referring them to the information in Part 1 of this Module, as well as to their local practical experience and field trips in the project area. Their Local Agroforestry Tree Matrices and Causal Diagrams are important references. All this information will be used to help the project determine:

1. FUNCTION	HOW CAN TREES BEST MEET THE NEEDS OF THE FARMER?
2. COMPONENT	WHICH TREE SPECIES ARE BEST FOR OUR PURPOSES?
3. CONFIGURATION	WHERE CAN TREES BE GROWN? WHAT SPACE IS AVAILABLE? HOW CAN TREES BE ARRANGED IN THAT SPACE FOR MUTUALLY BENEFICIAL EFFECT FOR TREES AND CROPS?
4. MANAGEMENT	WHEN AND HOW CAN WE HARVEST AND USE CROPS AND TREE PRODUCTS FOR MAXIMUM BENEFIT WITH OPTIONAL USE OF LABOR?

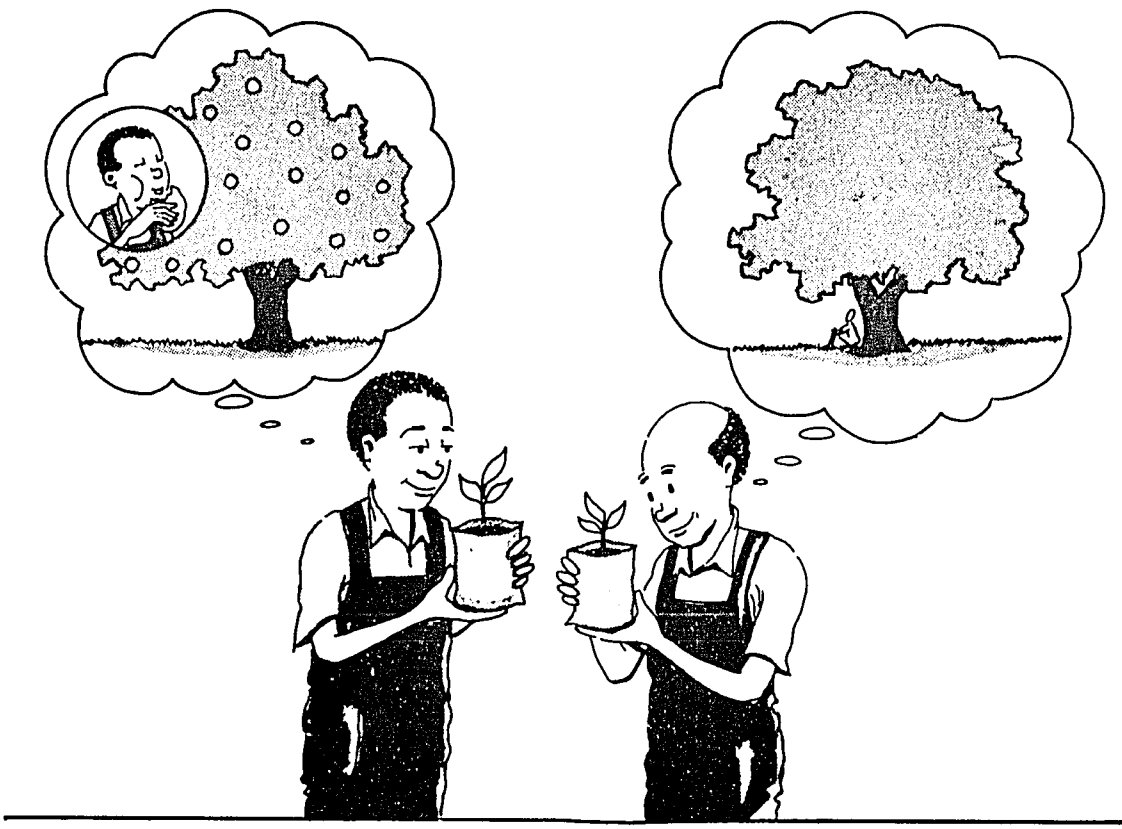
Facilitate

List the above questions on newsprint and facilitate discussion in order to answer each. Record key ideas.

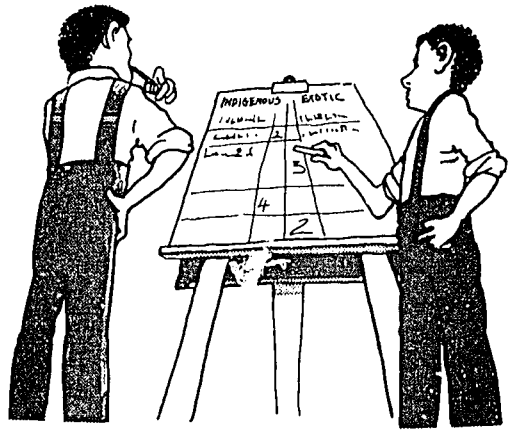
Refer to the group's Local Agroforestry Species Matrix developed during the diagnosis phase, as a guideline for considering specific components. The group may wish to modify the list when considering the function question. The group may feel there is a better tree solution to local land use problems if additional species are considered. Indicate on your Local Agroforestry Species Matrix, with a circle, where needed functions cannot be adequately met by the components in the matrix.

Summarize

We now have a general picture of our design needs and design options. Are our tree component options satisfactory to meet our needs?



Lesson 6 DEVELOPING A SPECIES MATRIX AND PRIORITY LIST



OBJECTIVE

Trainees will be able to produce a matrix of tree species, both local and "exotic", their uses, and environmental requirements appropriate to the project area. They will be able to develop a list of priority species for agroforestry use in their project area.

METHOD

The lesson consists of a study/review of reading materials and/or trainer presentations of the material, and of a brainstorming session. Plan one to two hours of classroom time, depending on how background material is delivered. Have newsprint available for trainee brainstorming.

EXAMPLE

Prepare

Trainees should read and review SOURCEBOOK SUPPORT MATERIALS (6-3), for background on agroforestry systems and species.

Use a copy of the balance sheet in SOURCEBOOK SUPPORT MATERIALS (6-4). The balance sheet is a tool for judging the "pros" and "cons" (advantages and disadvantages) for each species. It should also help you determine the suitability of species relative to one another, for agroforestry purposes.

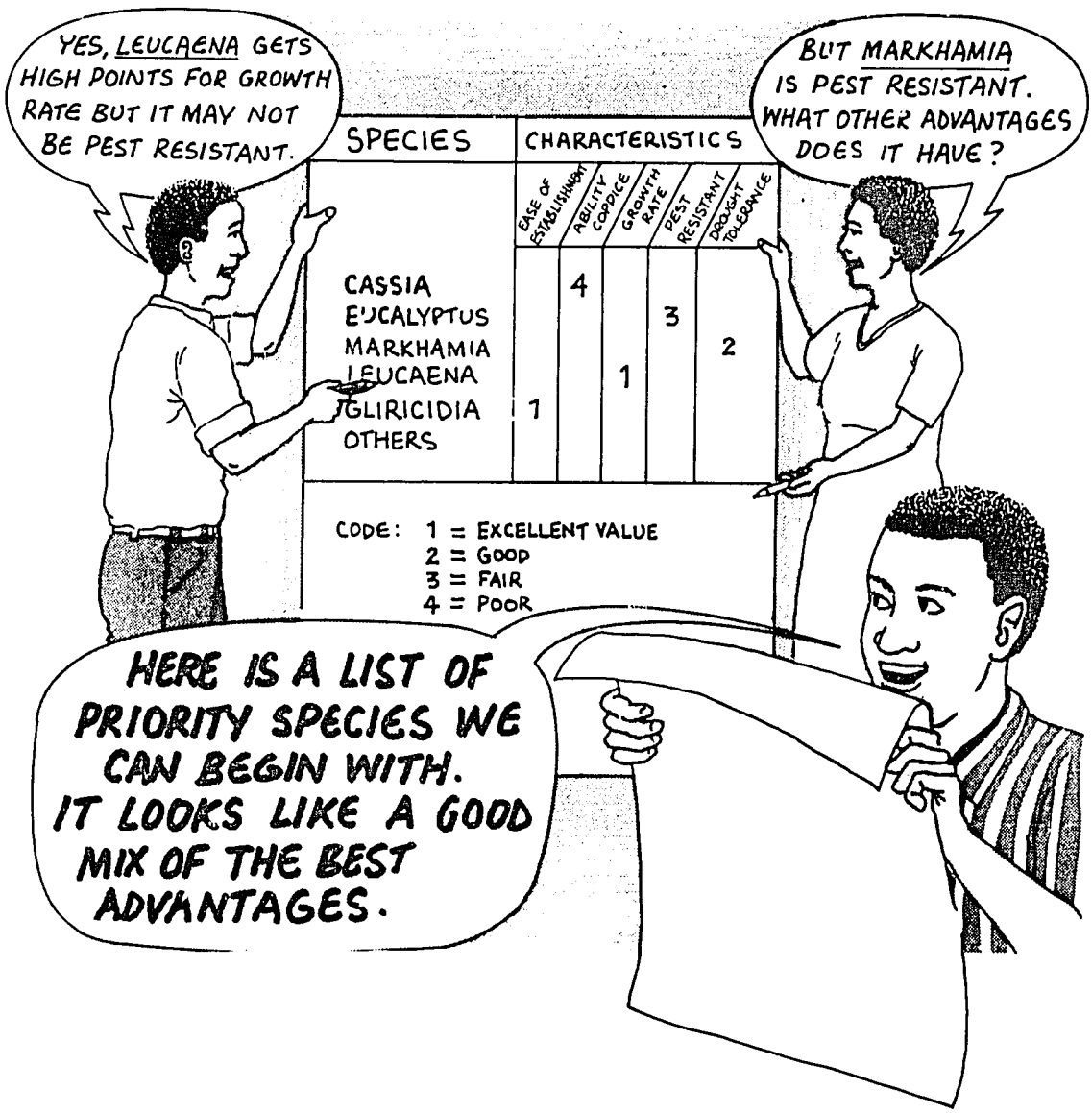
Facilitate

The group should brainstorm two lists of tree/shrub species which they consider best for agroforestry in the project area. One list should be for indigenous and locally adapted (naturalized) species. The other list should be for exotic species. Help the group review the "environmental" requirements, specific characteristics, and uses of agroforestry species that appear most promising for the project area.

These two lists and discussion about them should help the group produce a master list of species for potential use within your area. The balance sheet should help the group make choices of priority tree species based on a review of each species' advantages and disadvantages.

Summarize

The group's master list should now provide a list of priority species, ranked in order of importance, for your project area. Several species can have the same ranking, depending on how well they appear to meet your various design objectives.



Lesson 7 DESIGNING ON-FARM CONFIGURATIONS

OBJECTIVE

Trainees will be able to specify appropriate configurations and locations for their agroforestry interventions.

METHOD

The lesson involves a trainer-facilitated discussion about specifying on-farm locations for tree-based interventions. Brainstorming is used to apply criteria mentioned in the presentation to the design problem being discussed. It should take about two hours.

Prepare

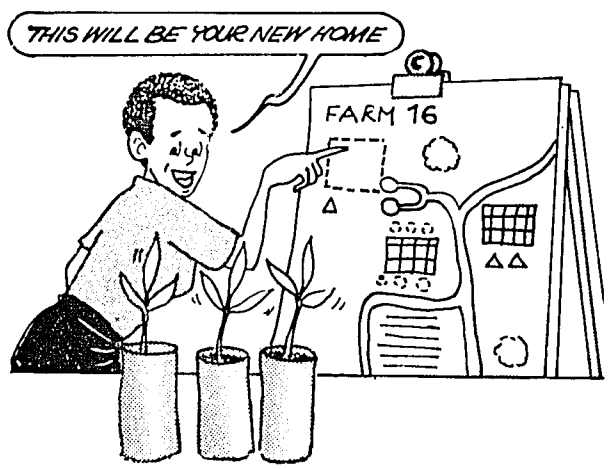
Review the material in SOURCEBOOK SUPPORT MATERIALS (6-5), Creating Spaces for Trees. Review, also, the LEARNING NOTES in Part 1, Lesson 2 of this module. On the basis of this information, prepare for a facilitated discussion that addresses the following questions:

What are "best-bet" locations for intensifying trees on farms (planting more where some already exist)?

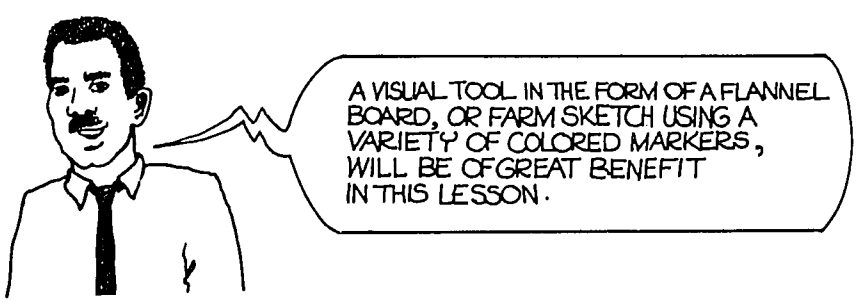
Where on a typical farm in our project area might trees be located where they do not presently exist? (Be specific, if appropriate.)

What are possible constraints to locating trees in these places where, technically, they may do the most good? (Consider land and tree tenure issues.)

What can we do to reduce these constraints?



What ways of organizing agroforestry trees in these locations would be considered efficient and acceptable to the farmer?



Facilitate

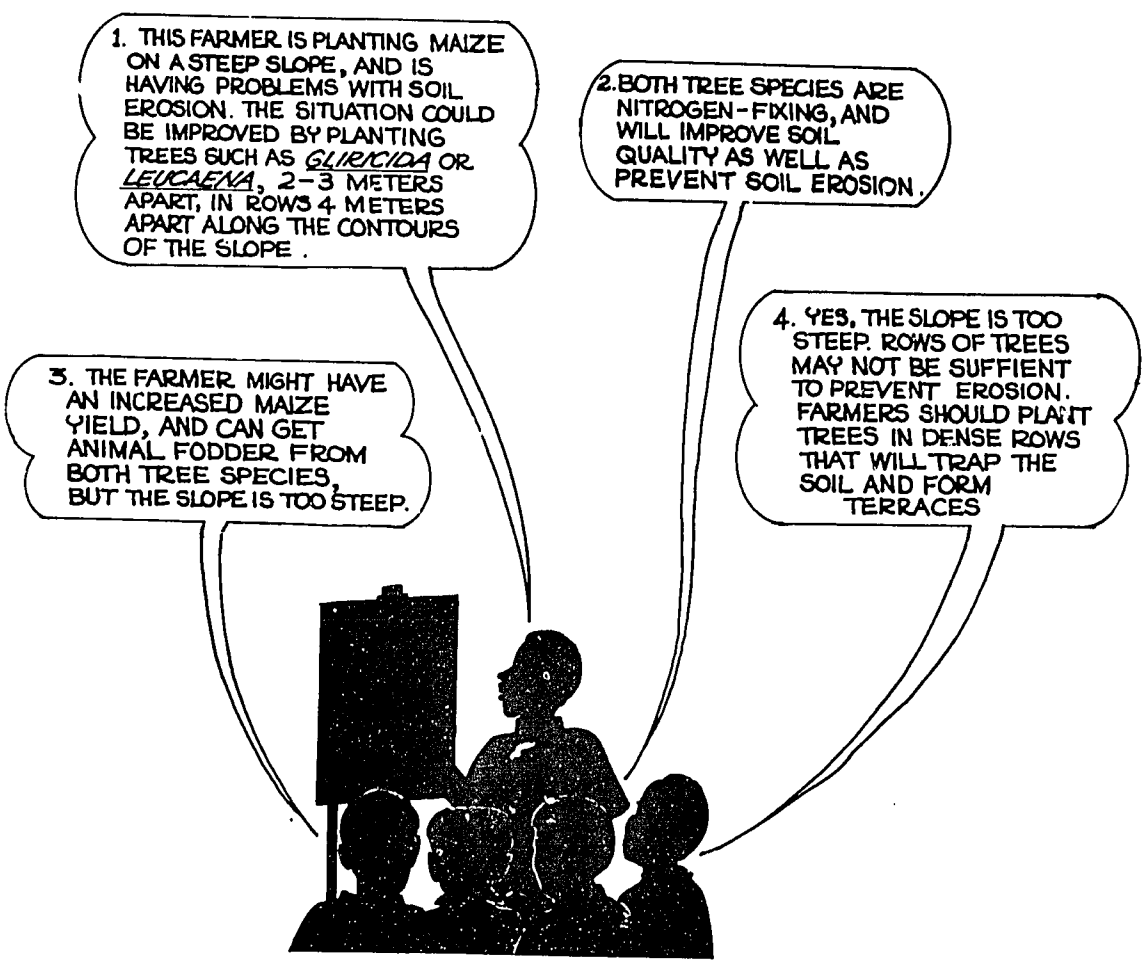
Facilitate discussion around these questions, as appropriate. Offer your input to stimulate and summarize as needed.

Then ask trainees to consider the design problem you have been addressing. Based on design objectives, components (tree species) available, and criteria for creating configurations as discussed above, have trainees brainstorm ideas about where on your typical, project area farm(s) to locate possible tree configurations.

Consider and note advantages and possible disadvantages of each location and configuration proposal.

Summarize

Each farm will have its own niches for trees. Hopefully, we now have a systematic way of helping farmers look for these niches and for ways trees can be arranged in the spaces available.



Lesson 8 TREE SPACING AND MANAGEMENT RECOMMENDATIONS

OBJECTIVE

Trainees will be able to provide guidelines on tree spacing and management aspects of their agroforestry designs.

METHOD

The lesson consists of facilitated discussion and brainstorming. Newsprint and markers are needed. Allow about two hours.

EXAMPLE

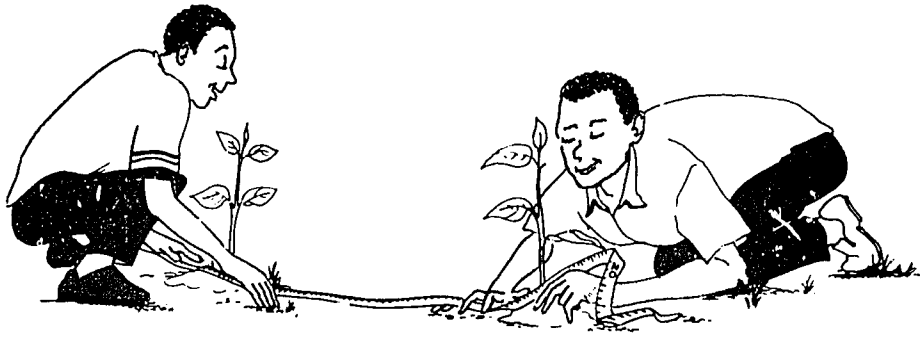
Prepare

Review material on tree spacing in modern agroforestry systems in SOURCEBOOK SUPPORT MATERIALS (6-5). See also Module 10, Lesson 6 on Tree Management. Obtain findings from local, or locally relevant, agroforestry spacing and management trials, if available. Have available trainees' configuration recommendations from Lesson 7 in this Part.

Facilitate

Lead a group discussion to set the guidelines on the spacing of trees. Relate these to each configuration you specified in the previous lesson and to the purpose the trees in that configuration will serve on farms (functions).

Tree species spacing is based on knowledge of how species adapt to local conditions, what are their rooting and growth characteristics, what purpose they need to serve on farms, and how they interact with crops and one another.



Encourage the group to specify how farmers should manage these trees and what products can be expected when they are managed or harvested. When, in the development of the tree, will parts be harvested, and why?

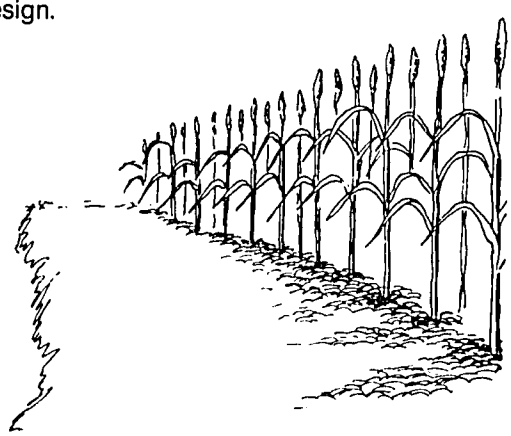
Recommendations about the spacing of trees and their management depends on:

What the overall design is meant to accomplish

How much your project knows about the habits of your selected species

What the project knows about traditional and modern agroforestry practices

Often times, such information is not readily available to the project. Good agroforestry designs will, therefore, be dependent on good observation, on a willingness to learn and experiment, but most important of all, on the trust, interest and participation of local farmers. Farmers will be the best decision-makers on specific spacing and management requirements and are always the ones to put design into practice. They will be the ones to determine the success or failure of any design. Encourage and respect them, ask questions and listen to their answers. They are your partners in agroforestry design.



Summarize

Tree spacing and management aspects of agroforestry designs are critical to whether or not they function properly. Yet there is not a lot of information or experience to use in making these recommendations.

These are aspects of our work where it will be especially important to rely on farmers' judgement about how well different options work for them. Be prepared to carefully monitor their experience.

Lesson 9 DESIGN EVALUATION WITH GROUPS (BEFORE PLANTING)

OBJECTIVE

Trainees will be able to present to farmers relevant information about their agroforestry design ideas. They will be able to obtain and use feedback from farmers about the suitability of the design for their farm.

METHOD

The lesson consists of facilitated discussion and two field trips to work with groups of farmers to obtain their input and feedback on agroforestry design ideas. Draw your design ideas on newsprint or use other appropriate visual aids to help communicate them to farmers. Allow a day for the discussion and first field exercise and half a day for the second field exercise.

EXAMPLE

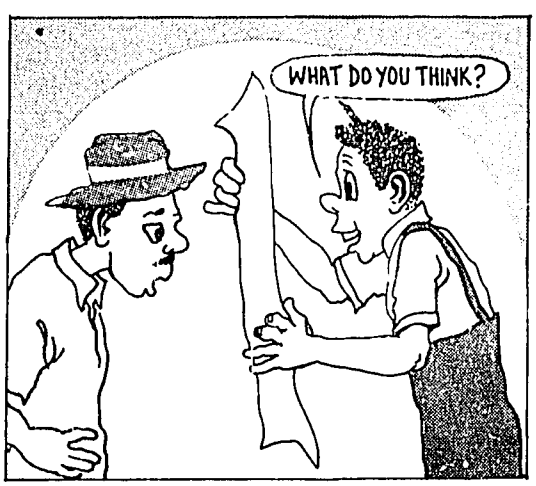
Prepare

Review LEARNING NOTES, Farmer Roles in Agroforestry Design Evaluation, for this lesson.

Arrange visits to one or two farmer groups to practice agroforestry design evaluations.

Facilitate

Discuss with the trainees what the farmer's role in design at this stage should be. Raise the following points:



Some of our design ideas may be unfamiliar to farmers. Their reaction to our proposed design, therefore, cannot be based on experience. Our meeting with farmer groups is suggested so that we might test our ideas and see if they meet with approval. It will also help us determine how willing farmers are to try our proposed designs.

We should use the farmer's input as a basis for either changing the design or changing the farmer's mind, before we bring the design and techniques to the farm. In attempting to change the farmer's mind, however, we do not want to sound more sure than we are.

Discuss with the trainees the idea of farmer evaluation and steps involved in the process as presented in the LEARNING NOTES.

Decide how you will best approach and discuss your proposed designs with farmers in your project area in order to test them.

Test your designs. Work with one or two farmer groups at first. Discuss and assess your efforts as you go along. Arrange for at least one follow-up visit with your farmer groups after your initial design evaluation meeting.

NOTE: DEMONSTRATION PLOTS

Demonstration plots are one way of testing agroforestry designs. Demonstration plots are best developed in an area where many farmers can visit and see some of the practical aspects of management and tree species spacing. If you choose to develop a demonstration plot for your project, consider:

its location

who will manage it and how

land requirements

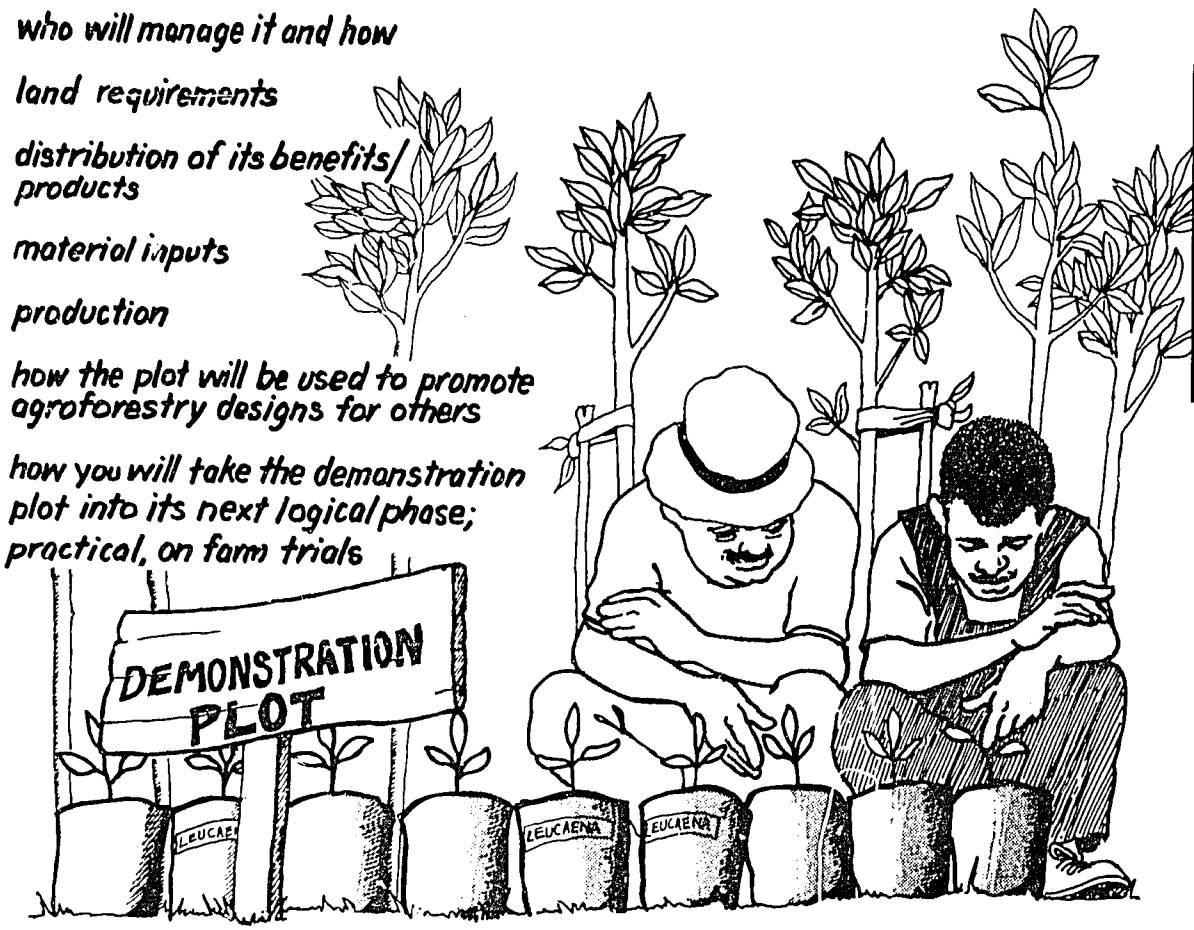
distribution of its benefits/ products

material inputs

production

how the plot will be used to promote agroforestry designs for others

how you will take the demonstration plot into its next logical phase; practical, on farm trials



This training activity may provide a good opportunity to introduce the idea of agroforestry demonstration plots to your farming community.

FARMER ROLES IN AGROFORESTRY DESIGN EVALUATION (BEFORE IMPLEMENTATION)

The following steps are suggested for obtaining farmer input into the agroforestry design process, before the design is implemented. Consider these, and adapt them to fit your own project circumstances.

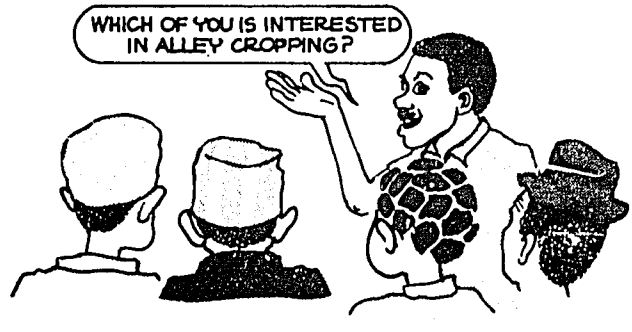
STEP 1

Call a design review meeting with a group of farmers whom you interviewed during the Land Use Diagnosis exercise.

STEP 2

Review the results of the Diagnosis with them. Explain clearly how the species and designs you are proposing relate to the needs you identified together. Provide the farmers with two or three species and designs for them to consider in the first meeting.

Make it clear that not every design will be appropriate for each farm. Explain the designs, what they are intended to do, and the types of variations possible on different farms, with the assistance of flipcharts or other appropriate visual aids.



STEP 3

Ask the group to consider which agroforestry ideas they think may be appropriate for their own farms. Invite discussion and feedback. Ask them for their reasons. Make notes of their questions and concerns.

STEP 4

Invite the farmers to think about the design and what you have proposed. Ask them to discuss it with other members of their household and to return to share ideas with you and the rest of the group. You should get better response at the second meeting.

STEP 5

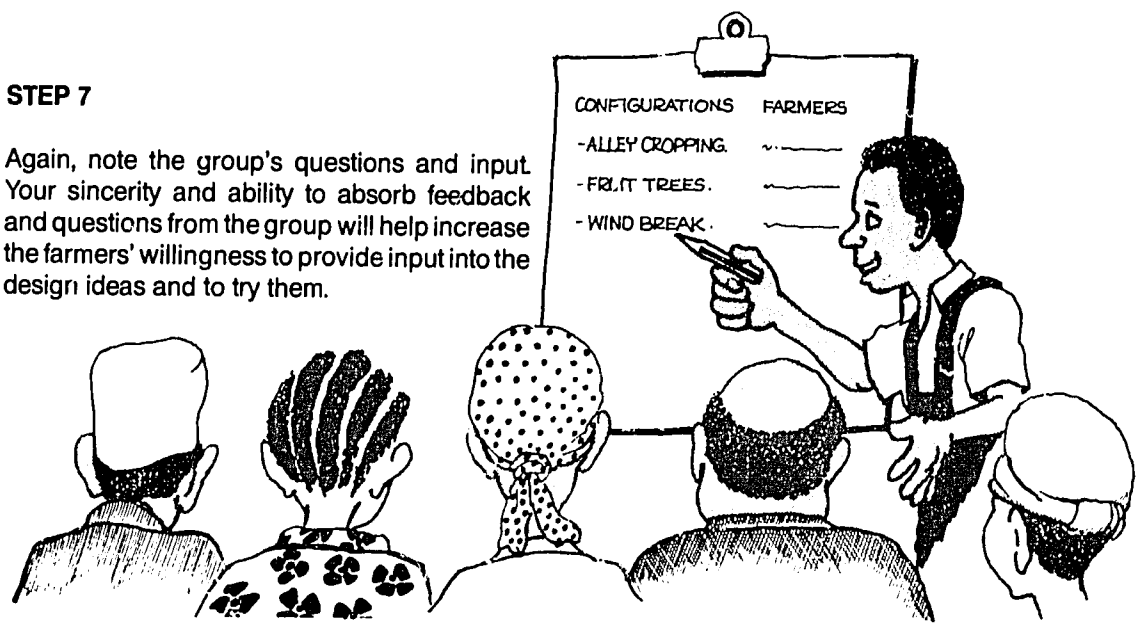
Take the farmers' response back to the project team for discussion. Discuss how you will try to convince the farmers to adopt the proposed designs. You can change your proposed designs if you have been convinced by the farmers that they have better ideas.

STEP 6

Arrange a second meeting. It should follow soon after the first. Discuss new ideas farmers may have. Share your ideas. Let the farmers know how useful their input has been in helping you think through your design ideas. Describe how their input has been included in the proposed designs. Discuss other possible design ideas.

STEP 7

Again, note the group's questions and input. Your sincerity and ability to absorb feedback and questions from the group will help increase the farmers' willingness to provide input into the design ideas and to try them.



Lesson 10 PREPARING FARM-SPECIFIC DESIGNS

OBJECTIVE

Trainees will be able to prepare both written and graphic farm-specific agroforestry designs.

METHOD

The lesson consists of trainee working group sessions to create farm-specific agroforestry designs. Allocate a half day or so for working group activities.

EXAMPLE

Prepare

Review the design summary forms in SOURCEBOOK SUPPORT MATERIALS (6-6). Modify them for your purposes.

Facilitate

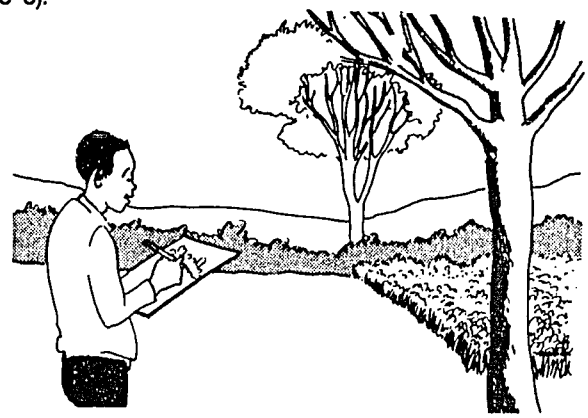
Review the outcome of your second design meeting with farmers. In your discussion, make the following points:

We should use feedback from farmers to adjust the designs to what is most acceptable, even if it is not optimal (the very best from the technical point of view). The goal for the first year or more should be to gain the farmers' interest and acceptance. We should aim at getting some agroforestry interventions established, as a basis for monitoring and improving the designs.

This approach may be difficult to follow. We may be tempted to use more information from our readings, observations of other projects and our project discussions to establish optimal designs. Optimal designs are likely to be more intensive than acceptable designs. We should resist the temptation to do too much at once with individual farmers. We should attempt to build a solid foundation of proven results and avoid pushing farmers to take risks they are uncomfortable with.

Use farmer group feedback and project staff discussions as a basis for filling in design summary forms for individual households surveyed during the diagnosis phase of the project. Examples of these forms are in SOURCEBOOK SUPPORT MATERIALS (6-6).

Possible locations for agroforestry species can be drawn on any sketches which were made of farms during the diagnosis phase. Trainees should remember to consider which species they are proposing, its location and spacing. Examples of on-farm design sketches are given in SOURCEBOOK SUPPORT MATERIALS (6-6).



NOTE: Agroforestry Demonstrations

It is a good use of agroforestry demonstration plots to try optimal designs, or those which hold the best promise from the technical point of view. It can be very useful to have sites where farmers can observe what a technique looks and performs like, when implemented on an optimal basis. However, ensure that the inputs and level of management used are similar to these available to your participating farmers.

If agroforestry demonstrations are implemented with a broad base of farmer interest, support, and participation, they can be extremely effective extension tools. If not, they can be a great waste of time.

Consider with your trainees strategies for developing agroforestry demonstrations as effective extension and project learning tools.

For more information about establishing demonstration plots see SOURCEBOOK SUPPORT MATERIALS (6-6).

Lesson 11 ON-FARM DESIGN EVALUATION (BEFORE PLANTING)

OBJECTIVE

Trainees will be able to review On-Farm designs with the farmer, to reach agreement on practical implementation activities and obtain a commitment to begin them.

METHOD

The lesson consists of a field trip to visit farmers, followed by classroom discussion. Use newsprint and markers to record discussion. Plan at least a day for the lesson.

EXAMPLE

Prepare

Group trainees into pairs or larger groups. Have them collect their farm-specific design summary forms and sketches.

Facilitate

Tell the trainees they will take their on-farm agroforestry designs to farms. Instruct them to discuss the proposed plans with members of the household.

Encourage them to walk with the farmer to the area(s) which you have suggested could be used for agroforestry purposes. Indicate which trees might go where, how they may be arranged and what functions these should perform.

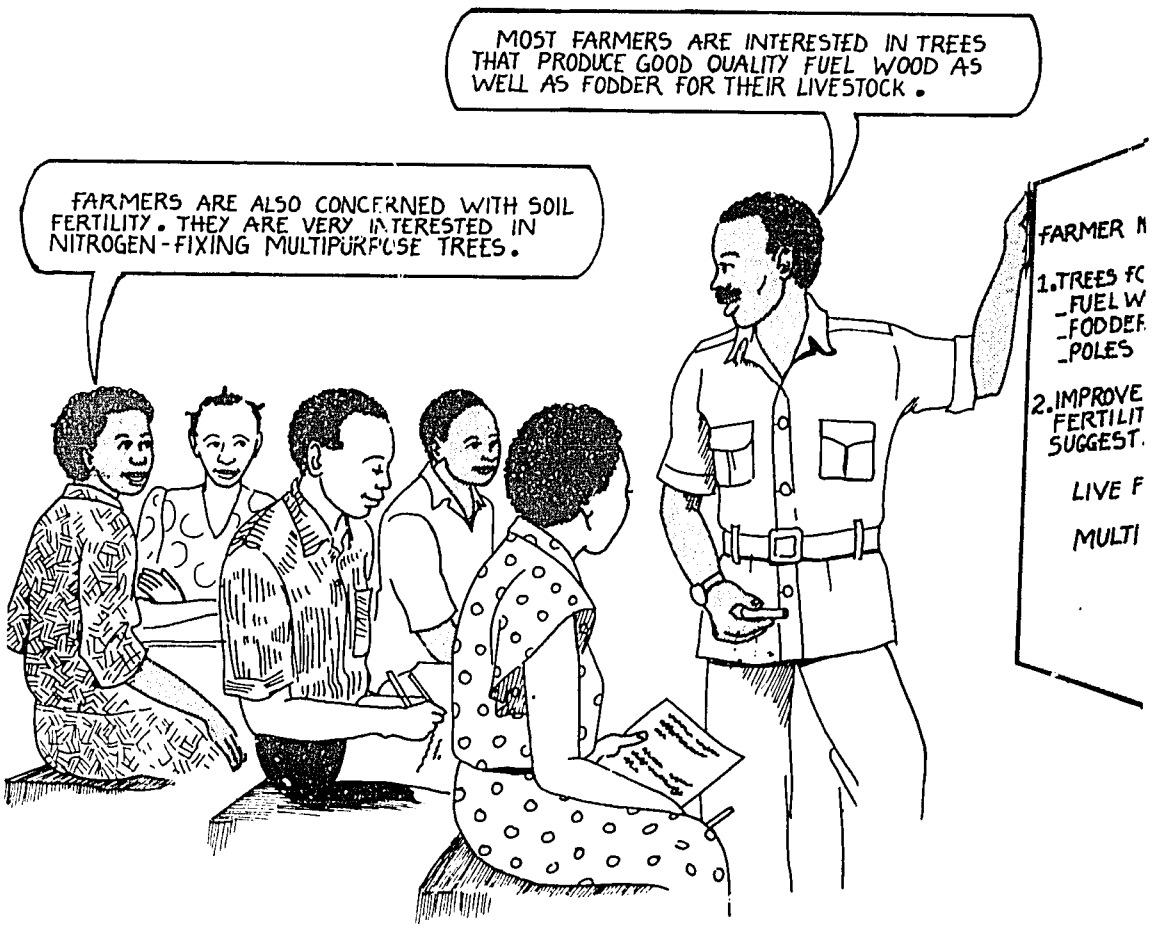
Trainees should suggest management and spacing options to the farmer. They should ask the farmer for comments and suggestions on what has been proposed. Trainees should work with the farmer until they have an agreement to cooperate or there is no intention from the farmer to cooperate.

Decide on a plan of action so that both the Extension Worker and the farmer know what each has to do in order to start tree planting activities on his farm.

At the end of the on-farm exercise, trainees should prepare a modified design summary form and farm sketch reflecting the farmer's assessment and input into the design. Attach these to the forms prepared by trainees so they can be compared.

Summarize

Following the field activity, meet with trainees to discuss their experience. Guide trainees in comparing agroforestry designs before and after farmer-specific input. What types of suggestions did farmers consistently make? Which ideas did farmers consistently like? Record and classify comments.



Lesson 12 ON-FARM DESIGN EVALUATION (AFTER PLANTING)

OBJECTIVE

Trainees will be able to obtain feedback from the farmer and report on how the actual planting configurations related to the planned agroforestry designs.

METHOD

Trainees will read and discuss material in this lesson's LEARNING NOTES and review design monitoring forms. Field trips should be arranged following the planting season to obtain design evaluation experience. About one and half hours of classroom time is required.

EXAMPLE

Prepare

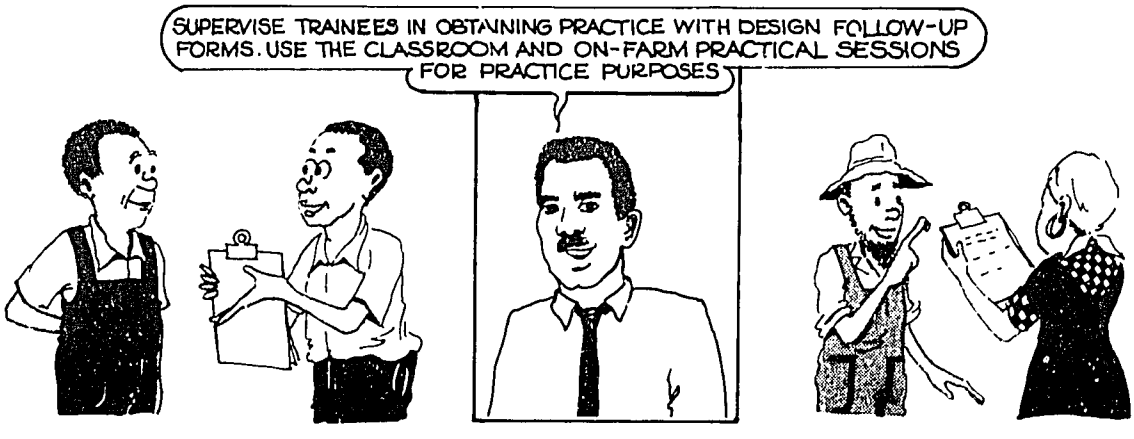
Read the LEARNING NOTES, Extension Team's Role in Agroforestry Design Follow-Up and Monitoring.

Review the SOURCEBOOK SUPPORT MATERIALS referenced in the NOTES.

Facilitate

Discuss the material in the NOTES with trainees. During the discussion, introduce (prototype) design follow-up forms, and long-term monitoring forms. These forms can be adapted for use in your project.

Give the trainees copies of the NOTES and design follow-up forms for their Training Workbooks, following the discussion.



LEARNING NOTES

EXTENSION TEAM'S ROLE IN AGROFORESTRY DESIGN FOLLOW-UP AND MONITORING

As Extension Workers, we sooner or later will realize that what a farmer says he will do and what he actually does will often be different. Information or events may force him to change his plans.

Sometimes we have communication problems. Farmers may agree to work with us when they mean only to be polite. The better we know the farmer, through meetings and discussions, the easier it will become to avoid communication problems.

Our main concern in evaluating an agroforestry design at this early stage of the project is to see whether or not the farmer planted the trees according to the agreed-upon design.

If he did not plant, we want to know his reasons. If the trees were planted, we want to know if it was according to our agreement, and design.

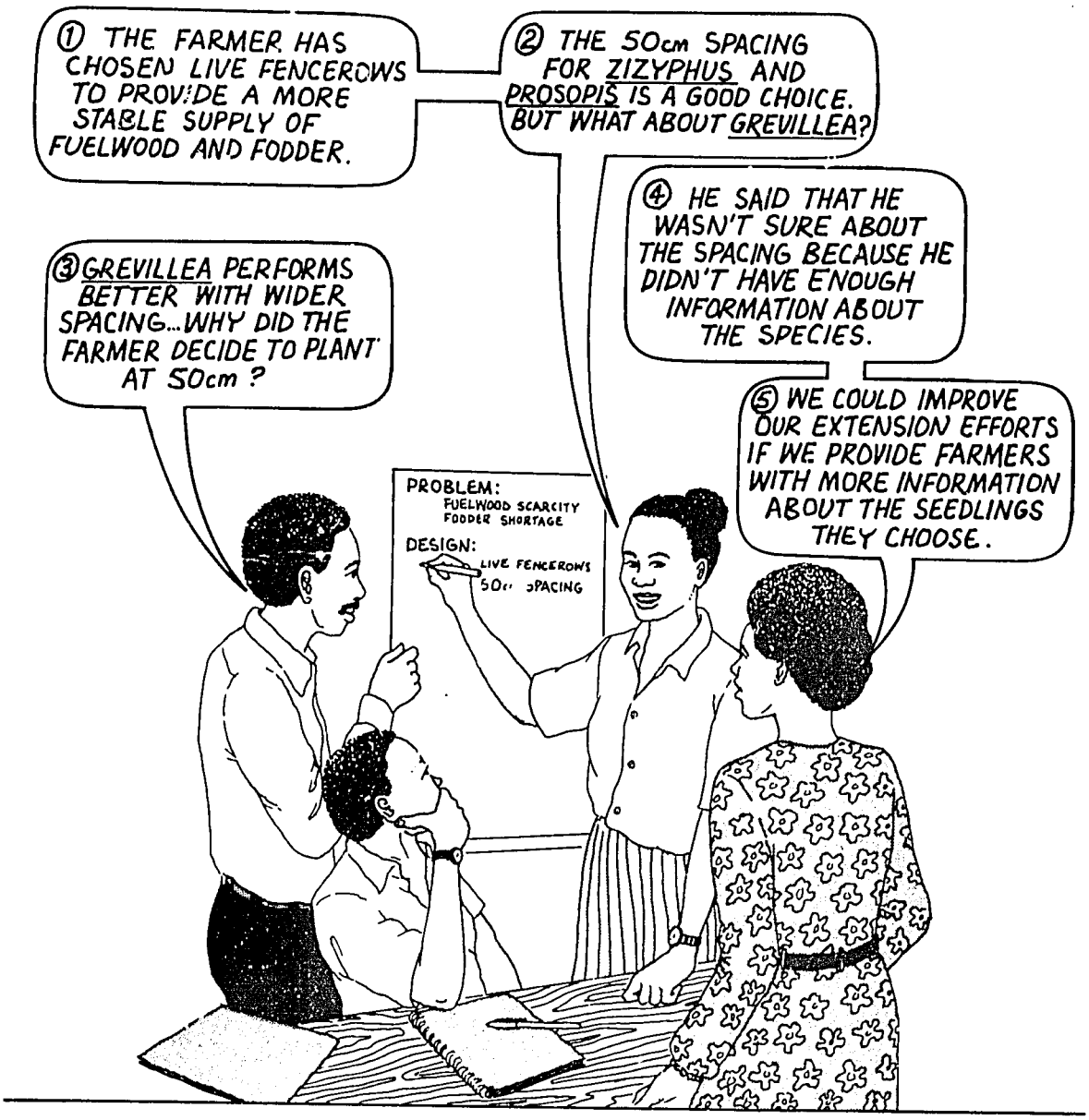
Soon after the planting season, we want to determine if and how the farmer planted. For this, we will use a design follow-up form and simple questionnaire.

This form summarizes the agreed-upon design, identifies what was actually done (in terms of numbers of seedlings planted and where) and finally, and most importantly, provides the farmer's reasons for any changes. The questionnaire will give us further information on the farmer's tree-planting activities and methods, and reasons for them. Sample design follow-up materials are in SOURCEBOOK SUPPORT MATERIALS (6-7).

The design follow-up forms provide the basis for long term monitoring of agroforestry activities on each farm. Based on what is found on the farm at the end of the planting season, we can maintain or change our management recommendations. We will then monitor what the farmer does with the trees and how the trees perform, on a routine and regular basis. Examples of these monitoring forms are in SOURCEBOOK SUPPORT MATERIALS (6-7).

The farmer interview and design follow-up forms will provide the basis for a project staff discussion on what the farmers did during planting season and why. Some reasons for changes in on-farm agroforestry practices might be related to poor communication between project staff and the farmer. Other changes might be due to poor communication between the farmer and somebody he chose to do the planting. Some of the problems may be much more fundamental to the actual design and original agreements. Project staff will benefit from recognizing common problems and differences among farmers. Discussion about these should benefit the project, its staff and the approach. Ultimately, good monitoring should benefit the farmer.

Project staff discussions on design, monitoring and evaluation should record all the farmers' reasons for planting the way they did. Farmers' actions and reasons for them should either reinforce our design suggestions or recommend changes in them. Good project discussion will then recommend ways in which we can adjust and improve our agroforestry extension efforts.



TRAINING MODULE 7 PLANNING, MONITORING AND EVALUATING AGROFORESTRY ACTIVITIES

INTRODUCTION

Module 7 introduces trainees to **planning, monitoring** and **evaluation** of agroforestry project activities. It also identifies practical planning and monitoring tools.

The lessons stress the importance of sound **planning** as a basis for conducting effective project activities. They also indicate how monitoring and evaluation are based on a continuous project **planning process** and how good project planning incorporates feedback provided by regular monitoring and periodic evaluation activities.

The lessons ask staff to consider **who** will participate in planning, monitoring and evaluating project activities, and **how** and **when** they will be involved. Knowing **who** to involve in these aspects of a project will help determine **how**, and **when** they will be involved and **what** resources will be used in **planning, monitoring, and evaluating**.

In other Modules we have considered the many possible participants in an agroforestry extension project. Experience gained from involving different participants in project planning, monitoring and evaluation efforts can have important learning benefits and can result in better local management of agroforestry activities. This effort may require extra time early in the project, but the investment should result in more sustainable benefits.

CONTENTS

Lesson 1 **Purpose of Project Activity Planning, Monitoring and Evaluation**

Lesson 2 **Planning and Monitoring Tools**

Lesson 1 PURPOSE OF PROJECT ACTIVITY PLANNING, MONITORING AND EVALUATION

OBJECTIVE

Trainees will be able to define planning, monitoring and evaluation and how these activities relate to their project. They will also be able to identify key steps in the planning process, and why they are important.

METHOD

Trainers should facilitate a discussion on the planning, monitoring and evaluation process based on the LEARNING NOTES in this lesson. Have plenty of newsprint and markers available to record important questions and group responses.

EXAMPLE

Prepare

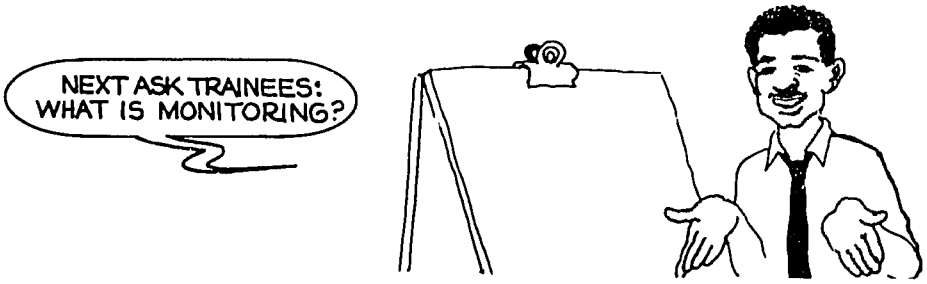
Review and adapt the LEARNING NOTES, **Planning, Monitoring and Evaluation**, as necessary for facilitating a group discussion.

Facilitate

Begin your discussion by asking trainees:

What is planning?

Record a list of responses from the group on your newsprint. Trainers should allow trainees to **brainstorm**. There is no right or wrong answer to such a broad question. After you have recorded answers on paper, return to each response and ask the group to elaborate or expand on the definitions of planning they gave. Help trainees to focus their discussion and responses using the following questions:



Following trainees' brainstorming on definitions of monitoring, discuss the following questions:

Help trainees distinguish between monitoring and evaluation. The two terms are very closely related and sometimes used interchangeably.

It is useful to think of monitoring as the process of collecting and recording information on how activities are implemented and their outcome. Through monitoring we answer the question, **What happened?**

Evaluation compares this outcome with what was planned, or our objective. Evaluation helps determine if the activities and the outcomes were appropriate and adequate for meeting the objective. Through evaluation we answer the questions,

During discussion highlight the following important points from the LEARNING NOTES.

1. Planning is a cyclical process. It is not simply a series of forward-looking steps. Effective planning requires examination of what happened after implementation and who was involved. We monitor to check up on the outcome of our project activities. Periodically we evaluate or judge the overall effectiveness of our plans.

The cyclical planning process depends on good information to answer the following questions:

WE COLLECT AND USE INFORMATION FOR ANSWERING THESE QUESTIONS WITH THE AID OF PLANNING, MONITORING AND EVALUATION TOOLS.

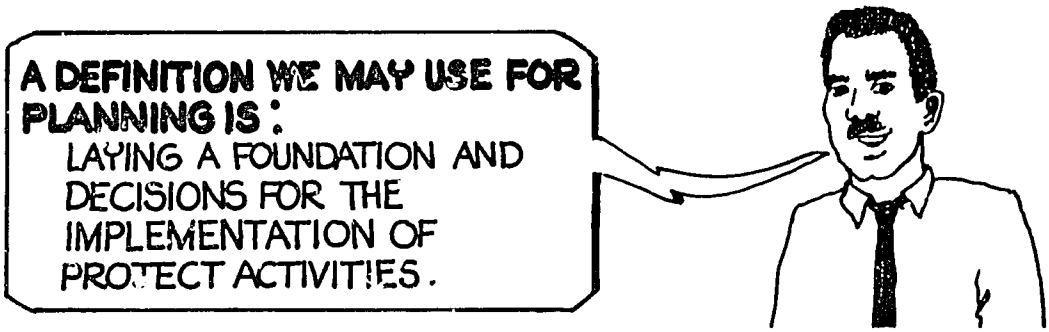
2. Agroforestry field workers are often in the best position to obtain much of the information needed to implement the project planning cycle. Farmers and other rural people can also do this work effectively. Appropriate tools are needed for both field workers and farmers.

Summarize

Following discussion summarize the contributions of trainees by relating them to key points raised in the LEARNING NOTES. Have trainees keep LEARNING NOTES and discussion notes in their Training Workbooks.

LEARNING NOTES

PLANNING, MONITORING, AND EVALUATION



The purpose of planning is to allocate project resources to achieve the best possible outcome, and progress toward our objectives.

It is also useful to think of planning as the project activity devoted to generating and describing all other project activities. Through planning we decide on:

- WHAT WILL BE DONE ?
- WHEN IT WILL BE DONE ?
- WHO WILL PARTICIPATE IN DOING IT ?
- HOW IT WILL BE DONE ?

Planning takes place at two essential levels in agroforestry extension projects:

AMONG PROJECT STAFF **AND** BETWEEN PROJECT STAFF AND THE VARIOUS PARTNERS WITH WHOM THEY ARE WORKING.

Project staff should also try to identify and encourage project planning among farmers and other local people. As the project progresses, planning at this level will become increasingly important.

When we plan as a project staff, we inform ourselves and think ahead. We also recognize that good planning allows us:

- 1. TO HAVE BETTER CONTROL OF EVENTS ACTIVITIES FOR WHICH WE ARE RESPONSIBLE.
- 2. TO COORDINATE EFFECTIVELY WITH OTHERS.
- 3. TO REDUCE THE CHANCE OF MEETING PROBLEMS OR BOTTLENECKS.

MONITORING is following-up or checking on the activities we have planned and implemented. Monitoring should give us information about:

- WHAT ACTIVITIES ACTUALLY TOOK PLACE?
- WHO PARTICIPATED IN THEM?
- WHEN AND WHERE THEY TOOK PLACE?
- WHAT PROBLEMS OR SUCCESSES WERE ENCOUNTERED?
- WHAT WAS THE OUTCOME?

Information we collect and record during monitoring allows us to analyze the effects of our planning, to plan new activities and to modify or adjust existing ones to make them work better.

EVALUATION is comparing what we planned to do with our project resources with what actually happened; then deciding if the plan was effectively implemented and if the effects are desirable. Through evaluation we decide:

- WERE OUR ACTIVITIES APPROPRIATE FOR LOCAL CIRCUMSTANCES?
- WERE THEY WELL IMPLEMENTED?
- HAVE THEY RESULTED IN THE TYPE OF CHANGES WE HAD HOPED FOR?

The PLANNING, MONITORING AND EVALUATION process involves a number of steps. These include:

1. Collecting information on conditions and needs in the project area.
2. Interpreting this information from the points of view of all project participants.
3. Identifying objectives or specific changes that you and local people would like to achieve within a certain time period in order to meet their needs with the aid of project resources.
4. Designing and implementing the best possible activities to accomplish the objectives.
5. Identifying information needed to plan, manage and monitor the activities and to evaluate their effectiveness.
6. Identifying and creating tools for obtaining the information needed to plan, monitor and evaluate activities.
7. Following-up and keeping records on the activities being implemented and completed.
8. Judging the effect and efficiency with which the activities have met project objectives.
9. Redesigning activities to better meet project participants' needs and improve local conditions or circumstances.
10. Following-up on any activity changes through regular monitoring and evaluation.

When we accept a **participatory** approach to development, we are accepting that all staff and other project participants have an active and responsible role to play in planning, monitoring and evaluation. A **participatory project** gives responsibility to all involved in deciding what activities to implement, and to assess their effectiveness.

Planning, monitoring and evaluation can help the project in the following ways.

LEARNING

As our project progresses we may realize that staff members' experience with farmers varies. When we share these experiences through planning, monitoring and evaluation we may see patterns which point to successful activities, good participation and good agroforestry development. Regular planning and monitoring contribute to information and experiences being shared more often.

COORDINATION

Planning and monitoring help us coordinate efforts among project staff, and between staff and other participants. This helps us use resources efficiently.

ACCOUNTABILITY

Planning and monitoring help to keep all project participants aware and accountable for what is happening. Without effective planning and monitoring, staff and farmers remain unaware of what their ideas and actions have accomplished.

KNOWLEDGE BUILDING

Because much of modern agroforestry is still new, monitoring and evaluation play the important role of generating information about the effectiveness of various agroforestry techniques. This information can be very valuable to agroforestry development efforts within and outside our project.

Good planning, monitoring and evaluation begin with good information.

Examine the types of activities that your project proposes to start or support. What information is required about these activities to make them as effective as possible?

Most agroforestry extension projects include the following categories of activity:

- planning and negotiation,
- training and extension,
- plant production, management and use,
- soil conservation construction and maintenance,
- monitoring and evaluation.

Within each of these activity categories there will be a number of project-specific activities.

Project-specific activities depend on our project's objectives, approach and resources. Specific activities also depend on our project's history and stage of development. At each stage of project development we require different information to help us plan, monitor and evaluate its activities.

Good information should help us answer questions such as:

1. **Who should the project work with and assist?**

2. **Who should be involved at what stages?**

3. **What is the most appropriate way to encourage effective participation from local farmers and other project participants?**

4. **What knowledge do participants already have about agroforestry and how skilled are they at practicing it?**

5. **What tree species are popular and successful?**

6. **What are good sources of local seed?**

7. **What are good protection measures for tree seedlings?**

8. **What are good tree growing and tree management techniques and strategies?**

9. **What tree planting configurations work best on farms? Why?**

10. **How much time do local people have for various project activities?**

11. **Which activities are most important during a given time in the crop cycle or in the project?**

12. **Under what conditions will people continue to participate through planning and management of their own activities?**

13. **What information do local people need to help them manage agroforestry activities over the long term?**

14. How do we set priorities for our project activities?

15. How should we schedule our activities?

Answers to these and similar questions will help us work with local people to make effective plans.

For **participatory** project planning, monitoring and evaluation staff need to develop the following types of information collection skills:

These methods help us understand the environment we work in and the people we work with, and can help us involve these people in planning, monitoring and evaluating project activities.

Lesson 2 PLANNING AND MONITORING TOOLS

OBJECTIVE

Trainees will be able to explain the purpose of planning and monitoring tools used to record information for their project. They will be able to use these project tools effectively.

METHOD

This lesson is based on LEARNING NOTES and SOURCEBOOK SUPPORT MATERIALS. Plan to lead discussions and conduct the practical exercises described in this lesson. Use newsprint and markers to record important points from group discussion. If you use this lesson to produce activity plans for your project you will need a day or more. An additional day, at least, will be needed to develop and practice using monitoring tools, depending on trainees' familiarity with the project and its participants.

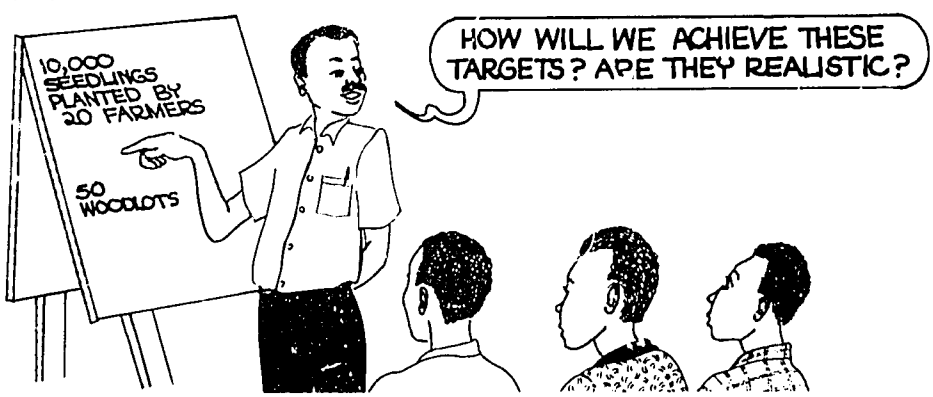
EXAMPLE

Prepare

Prepare for this lesson by reviewing the LEARNING NOTES. SOURCEBOOK SUPPORT MATERIALS (7-1), (7-2) and (7-3) may also be helpful in preparing for this lesson.

Sample planning and monitoring tools are included within the LEARNING NOTES for this lesson. These have been used in some agroforestry extension projects for staff planning and monitoring. Modify these sample forms and adapt them to the activities and conditions of your project. In modifying the sample tools seek the assistance of other project staff. Try to obtain broad agreement on what they will contain and how they will be used.

Also prepare a list of activities which the project is likely to implement. Some projects prepare activity targets or quantities of output they expect to accomplish over a certain period of time. If your project has activity targets, prepare a list of them for discussion with your trainees.



Facilitate

STEP 1 Introduction
Begin discussion by reviewing information collection tools trainees have already been introduced to, based on the list on the first page of the LEARNING NOTES.

Next, review the idea of project activity planning and monitoring tools and why these are important.

Then, present trainees with a list and samples of the basic tools your project will use for planning activities and reporting on them. These will help trainees become familiar with their names, formats and uses. The remainder of the lesson will be based on them.

STEP 2 Seasonal Activity Plan
Beginning with the Seasonal Activity Plan, suggest that trainees create a draft Plan for the up-coming planting and preparation season.

As a first step in preparing a Plan, review information from the LEARNING NOTES about uses of the Seasonal Activity Plan and the information it should contain.

Next, generate or share with trainees a list of specific activities and outputs for the next season.

For each activity discuss the questions listed in the LEARNING NOTES, beginning with, What will be done?.

Discuss the conditions that would have to be met including the inputs required to implement the activity and achieve the desired output. Help trainees see how the output of one activity becomes a necessary input for another. For example:

1

THE RESULTS OF AN "ON-FARM" SURVEY WOULD BE INFORMATION ABOUT WHAT FARMERS ARE DOING, AND WANT TO DO ON THEIR FARMS. THIS INFORMATION IS AN OUTPUT OF THE SURVEY.
THIS OUTPUT SERVES AS AN INPUT FOR MAKING AN AGROFORESTRY DESIGN ON FARMS.

2

THE RESULTS OF A FARMERS' TRAINING ACTIVITY WOULD BE KNOWLEDGEABLE AND SKILLED FARMERS. TRAINED FARMERS WOULD BE IMPORTANT INPUT INTO EFFECTIVE AGROFORESTRY PRACTICES.

Discuss also your definition of a completed activity. Identify criteria for satisfactory activity completion.

Draw a **sample format** on a flip chart or chalkboard based on the example in the LEARNING NOTES. Fill in appropriate information as it is generated so trainees see how to use the format. On a separate sheet or area of the chalkboard, keep a list of "assumptions", or conditions and inputs necessary to effectively implement the activity.

Once you have a reasonably well completed project level Seasonal Activity Plan, discuss with trainees what would be involved in generating such a plan for each staff member. Be sure to consider the geographic area and local population for which each staff member will be responsible. Then assign trainees to prepare their own personal Seasonal Activity Plans based on the project level plan.

Following a reasonable amount of time for this activity, have trainees reassemble to discuss the process and the product of the planning exercise. Ask about problems or areas of uncertainty and note these on newsprint. Provide clarification where possible.

Where uncertainty stems from a lack of adequate information about project conditions and what the future may hold, remind trainees that:

> Planning with some degree of uncertainty is inevitable. We cannot know the future.
>
> Stating our assumptions about what is most likely to happen in the future helps us deal with uncertainty in a responsible way.
>
> Good information about current and recent project conditions can eliminate a great deal of uncertainty, for situations normally do not change significantly within the planning time frame we are discussing.

STEP 3 Monthly Activity Plan

Following completion of Seasonal Activity Plans to your satisfaction (remember, they can be changed), use a similar teaching process to generate a Monthly Activity Plan for the project.

Based on the project plan and discussion about project assignments for each trainee, ask them to prepare individual Monthly Activity Plans.

Review and discuss the plans in a common forum, focussing on problems trainees had in organizing and presenting the information. Do they understand the relationships between activities, inputs and outputs? Do they understand relationships among activities in terms of their sequencing and scheduling?

STEP 4 Field Notebooks

Use a similar teaching process to cover information in the LEARNING NOTES about Field Notebooks and Monthly Activity Reports as Monitoring Tools.

In the case of Field Notebooks, specify to the trainees particular types of information you feel is essential for each person to keep. If you have particular suggestions on organization of this information, offer them.

Suggest additional types of information they may want to keep in Field Notebooks to remind them of important events.

STEP 5 Monthly Activity Reports

To teach trainees how to prepare Monthly Activity Reports, use the Monthly Activity Plans as a starting point. Ask trainees what specific information the Reports should contain to serve the purposes identified in the LEARNING NOTES. Then help them practice organizing this information using discussions and visual aids.

STEP 6 Meetings

Then introduce Meetings as an information collection tool for planning, monitoring and evaluation. Use the material in the LEARNING NOTES to generate discussion about the purpose of meetings, and characteristics of good ones.

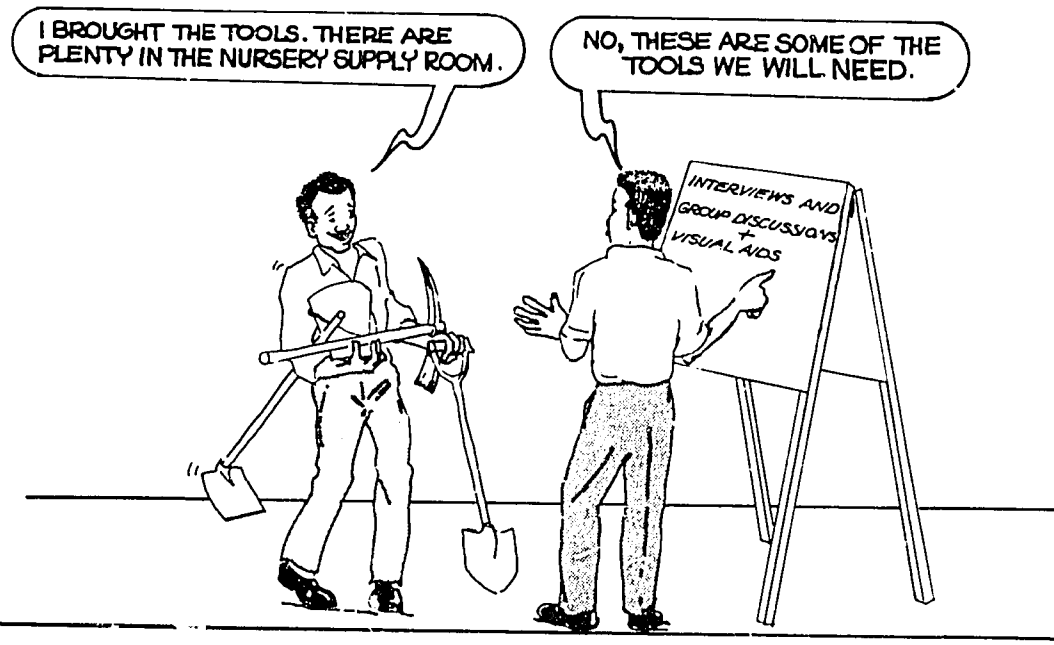
You may want to suggest a Role Play to demonstrate good and poor meeting techniques, and to give trainees practice in planning and conducting a good meeting.

STEP 7 Tools For Farmers

As a final series of steps in the lesson, ask trainees to consider how farmers and other project participants can become involved in the project's planning and monitoring system. Be prepared to offer the following suggestions.

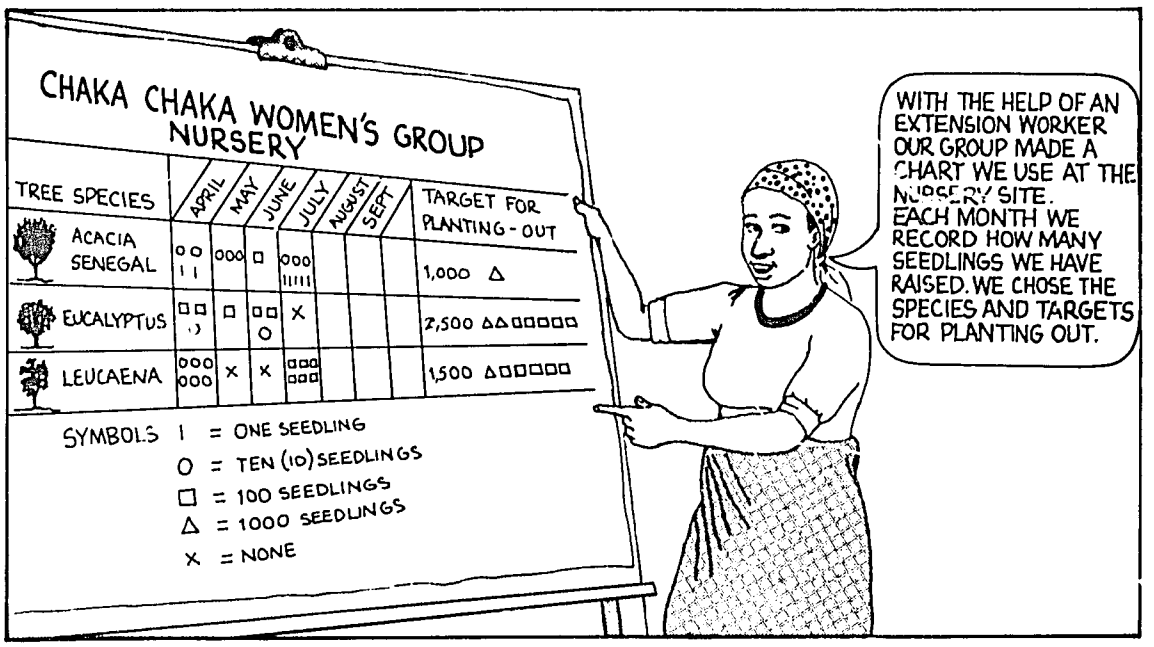
How project participants plan and monitor their activities will depend on their level of education, and their familiarity with activities and techniques promoted by the project.

Farmers plan, monitor and evaluate their activities routinely. Participation in project activity planning and monitoring however, normally implies an ability to communicate information to project staff. Staff can facilitate such communication by identifying developing and using appropriate tools, such as interviews or focussed group discussions with the use of visual aids. Such tools are likely to be less dependent on written and numerical means of communication and will rely more on verbal communication and graphics.



Use ideas from SOURCEBOOK SUPPORT MATERIALS (7-3) as well as your own experience to generate appreciation for involving farmers in planning, monitoring and evaluation, and interest in doing this in your project area. Encourage staff suggestions about appropriate approaches and tools.

You may consider giving trainees specific assignments to develop planning and monitoring tools which encourage farmer management of these activities, and useful information exchange between farmers and field staff. Be activity or output specific in such assignments, i.e. needs identification, seed supply, nursery production and distribution, tree planting, tree survival, tree management, system productivity, etc.



Encourage trainees to learn how project area farmers already plan and monitor these or similar activities, and to be creative and open-minded about potential adaptation of traditional practices for project purposes. Arrange a time to discuss these ideas, and develop tools for testing.

Summarize

Review and highlight key points on planning, monitoring and evaluation from Lesson 1. A substantial review will help trainees comprehend the terminology so it does not become a stumbling block to understanding the concepts and practices.

Review also key tools discussed in this lesson and how the information they generate is used in the planning, monitoring and evaluation process.

Finally, review trainee suggestions for involving project participants in the planning and monitoring process and steps the project plans to take toward encouraging such participation.

Give trainees copies of the LEARNING NOTES for their Training Workbooks. Suggest they also keep notes they took during the lesson.

LEARNING NOTES

PLANNING AND MONITORING TOOLS

When we understand the uses of planning and monitoring in our project, we are in a good position to identify tools and methods we may use to collect information. We have learned about several useful information collection tools already and we will learn about more in future lessons. Consider for example:

1. **Group Interviews and On-Farm Surveys** for obtaining information about farmers' problems, needs and potential for implementing agroforestry practices,

2. **Agroforestry Tree Inventory** for obtaining information about potential local agroforestry species,

3. **Agroforestry Design Summary Forms and Diagrams** for organizing and presenting information about how agroforestry components can be arranged and managed to address production objectives,

4. **Seed Supply Worksheets** for organizing information about the availability and treatment of agroforestry tree seed in your project area,

5. **Nursery Records** for collecting information about operations involved in producing trees, and about seedling distribution.

Information collected with these tools helps us decide how to organize specific project activities and/or how an activity occurred and with what result. Many tools used for planning, monitoring and evaluation generate information that is used for several purposes.

There are other important information tools we use in agroforestry projects. These tools help us plan, monitor and evaluate all major activities in which the project is involved. They help us schedule and organize all project resources. They are used by staff on a regular basis.

Tools we use to identify, schedule and coordinate project activities are called planning tools. Important project planning tools include:

SEASONAL ACTIVITY PLANS	MONTHLY ACTIVITY PLANS	MEETINGS

Tools we use to report on project activities are called monitoring tools. Important project monitoring tools include:

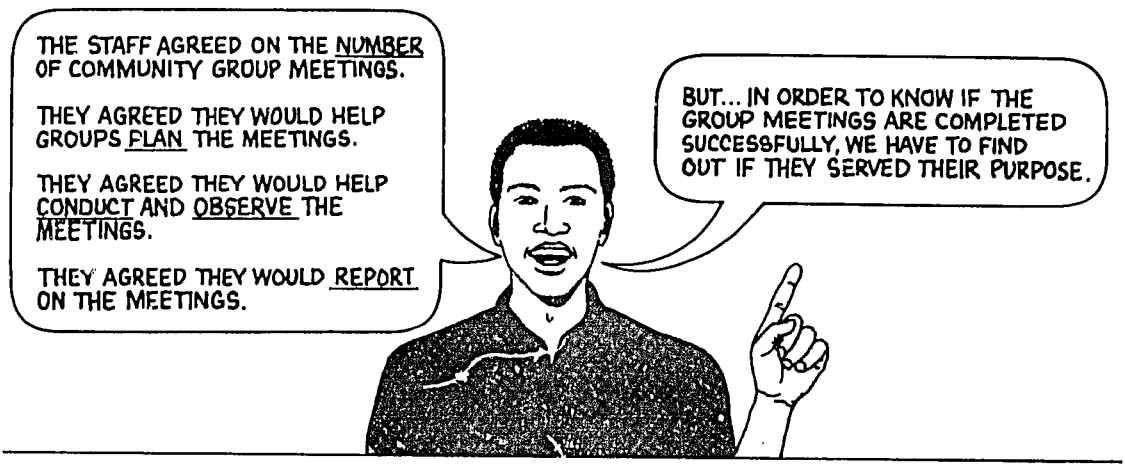
FIELD NOTEBOOKS	MONTHLY ACTIVITY REPORTS	MEETINGS

SEASONAL ACTIVITY PLANS

Seasonal Activity Plans are used to help project staff schedule their work before and during the planting season(s). A Seasonal Activity Plan includes a list of important project activities that each staff member will be involved in during the planting season. Each Seasonal Activity Plan describes:

- **IMPORTANT ACTIVITIES OF THE PLANNING PERIOD**
- **RESULTS EXPECTED FROM THESE ACTIVITIES**
- **WHEN THESE RESULTS ARE EXPECTED**

Seasonal Activity Plans are based on a clear understanding among project staff about each activity. This involves discussion about what makes up a "completed" activity, and how they know when a result or output has been achieved.



Each staff member's Seasonal Activity Plan is used to make up the project's Seasonal Activity Plan for each planting season. In this way each staff member contributes to the direction and activities of the project. (During the first season it may be more practical to first prepare the project level Activity Plan and base each staff member's plan on this.)

Your Seasonal Activity Plan is best prepared in staff meetings. Extension workers, supervisors and the project manager should join together to describe and discuss each project activity for the season. They should consider:

What will be done?
Who will be involved?
What resources and conditions are needed?
When will it be done?
How will we know the activity is accomplished?

If your project and individual Seasonal Activity Plans are prepared and used effectively with the participation and common understanding of all staff, they will help you in preparing Monthly Activity Plans and Weekly Schedules.

See a sample Seasonal Activity Plan for one staff member on the following page.

SAMPLE SEASONAL ACTIVITY PLAN

SEASON: Long Rains 1988
EXT. WORKER: Leon

AREA: Wabayu
SUBMITTED: Dec.'87

ACTIVITY	TARGETS						
	JAN.	FEB.	MAR.	APR.	MAY	JUNE	TOTAL
1. Planning and Negotiation							
a. Women's Groups Identified	2	2					4
b. Primary Schools Identified	2	2					4
c. Gov't Meetings Attended	1		1		1		3
2. Extension Staff Training							
a. Training Needs Assessment	x						x
b. Communication Training	x	x	x				x
c. Diagnosis & Design Training	x	x					x
d. Plant Production Training (Seed Collection/Supply, Nursery Est. and Planting Out)		x	x				x
e. Soil Conservation Training			x	x			x
f. Tree Management Training				x			x
3. Extension							
a. Group Interviews	4	4					8
b. On-farm Surveys	8	8					16
c. Agroforestry Designs			16				16
d. Follow-up Visits					16		16
4. Plant Production							
a. Nursery Sites Identified			4	2	2		8
b. Seed Collection		x	x		x	x	x
c. Demonstration Sites/Seed Orchards Identified			2	2	4		8
d. Nursery Operations Begun			2	2	2	2	8
5. Soil Conservation and Planting							
a. A-Frames Constructed			6	6	18	18	48
b. Meters Contour Lines Established				1200	3600		4800
c. Meters Grass Strips Established				600	1800		2400
d. Agroforestry Trees Planted				1000	200		1200
6. Monitoring and Evaluation							
a. Baseline Surveys Completed	8	8					16
b. Monthly Activity Reports Completed	1	1	1	1	1	1	6
c. Seed Records Established		x	x	x	x	x	x
d. Nursery Record Books Established			2	2	2	2	8

ASSUMPTIONS AND DEFINITIONS

1. **Planning and Negotiation**
   a. A Women's group is "identified" when members have met at least twice with an EW and agreed to terms for participating in project nursery activities.
   b. A school is "identified" when the Headmaster and another staff member have met at least twice and agreed to establish a project nursery.
   c. Attendance at Gov't meetings involves informing Committee members about project activities.

2. **Extension Staff Training**
   Weekly and daily training schedules and topics will be posted by trainer and discussed in staff meetings the beginning of each month.

3. **Extension**
   a. One Group Interview for each group school
   b. Interviews conducted with four members per women's group
   c. Farm level design plan written, drawn and discussed with each surveyed farmer
   d. To determine if tree holes staked/dug per design

4.,5.,6. Etc.

MONTHLY ACTIVITY PLANS

Monthly Activity Plans are based on Seasonal Activity Plans. They are a breakdown of the seasonal plans on a month-by-month basis. They are more detailed than the seasonal plans. As in the case of Seasonal Activity Plans, you will need to agree with other project staff on what is meant by a "completed" activity.

Monthly Activity Plans allow for more careful planning and for more exact coordination of project staff and resources than Seasonal Activity Plans. Monthly plans help us coordinate project activities more easily, and indicate how project staff may work in support of one-another.

Monthly Activity Plans allow us to consider the same questions we asked when completing our seasonal plans:

What will be done?
Who will be involved?
What resources and conditions are needed?
When will the activity be accomplished?
How will we know it is accomplished?

There is a sample of a Monthly Activity Plan below.

This is the Activity Plan for the third month (March) of the Sample Seasonal Activity Plan previously discussed in these LEARNING NOTES.

SAMPLE MONTHLY ACTIVITY PLAN

MONTH: March, 1988
EXT. WORKER: Leon

AREA: Wabayu
SUBMITTED: Feb. 25 '88

ACTIVITY	TARGETS				
	Week 1	Week 2	Week 3	Week 4	Total
1. Planning and Negotiation					
c. Government Meeting	1				1 meeting
2. Extension Staff Training					
b. Communication Training		2			2 days
d. Seed and Nursery Training			3		3 days
e. Soil Conservation Training				2	2 days
3. Extension					
c. AF Designs	6	4	2	4	16 farmers
4. Etc. (As per activities in Seasonal Activity Plan)					

RESOURCES NEEDED	REMARKS
1. Lift in vehicle to Dist. Forest Dept.	Must be picked by 9:00 am Wed.
2. Training Schedule	Need dates and times of training so can schedule other activities.
3. Blank Copies of Design Summary Forms (16)	Need staff meeting on A/F design ideas before going to farmers.
4. Etc. (For each planned activity)	

FIELD NOTEBOOKS

Staff Field Notebooks are perhaps the most important project record-keeping tool. They are used to collect information for your activity plans and reports.

Field Notebooks should be used to keep a record of the following types of information:

People you meet, topics you discuss and decisions you make,
Observations you make,
Activities you are involved in,
Problems,
Successes,
Ideas related to your work.

Field Notebooks are personal. They should help serve as your memory, a source of information and guidance. You may record critical remarks, good ideas, and personal accomplishments in it. You need not share it. Notebooks are like diaries, but focus on your agroforestry work.

Keep your Field Notebook with you in the office and in the field. It should be small enough to fit in your bag or pocket.

Organize your Field Notebook so it is easy to use. Date all your entries and keep information to suit your way of thinking. Try and keep regular records. It is best to write down ideas or observations as soon as possible after meetings or other activities. Otherwise at the end of your work each day summarize the events and your thoughts for that day. Do not wait too long to record information or you may forget it.

Here is an example of an entry in a Field Notebook:

JANUARY 18, 1988.

CONTACTS/ADVICE.	OBSERVATIONS AND THOUGHTS.
• Met Wamuyu W.G. Chairlady. She requested follow-up group interview. Suggested Feb 1st.	• Farmer Juma has good supply of Grevellia seed. Need to request him to sell in April.
• Assisted F.D. Ext. Officer lay-out Chiefs nursery.	• F.D. staff need extra training in small scale nurseries - discuss with P.M.
SPECIAL EVENTS.	**PROBLEMS.**
• Small party on Peter's birthday - Wamuyu W.G. Chairlady's husband, 12 members attended.	• Bicycle tire tubes not holding up.
	• Perhaps lack of time. Schedule extra group interviews.

Information from your Field Notebooks should be used to help you write up reports. For example, a weekly or monthly activity report would be based on notes you have made in your Field Notebook. You can refer to your Field Notebook for information to write up your monitoring reports for the project.

MONTHLY ACTIVITY REPORTS

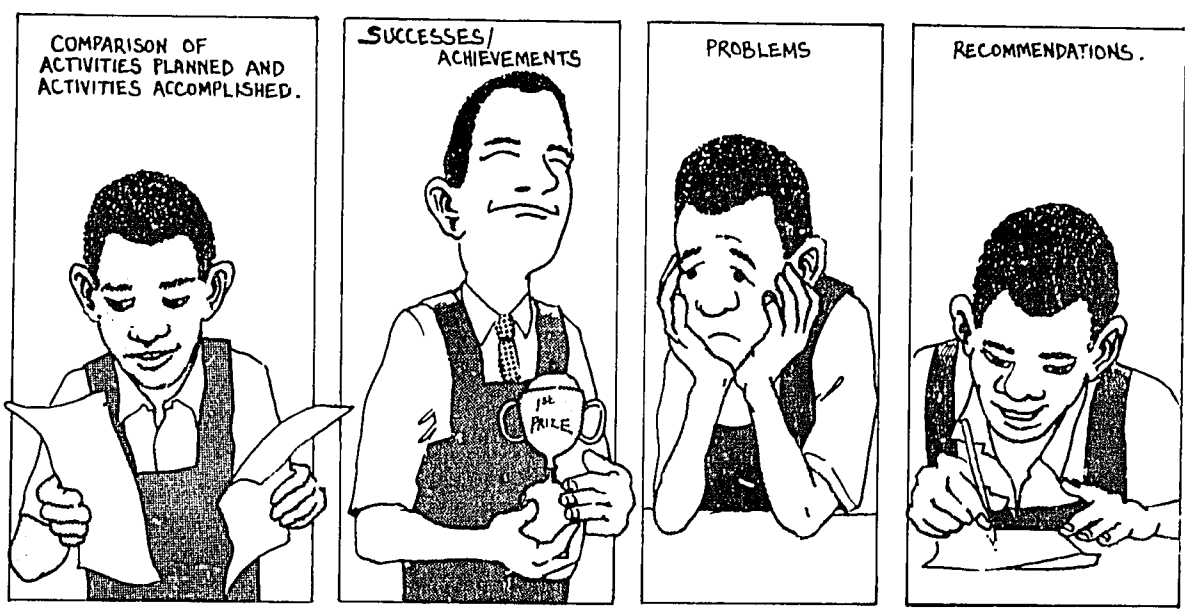
Monthly Activity Reports are used to monitor your progress against your Monthly Activity Plans. They correspond directly to your plans, and are used to:

- SUMMARIZE THE RESULTS OF YOUR ACTIVITIES,
- EXPLAIN WHY ACTIVITIES WHICH WERE PLANNED WERE NOT ACCOMPLISHED,
- SUMMARIZE YOUR THOUGHTS ABOUT WHAT IS WORKING WELL, AND WHAT PROBLEMS NEED TO BE SOLVED.

This information is important for project monitoring. From monthly staff reports project managers and other staff can note successes and problems. Monthly Activity Reports by Extension Workers are particularly helpful for project monitoring, as they are the project staff who have contact with farmers and the community most often. Reports they submit to their supervisors provide a basis for improving the use of project staff time and other resources. Monthly Activity Reports give us the information necessary to solve problems, note successes and make decisions.

Monthly Activity Reports are prepared by staff members responsible for Monthly Activity Plans. Each staff member's Report will contribute to the project's Monthly Report. These Reports are used to draw up a quarterly, trimesterly, seasonal or annual report, depending on the reporting requirements of the project.

Monthly Activity Reports should be accompanied by a written explanation of what happened during the month. It is helpful to use the following categories when writing your explanation:



There is an example of a Monthly Activity Report on the following page. Note that the Report corresponds directly to the Monthly Activity Plan.

This is the Activity Report for the third month (March) of the Sample Seasonal Activity Plan previously discussed in these LEARNING NOTES.

SAMPLE MONTHLY ACTIVITY REPORT

MONTH: March '88
EXT. WORKER: Leon

AREA: Wabayu
SUBMITTED: April 4, '88

ACTIVITY	TARGET*											
	Week 1			Week 2			Week 3			Week 4			TOTAL		
	P	A	D	P	A	D	P	A	D	P	A	D	P	A	D
1. Planning and Negotiation															
c. Government meeting	1	1	0										1	1	0
2. Extension Staff Training															
b. Communication Training				2	1	-1	0	1	+1				2	2	0
d. Seed and Nursery Training							3	3	0				3	3	0
e. Soil Conservation Training										2	1	-1	2	1	-1
3. Extension															
c. AF Designs	6	6	0	4	4	0	2	1	-1	4	3	-1	16	14	-2

*P = Planned A = Actual D = Difference

REASONS FOR DEVIATIONS

2. b. Postponed to suit other schedules
2. e. Postponed to next month due to lack of construction materials
3. c. Two farmers not at home, will continue trying next month

MEETINGS

Well planned, well conducted meetings support good planning and monitoring. Meetings should be used throughout your project as a way of sharing information, plans and experiences among project staff and other participants. Meetings are essential tools for managers of participatory project activities, and should include field staff and farmers.

Meetings which will assist your planning, monitoring and evaluation efforts should be based on the following guidelines.

1. A good meeting needs a stated purpose. It also needs an agenda, or list of discussion topics and issues.

2. Meeting participants should be informed of the meeting and agenda well enough ahead of time to prepare for it.

3. Meetings need a good leader. This person takes on the role of facilitator. He or she should guide the meeting, helping to move discussion from general to more specific issues according to the agenda and purpose of the meeting.

4. The leader of project staff meetings may use newsprint to record ideas, so that all can see and follow what is being discussed. Chalkboards work just as well.

5. The meeting leader (facilitator) should encourage everyone to speak by raising questions about project progress....what are some of its strengths...what are weakness? At least one person should record responses.

6. The facilitator should encourage the group to discuss project strength and weakness and relate their observations to specific activities.

7. The facilitator should encourage participants to share possible solutions to problems or weaknesses in their project and help them determine why proposed solutions might be successful.

8. The facilitator should assist the group in developing a plan of action based on these discussions.

9. The facilitator should summarize the results and recommendations of the meeting. He or she should focus on the role and responsibility of each participant. He or she should ensure that someone records the discussion and outcome so there is a record of results and planned action.

AGROFORESTRY

EXTENSION TRAINING SOURCEBOOK

MODULE 8
Seed Supply

MODULE 9
Nursery Management

MODULE 10
Tree Planting, Protection and Management

CARE

TRAINING MODULE 8 SEED SUPPLY

INTRODUCTION

The material in this Module will help trainees obtain and correctly handle seed of appropriate agroforestry tree species. Specifically, trainees will learn how to identify good seed sources, how to effectively store seed, how to test it for viability and how to treat it before sowing to increase chances for germination. Trainees will also learn how to plan for seed collection as a part of seasonal and annual activities.

CONTENTS

This Module contains the following lessons:

Lesson 1 **INTRODUCTION TO PROJECT SEED SUPPLY STRATEGY** This lesson provides an overview of your project's seed supply strategy and what is required of field staff to implement it.

Lesson 2 **TOOLS FOR IMPLEMENTING PROJECT SEED SUPPLY STRATEGY** This lesson consists of an extended series of exercises that provide trainees practical experience with agroforestry tree seed.

Lesson 1 requires about an hour to conduct, plus preparation time. Lesson 2 takes four to five days depending on the amount of time you spend identifying seed sources.

Lesson 1 INTRODUCTION TO PROJECT SEED SUPPLY STRATEGY

OBJECTIVE

Trainees will be able to describe their project's strategy for obtaining appropriate agroforestry tree seed and factors involved in effective seed procurement and handling. They will also be able to describe Extension Staff roles in seed collection and handling.

METHOD

The lesson consists of a facilitated discussion. Use newsprint to record notes and discussion points.

EXAMPLE

Prepare

Review the LEARNING NOTES, **Project Seed Supply Strategy**. Adapt the notes according to plans for your own project. Prepare a presentation based on the NOTES.

Facilitate

Present the material using a question and answer approach. Encourage trainees to consider benefits of local seed collection and factors affecting quality seed supply for the project.

Summarize

Now that we know what is needed to ensure a good supply of quality tree seed for the project, our challenge is to learn to obtain and use tree seed effectively.

LEARNING NOTES

PROJECT SEED SUPPLY STRATEGY

Our project strategy emphasizes the importance of seed collected locally. By locally, we mean within the project area and nearby environments. This strategy has the following advantages:

SECURITY OF SUPPLY

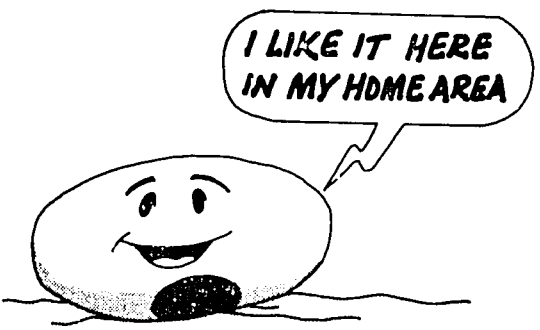
There is a better chance of having seed available when seed is needed by the project.

QUALITY CONTROL

There is a better opportunity to obtain fresh seed. This way we reduce chances that the seed will lose its viability during its time in storage.

This factor is particularly important for seed which does not store well, such as Grevillea robusta, Azadirachta indica, Gliricidia sepium and many fruit trees, including citrus species.

It is important to know local sources of good quality seed. Tree specimens that have characteristics you want in your project trees are the best to collect seed from. These preferred seed-producing specimens are called **mother trees.** Your project should identify **mother trees** as regular sources of good quality seed.



LOCAL ADAPTABILITY

There is a better chance that trees from local seed will adapt better to environmental conditions in your project area.

LESS EXPENSIVE

Generally, it is less expensive to obtain seed locally than from outside sources.

LOCAL SELF-RELIANCE

Collection of seed locally promotes reliance on local resources. Farmers can make better use of locally available seed. They will also learn ways to make sure that local seed produces the best possible results.

The biggest disadvantage of relying on local seed supply is that certain agroforestry species may not be available. In addition, your project will need to plan carefully to ensure an adequate supply of local seed to meet local demands. This may mean spending additional time building up knowledge about tree species and seed availability in your project area.

Your project strategy for local seed supply should include the following:

Learn as much as possible about local tree species and the **seeding time** of each appropriate species.

Learn about the location of good quality seed trees. Certain trees produce more regularly and produce higher quality seed than others.

Organize and supervise seed collection activities on a timely basis.

Apply appropriate techniques for extracting, cleaning, drying, storing, viability testing and **pre-treatment** of seed.

Ensure that seed distribution to local farmers in the project area is efficient. Emphasize distribution to farmers who are relatively close to the collection sites.

Record seed sources. Label seed packages or containers with the date of collection, the type of seed collected and the source of the seed.

Assign someone on the project staff to be in charge of coordinating all seed supply operations.

Your project may want to use seed sources from outside the project area under the following conditions:

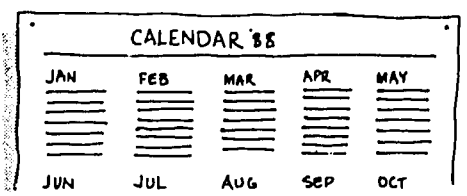
- Seed is brought in when certain species which are desired by the project are not available locally.
- The project hopes to improve certain characteristics of local species.
- Seed obtained outside the project area is more affordable and can be delivered within a specified time.
- Seed from outside the project area remains viable for long enough to guarantee good germination results.
- The exchange of seed between project areas may promote cooperation and collaboration among different agroforestry development groups.

Your project will focus on tree species which are indigenous or which have been naturalized in your project area. You may also want to introduce new species, especially fast-growing, multi-purpose legumes that agroforestry has made popular in many regions of the world. Seed for species such as Leucaena leucocephala and Calliandra calothyrsus, for example, may need to be obtained from external sources.

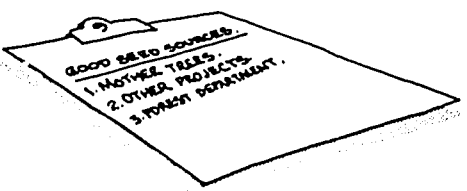
The following are important points about seed supply to be noted and understood:

Appearance. You will want to identify the seed and the tree it comes from.

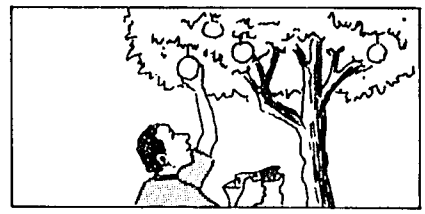
Collection Schedule. You will want to identify the month(s) when seed is particularly plentiful in your project area.



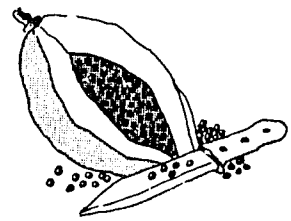
Identify the Best Source of Seed. You will want to identify trees which provide the best source of seed and seeds which are most in demand for your project area.



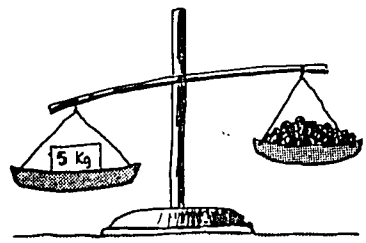
Collection Methods. You will want to identify the best and most efficient methods for collecting seeds from key tree species.



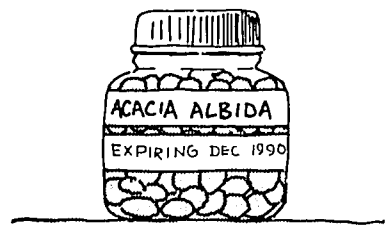
Extracting and Drying Seed. You will want to identify the best way to extract seed from the case or fruit. You will also want to identify which seed types need to be dried and for what period of time.



Weight. You will want to record the weight of seed before storage or distribution.



Viability Periods. You will want to determine for how long each seed type can be stored before it loses its ability to germinate.



Storage Methods. You will want to identify the best methods for storing your seed. Identify the containers, physical location of your seed store, and other requirements for storing your seed.

Pre-treatment Requirements. You will need to know how best to treat your seed types for best germination results. Identify techniques which can be used to make sure the seed germinates.

It will be important for all project staff to develop an understanding through practical experience of these aspects of seed collection and supply.

Lesson 2 TOOLS FOR IMPLEMENTING PROJECT SEED SUPPLY STRATEGY

OBJECTIVE

Trainees will understand how to use Seed Supply Worksheets as a guide to learning how to implement the projects' seed supply strategy.

METHOD

This is an extended lesson that consists of a series of practical training exercises followed by discussion about their outcome. The exercises correspond to the seven sections of the LEARNING NOTES. They should be planned and organized by the trainer based on corresponding SOURCEBOOK SUPPORT MATERIALS referenced in the LEARNING NOTES. The exercises are introduced through the first part of the lesson which includes a trainer presentation and training group development of a work plan.

EXAMPLE

Prepare

Review the LEARNING NOTES, **Seed Supply Worksheet.** Make copies of the NOTES for each trainee. Make extra copies of the Seed Production Information Matrix contained in the **Worksheets** if necessary.

Review the TRAINER'S NOTES, **Evaluation Guidelines for Seed Supply Worksheets,** at the end of this lesson.

Select a number of species available locally which your project may use (or already is working with). The species selected should represent a range of characteristics with respect to size, seeding times, type of seed coat, and **viability** period. Seed of three or four selected species should expose the trainees to a wide variety of seed characteristics in the limited training time available.

Identify sites within your project area where specimens of the species selected can be found. You may also want to include in your selection seed that is not yet available locally such as a fast-growing, nitrogen-fixing legume.

Facilitate

Give a presentation covering the points in the **Worksheet's** Introduction.

Ask trainees to complete Section 2 and 3 of the **Worksheet** within the next day or two.

Develop a work plan with your trainees to complete the other sections of the **Worksheet.** The work plan should include activities which can be best done in the field.

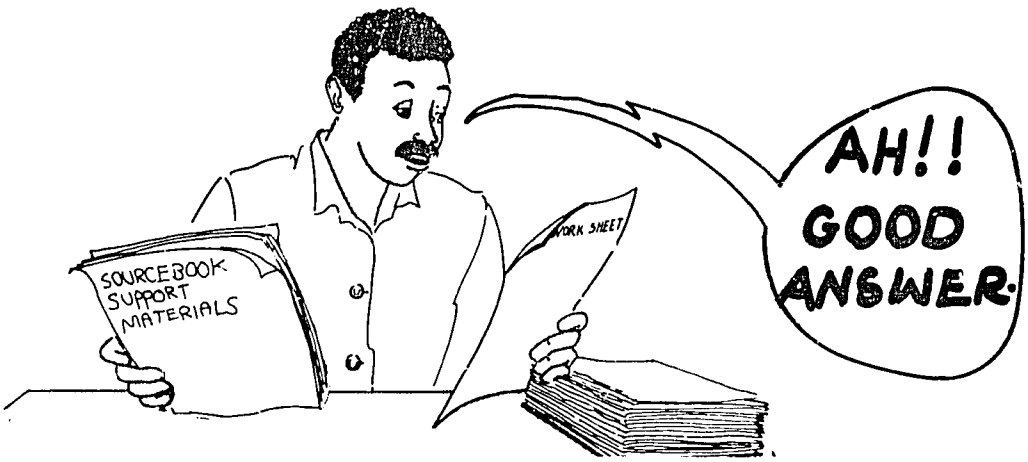
Summarize

The project's seed discovery process is now in the hands of the trainees. Share and compare your findings with one another as you move through the stages of your work plan.

TRAINER'S NOTE:

Evaluation Guidelines for Seed Supply Training Worksheets

The questions in Section II of the Worksheet correspond to those in a book entitled A Pocket Directory of Trees and Seeds in Kenya, by Wayne Teel. The necessary pages of the book are contained in the SOURCEBOOK SUPPORT MATERIALS for this lesson. Use answers to questions posed by Teel as guidelines for evaluating the trainees' responses.



Be aware that Teel's answers are general. He is making the point that there is a lot of diversity among tree species regarding seed characteristics. Trainees will be able to provide more specific information based on their training experience.

In evaluating the trainees's responses, you want to know how they obtained their information.

For example, for the question about the number of seeds a tree produces per season, did they guess the number or did their response show they understand that the number depends on such factors as:

"Seed size"	"Tree maturity"	"Length of seedling cycle"

Find out how the trainees came to their answers. Did they guess? Did they ask someone? Who? Did they ask a lot of people the same questions? What did they do about different or conflicting answers? Did they make observations, take samples, etc.? With this information, you can guide the learning process by encouraging trainees to use as many resources as possible. Remind them not to forget Forest Department officials in your project area as good information sources about seed.

The quality of responses to the Worksheet's questions depends on your ability to guide trainees to good field sites. They need to see a variety of specimens that exhibit a variety of characteristics. Careful pre-planning is essential to the success of the seed exercises.

LEARNING NOTES

SEED SUPPLY WORKSHEETS

INTRODUCTION

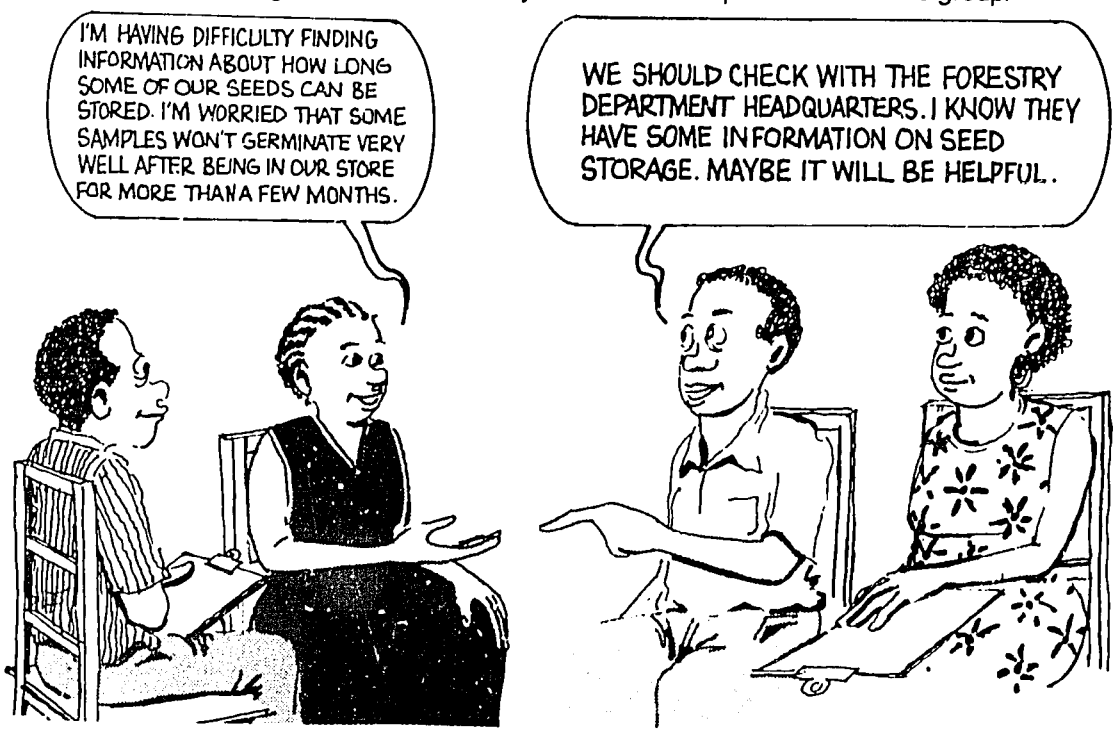
The purpose of the **Seed Supply Worksheets** is to help you discover important information about seed characteristics and handling requirements of various tree species. You will work in pairs to complete the **Worksheets.**

Most information required to complete the **Worksheets** will be obtained from field and office activities. There also will be some readings and group discussions.

The **Worksheets** are designed to be used with five different tree species in your project area; tree species that your project intends to use.

Your best source of information for some of the questions in the **Worksheets** should be farmers. Seed supply training is another chance to practice good communication and information collection with farmers. Use your experience with project area farmers and your communication training to obtain the best and most useful information.

If some question cannot be answered using locally available information and experience, consider where this information might come from. Share your ideas and experiences with the group.



SEED SUPPLY WORKSHEETS

SECTION 1 - TREE SPECIES CHARACTERISTICS

Use pages from SOURCEBOOK SUPPORT MATERIALS (8-1) to help you learn more about common agroforestry tree species characteristics.

Read about characteristics of other tree species your project may use from the information sources listed in the SOURCEBOOK SUPPORT MATERIALS.

Next, list five project tree species here. _____ _____

_____ _____

_____ _____

List key characteristics of each species here.

Species	Local Names	Uses	Preferred Climate and Soil Types

SECTION 2 — SEED PRODUCTION

From the material you have read and your experience, answer the following questions **about each species.** Write the species name at the top of each column. Use additional pages for more species.

1. When does the tree flower?
2. When does the tree seed?
3. When are the seeds mature?
4. What does the seed look like with its seed coat?
5. If the seed coat is removable, what does the seed look like without it?
6. How many seeds does a mature tree produce a year?
7. When in the tree's life cycle does it begin to produce seed?
8. Does the tree produce seed every year?
9. Are there differences in seed from the same species?
10. How is the seed best collected?
11. Can the seed be collected from the ground?

SEED PRODUCTION INFORMATION MATRIX

	SPECIES	SPECIES	SPECIES
Flowering Time			
Seeding Time			
Seed Maturity			
Seed Appearance			
Number Seeds Produced			
Age of Tree When Seed Produced			
Frequency of Seed Production			
Best Collection Method			

SECTION 3 — IDENTIFYING THE BEST SOURCE OF SEED (Mother Trees)

Read SOURCEBOOK SUPPORT MATERIALS (8-2) before starting this section.

As our project proposes to make use of locally available seed for good agroforestry species, it is important to identify the best source of seed for these species. The best seed sources usually are trees that are particularly good specimens (samples) of characteristics you are looking for in a tree. Such trees are called **mother trees.**

Identify two farmers within each of the different environments (agro-climatic zones) in your project area. Each farmer you identify should have at least three specimens of one or more of the species you are promoting. Search for trees which vary in age.

Talk with farmers to determine the following important information about the species selected.

Which tree does the farmer believe to be the best source of seed for these species? (Which is the best mother tree?)

What are the farmer's reasons for choosing one tree over another?

Which tree does the farmer believe would be the worst mother tree? Why?

Next, look at the following characteristics of the trees selected by the farmer as examples of those which would be the best and the worst **mother trees.**

- **Tree form (shape size)**
- **Foliage (bushiness, leafiness, health of branches and trunk**
- **Presence of flowers or seeds**

Try and draw on paper the differences you note between tree specimens. Share both the information and the drawings you have made with the farmer(s).

If the trees are producing seed, collect a handful from each tree. Make sure you keep the seed from each tree separate. Label each handful with the name of the tree species, the date it was collected and the location or other identifying characteristics of the tree it came from.

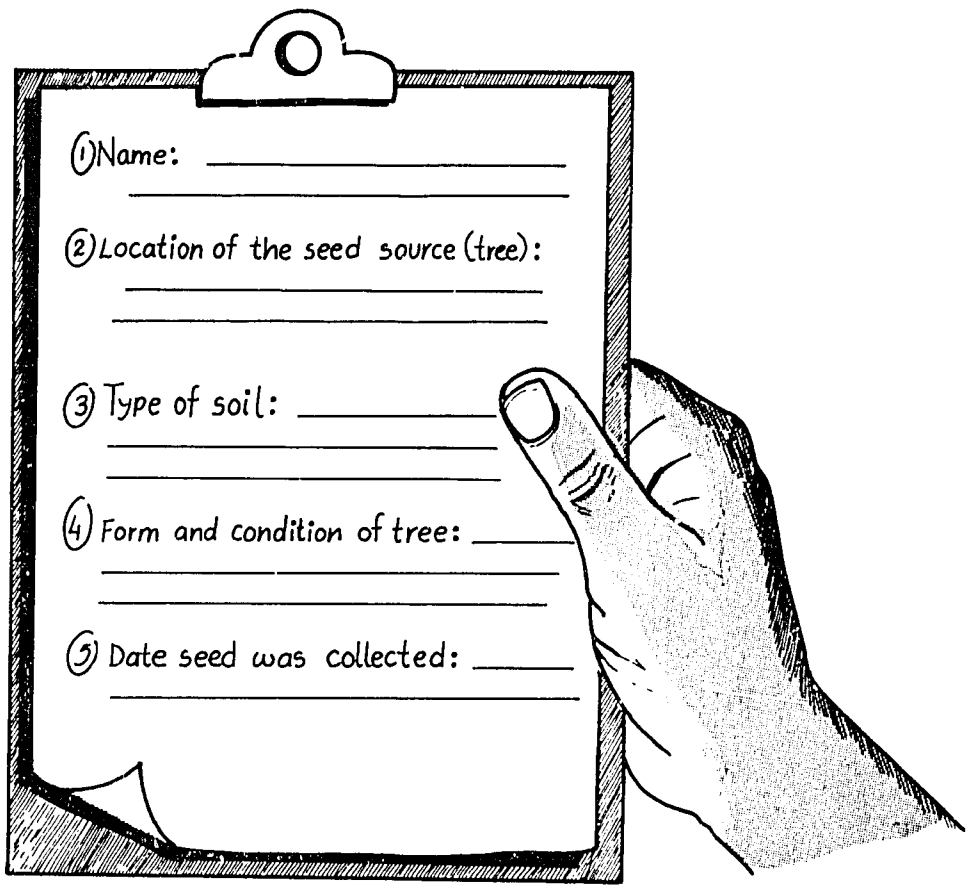
As you travel throughout the project area, watch for specimens of trees which appear to be good sources of seed. Share this information with one another, and describe why you think a tree is a good source of seed. Note the location of such **mother trees.**

If your project is also promoting the use of citrus trees, look for good examples of both **rough** and **improved** varieties. Compare the seed, fruit and tree characteristics of each.

SECTION 4 — TREE SEED DOCUMENTATION

Use SOURCEBOOK SUPPORT MATERIALS (8-3) for this section. These include **Tree Seed Information and Documentation Forms.**

Use these forms to record information on seed which you have collected. A separate form should be used for each lot of seed collected. Fill in the form with the following information, corresponding to the first five categories on the form.



Trainees/Extension Workers should answer these questions after completing the forms:

Why is it important to record such information about seed and seed sources?

What should be done with this information in the project?

This documentation of seed and seed sources becomes important as we discuss seed processing in the following sections.

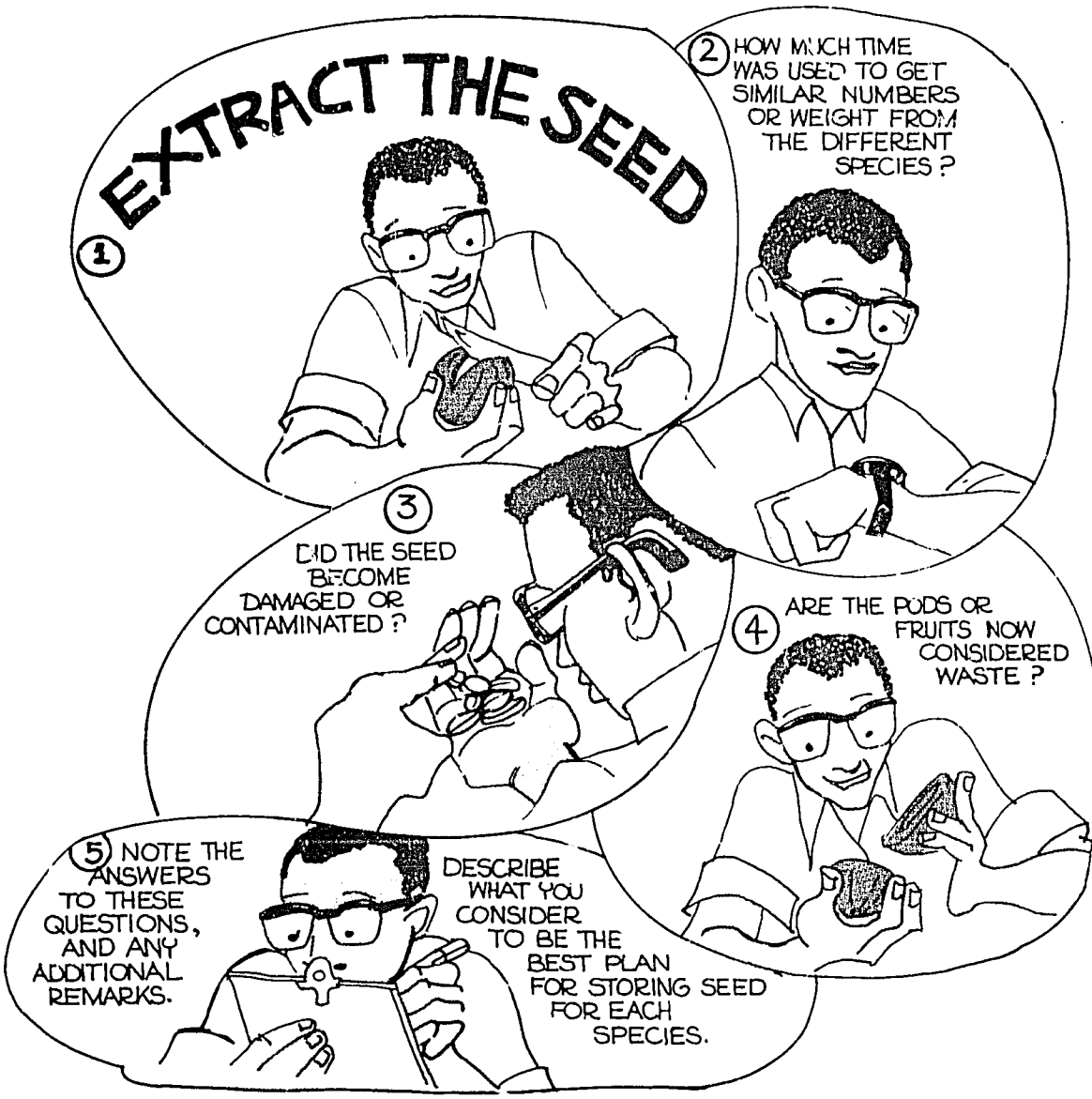
SEED SUPPLY WORKSHEETS

SECTION 5 - SEED EXTRACTION, CLEANING, DRYING AND STORAGE

Read and discuss materials on seed extraction, etc. in SOURCEBOOK SUPPORT MATERIALS (8-4).

We will now work on extracting seed from pods or fruits we have collected, as appropriate.

Sometimes the pods or fruit need to be dried or soaked before the seed can be removed. What is the procedure for each of our seed types? How much time is required to prepare the seed for extraction?



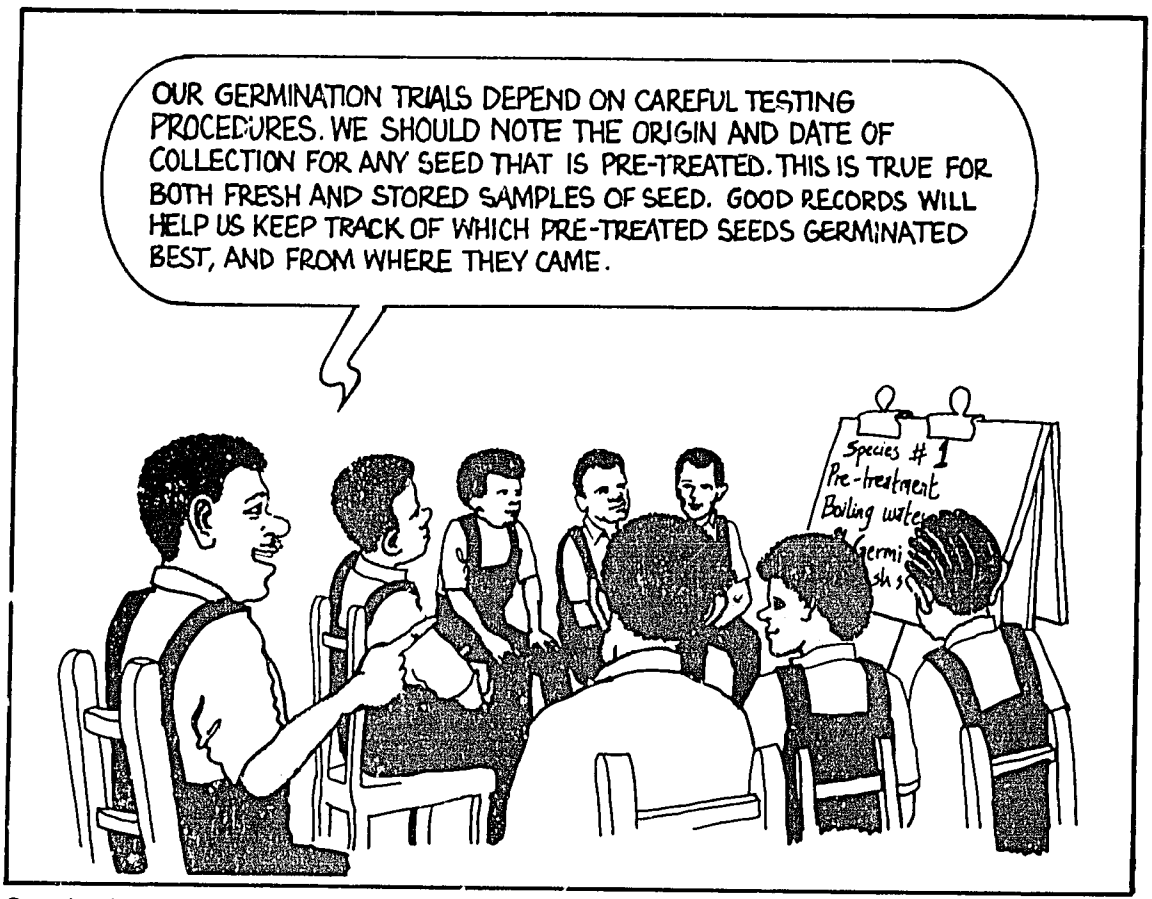
SEED SUPPLY WORKSHEETS

SECTION 6 - SEED PRE-TREATMENT AND GERMINATION

Read the pages in the SOURCEBOOK SUPPORT MATERIALS (8-5) that refer to this section.

We will now compare the pre-treatment and germination of seed, both stored by the project and "fresh" seed collected by the project staff. Use samples of seed stored by the project (if available) for each tree species for which you have collected "fresh" seed.

Pre-treat both **seed samples** of the same tree species (stored and fresh).



Germination tests are used to test the viability of seed. You will be conducting tests of each species of seed and comparing it with information about the place and date these seeds were collected. Keep a written record of your results.

These germination tests should help you answer the questions about seed **viability.**

Why are germination tests for seed viability important for the project?

What can we do as project staff to increase the chances of good germination of seed for each type of tree species we are promoting?

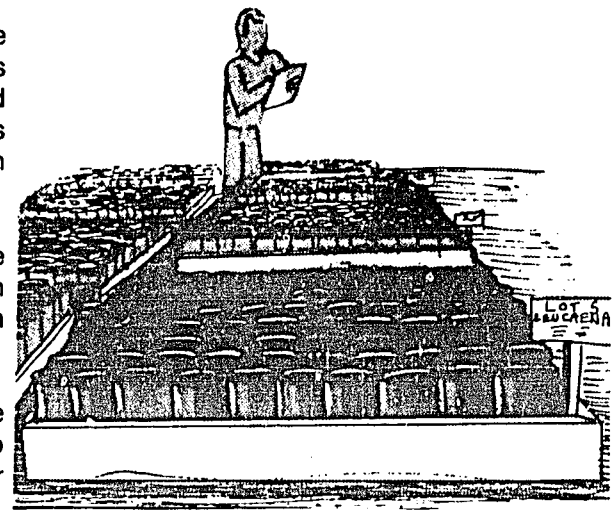
SECTION 7 — TESTING SEED QUALITY IN TEST PLOTS

Another way of testing for seed quality takes more time and regular monitoring. Consider the use of test plots to further test the quality of seed collected from both good seed sources and poor seed sources.

Setting-up a test plot.

Prepare seed beds or seed pots for sowing, in a nursery close to your office.

Pre-treat seeds as necessary. Sow and label the seed beds with the **lot number** and species name of the seed used. The test plot should include seeds from both good seed sources and poor seed sources. Be sure to note which seed pots/beds are which.



Observe your test plots each day. Record the dates when germinated seeds first push through the soil. Record the height of each seedling in each pot/bed every two weeks.

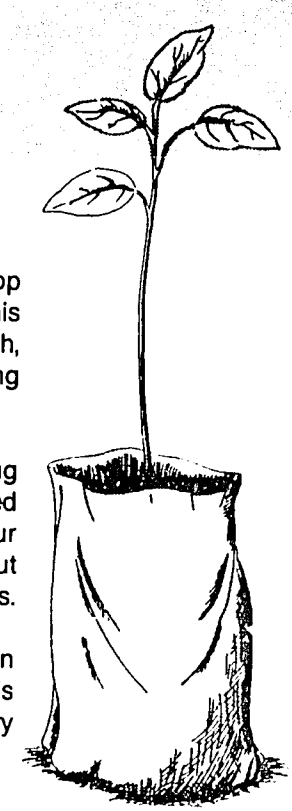
Each pot/bed should be given the same watering, weeding, and shade. Continue to monitor your seedlings until they are ready for transplanting.

When seedlings are ready for transplanting, compare and summarize the results of your test plots, comparing seed quality of the same tree species. You will be interested in the percentage of seed that germinated and the average height of seedlings at each two-week interval for each lot of seed.

When you plant out your seedlings, choose a spot which can be easily observed. Seedlings of the same species should be selected, but from different seed **lots** in order to compare their ability to survive outside the nursery. Plant the seedlings in similar growing sites, close enough together so that monitoring and visual comparisons can be made.

Observe and record the growth of the seedlings regularly. Be sure to note and compare the seed source of the seedling and its date of planting out. This information should prove helpful to the project over time.

TRAINING MODULE 9 TREE NURSERY MANAGEMENT



INTRODUCTION

Module 9 is designed to help agroforestry extension projects plan and develop effective small-scale tree nurseries which are managed by farmers. This module outlines the skills and information necessary to help farmers establish, manage and monitor their own tree nurseries. Extension Staff are key to helping small-scale farmers learn nursery techniques.

This Module stresses the importance of practical, "hands-on" learning, using nurseries to teach and develop new skills. If your project has not yet established nurseries, it will help to develop a project nursery for this purpose. Your Extension Staff can also plan to visit nurseries sponsored by other projects, but it is best to use your own nursery to teach and develop nursery operation skills.

Trainers should read through Module 9 before beginning training sessions on nursery management. You should then develop your lesson plans and use this Module's lessons according to the level of skill and familiarity with nursery management among your Extension Staff.

CONTENTS

Lessons in Module 9 address the following subjects:

Lesson 1 **USING FARMER PARTICIPATION IN NURSERY DEVELOPMENT** This lesson stresses the value of encouraging the participation of farmers in establishing, managing and monitoring small-scale tree nurseries.

Lesson 2 **PLANNING AND SITING A NURSERY** Lesson 2 helps trainees identify and describe factors important to planning and siting small-scale nurseries managed by farmers.

Lesson 3 **NURSERY MANAGEMENT** This lesson helps trainees identify and describe different methods of managing and operating nurseries. Trainees should be able to relate them to choosing the best management plan for nurseries they will support.

Lesson 4, 5, 6 **NURSERY OPERATIONS AND TECHNIQUES** The training exercises in these lessons relate directly to Lessons 1, 2 and 3. They make use of "hands-on" field experience, Role Plays, and classroom discussion to emphasize important aspects of developing and operating a tree nursery.

About eight hours of classroom time is required to cover the lessons in this module, exclusive of time to prepare the lessons. Field trips to non-project nursery sites should require one to two days depending on distances involved to visit them. Plan an additional four to eight days of "hands-on" nursery planning and practice with farmers.

Lesson 1 USING FARMER PARTICIPATION IN NURSERY DEVELOPMENT

OBJECTIVE

Trainees will be able to describe the roles of farmer-managed nurseries in agroforestry extension projects and the advantages of farmer participation in nursery development.

METHOD

This lesson uses facilitated discussion, brainstorming and selected readings drawn from SOURCEBOOK SUPPORT MATERIALS and LEARNING NOTES, highlighted below. Be sure to have newsprint, markers and tape ready to record important ideas.

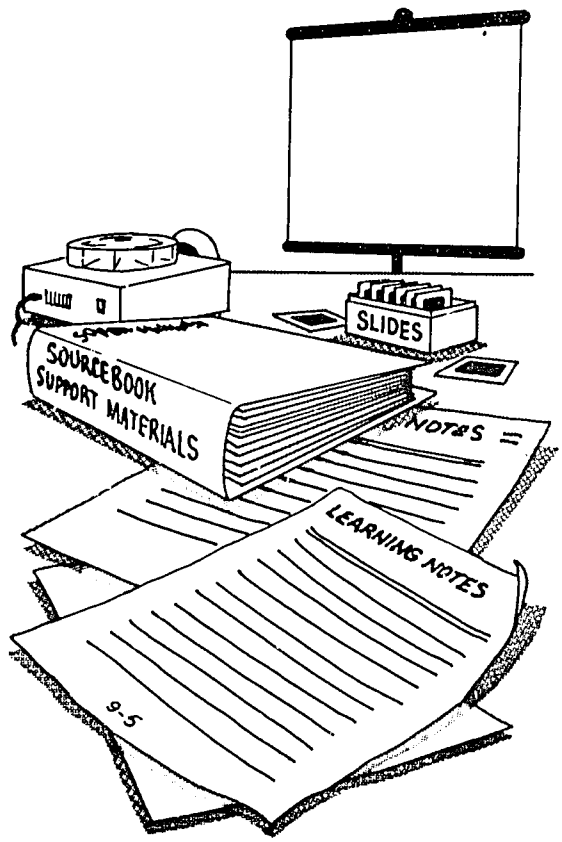
EXAMPLE

Prepare

Trainers should prepare a presentation based on SOURCEBOOK SUPPORT MATERIALS (9-1), **Small-Scale Nursery Management.** It will help you also to read SOURCEBOOK SUPPORT MATERIALS (9-2). These provide more technical information about small-scale tree nursery management and will help you better prepare for questions trainees might ask. If you still wish to read more on tree nursery management techniques, additional information is provided in SOURCEBOOK SUPPORT MATERIALS (9-3).

If possible, use slides which highlight differences in nursery size, location and management during your presentation.

Finally, use the LEARNING NOTES, **Why Have Small-Scale Tree Nurseries Managed by Farmers?** as part of your presentation. These should be reproduced and given to your trainees for their Training Workbooks, after your presentation.



Facilitate

Use newsprint to highlight points raised in your presentation about the purpose and strategy for small-scale tree nursery management. Encourage trainees to ask questions.

Distribute copies of SOURCEBOOK SUPPORT MATERIALS as appropriate to support key points in your presentation.

Summarize

Help trainees summarize your presentation, and their questions, by emphasizing key points about the role of farmers in small-scale tree nursery management. Help them recognize the value of helping farmers to raise their own tree seedlings, particularly from the viewpoint of sustaining agroforestry activities beyond the life of the project.

LEARNING NOTES

WHY HAVE SMALL-SCALE TREE NURSERIES MANAGED BY FARMERS?

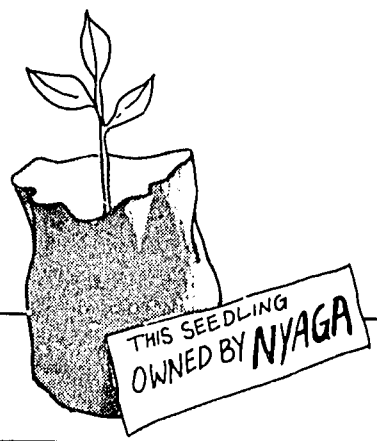
Tree nurseries are considered one of the best ways to produce trees. Tree nurseries are usually more economical than other means of raising trees because survival rates of seedlings improve with good care in the nursery. Tree nurseries are also an important focal point of activity between project staff and farmers, especially early during the project. The production of tree seedlings often becomes an important indication to staff and farmers of project progress. Successful agroforestry extension project tree nurseries promote the participation of farmers in tree nursery management to encourage **ownership** and **pride** in the production of their trees.

Tree nurseries are not always necessary to produce trees. Some important agroforestry species can be reproduced from cuttings or the direct sowing of seeds in the ground. Most species under most conditions, however, are best raised in the nursery.

Agroforestry extension projects promote small-scale tree nurseries that are managed by farmers because:

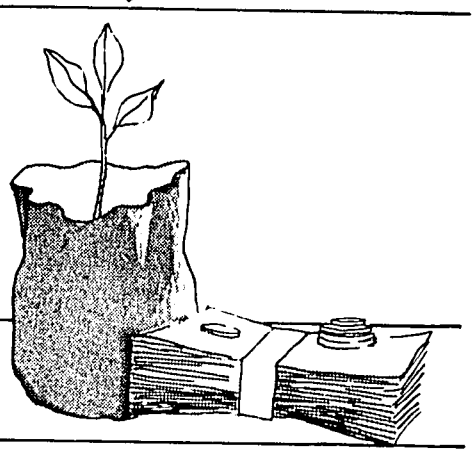
OWNERSHIP

THIS APPROACH ENCOURAGES A SENSE OF PRIDE AND OWNERSHIP IN TREE SEEDLINGS, TREES AND NURSERY MANAGEMENT BY THE FARMER. IT ENCOURAGES FARMERS TO DEVELOP IMPORTANT AGROFORESTRY SKILLS EARLY DURING THE PROJECT WHICH THEY CAN DEPEND UPON BEYOND THE LIFETIME OF DIRECT PROJECT SUPPORT.



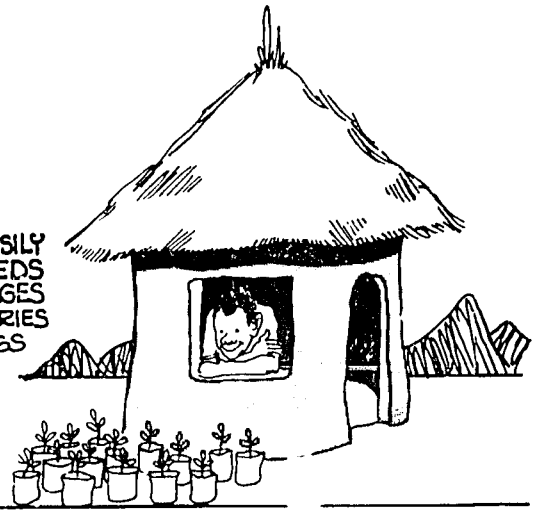
ECONOMY

IT IS OFTEN THE MOST ECONOMICAL WAY TO RAISE TREE SEEDLINGS.



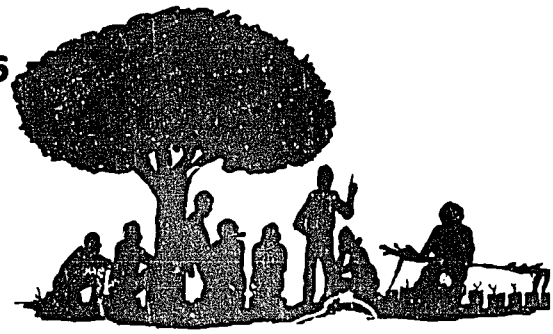
PROXIMITY

SMALL-SCALE NURSERIES OFTEN CAN BE EASILY ESTABLISHED CLOSE TO THE AREAS AND NEEDS OF THE FARMER. THIS HAS MANY ADVANTAGES OVER LARGE-SCALE, CENTRALIZED NURSERIES INCLUDING EASE OF TRANSPORTING SEEDLINGS FROM THE NURSERIES TO THE FARMS.



EXTENSION ACTIVITY CENTERS

SMALL-SCALE TREE NURSERIES BECOME IMPORTANT CENTERS OF ACTIVITY FOR LEARNING AND DEMONSTRATING DIFFERENT ASPECTS OF SEEDLING AND TREE MANAGEMENT. THEY ALSO BECOME IMPORTANT MEETING POINTS FOR THE PROJECTS EXTENSION STAFF AND THE LOCAL COMMUNITY.



Tree nurseries should be established on a scale appropriate to meeting the qualities of tree nurseries mentioned above. Nurseries should be sited and planned with the help of the project's participants - the local community and local farmers. Local involvement should help to make tree nurseries appropriate, practical and desirable.

Lesson 2 PLANNING AND SITING A NURSERY

OBJECTIVE

Trainees will be able to identify and describe factors important to planning and siting small-scale tree nurseries managed by farmers.

METHOD

This lesson uses questions, facilitated discussion and selected readings. Use newsprint and markers to record issues and responses to questions.

EXAMPLE

Prepare

Prepare a presentation on tree nursery siting and planning. Use the LEARNING NOTES from this lesson and SOURCEBOOK SUPPORT MATERIALS (9-4) for information on key issues to raise during your presentation.

Facilitate

Ask trainees:

What factors are important to consider in planning and siting a small-scale tree nursery?

List their responses on newsprint. You should suggest factors if trainees omit them in their answers.

Now ask trainees to consider the factors you have listed. Give them time to note for themselves how they would ensure that each of the factors is addressed when planning and siting a tree nursery.

Facilitate discussion. Encourage trainees to share their ideas with the group. Try and be project specific when developing strategies for addressing these factors. Trainers should use questions and **Active Listening** to help trainees cover each of the points mentioned in the LEARNING NOTES.

Summarize

Summarize your discussion by comparing the list of factors in the LEARNING NOTES with the strategies for planning and siting small-scale tree nurseries that have been mentioned. Give trainees copies of the LEARNING NOTES for their Training Workbooks.

PLANNING AND SITING A SMALL-SCALE, FARMER-MANAGED TREE NURSERY

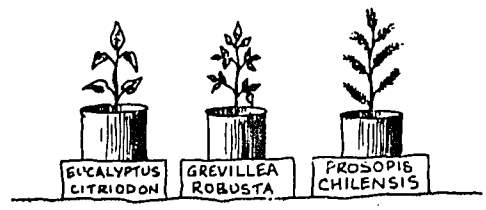
The following factors should be considered when planning and siting a small-scale tree nursery managed by farmers.

SIZE OF THE TREE NURSERY

How many seedlings will be raised?

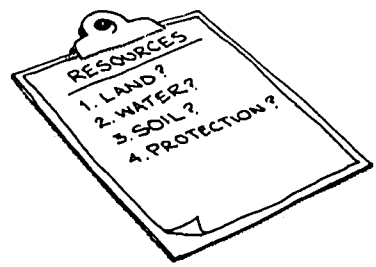
SPECIES TO BE RAISED

Which species will be raised? What number will require seed beds? What number will use direct sowing in pots?



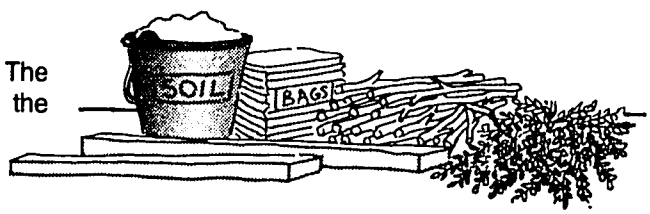
RESOURCES

What land will be used? Where will the water for the nursery come from? Where will soil for the nursery come from? How will the nursery be protected from pests, animals, etc? Who will be in charge of the security of the nursery?



MATERIALS

Who will provide the tools for the nursery? The containers? The material for shade of the seedlings?

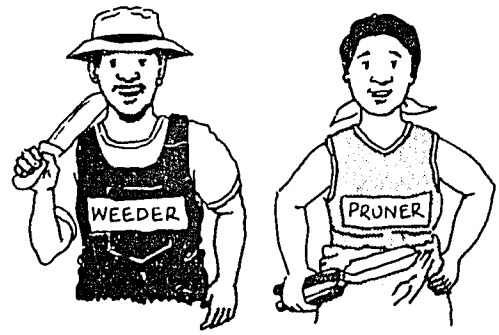


LABOR

Who will do the work in the nursery? Who will manage it and monitor its activities each day?

SPECIFIC TASKS

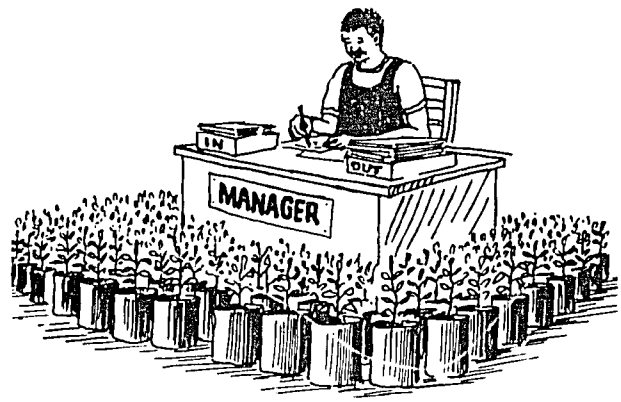
Who will clear and level the nursery? Who will prepare the seed beds? Who will fill the pots? Who will sow the pots? Who will construct and monitor the shading of the seedlings? Who will do the watering? Weeding? Pruning?



MANAGEMENT

Who will set the number of seedlings to be produced? Who will decide if seedlings should be sold? If yes, at what price?

Who will be responsible for seeing that the resources, materials and labor have been organized? Who will plan the nursery production cycle? Who will monitor the production plan and management of the nursery?



SUGGESTIONS FOR DEVELOPING A STRATEGY FOR PLANNING AND SITING TREE NURSERIES

COMMUNITY INPUT

Rely on community input for all factors mentioned above. This is particularly important when considering the management and monitoring of nurseries.

Our objective in using a strategy that relies on community input is to make sure that the tree nursery belongs to the farmers, local community, or group - not the project. We must encourage group members to feel responsible for as many aspects of nursery development and management as possible. This is extremely important to the long-term sustainability of nurseries.

PROJECT INPUTS

Material inputs should remain limited to the extent possible. The most important project input is technical, monitoring and management advice. Advice should include ideas about how nurseries can take advantage of locally available material inputs, or do without certain inputs. We should help communities avoid dependence on project-supplied inputs.

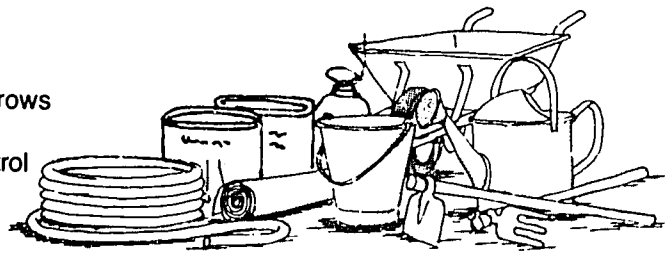
Agroforestry extension projects have, in the past provided:

Polybags (Plastic Seedling Containers)

Buckets, Watering Cans, Hoes, Wheelbarrows

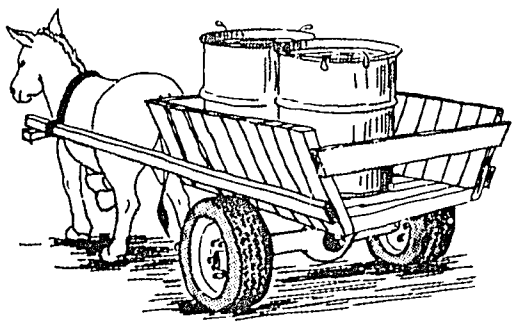
Plastic Sheeting for weed and insect control

Seed of tree species not available locally



When such inputs are provided, it is important that staff and communities share an understanding about how long the project will provide inputs and how they will be obtained as direct project support phases out. Will nurseries be able to purchase them from proceeds of plant sales? Will a collaborating national agency (Forestry or Agriculture Department) provide inputs to local groups? Perhaps these questions cannot be answered with certainty at this point. However, they should be discussed and a strategy for addressing them established.

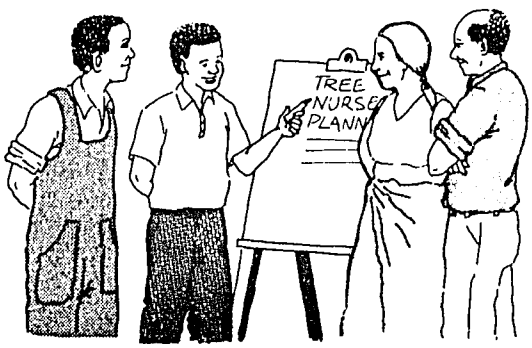
Sometimes projects are required to assist with small water development activities. This may mean assisting nursery groups with donkey, buffalo or ox carts for hauling water. Communities might receive advice and assistance on roof water catchments or small water ponds. Extension Staff will want to work with communities to determine the form and level of water development assistance.



Larger scale water project development is more difficult. Agroforestry extension projects should be careful about selecting and supporting sites where water is a major problem for the community. As water is such an important input for tree nurseries, consider water carefully as a factor in planning and siting tree nurseries.

GROUP AWARENESS AND EDUCATION

It is important for your project to create awareness and educate all participating nursery groups on the different factors or aspects of tree nursery development. Assist them with the information and skills necessary for good tree nursery planning, management and monitoring. This will help in creating a sense of group ownership and pride in the nursery.



DEVELOPING SEEDLING PRODUCTION TARGETS

Assist the group with information on planning production targets for the tree nursery. These production targets will be based on:

Group size,
Average number of seedlings to be distributed to each farmer/member,
Approximate number of seedlings needed for off-farm demonstration,
Approximate number of seedlings needed for sale to non-group members,
Labor, land and other resources available to produce the seedlings.

LAND

Consider the following aspects related to land required for the tree nursery.

What size (area) of land is required?
Who owns the land where a nursery may be sited?
Is a lease required?
What is the duration of the lease?
Is the land free, or does the owner expect to be compensated?

Land and aspects related to it are important matters for the group/farmers to decide upon. It is important for the project staff to know about local land use issues and characteristics as well as how farmers/groups might respond to them. Your familiarity with these issues will allow you to help the group determine the best way to obtain land for a tree nursery.

WATER

Consider water in terms of:

Where are possible sources?
How much is required?
Who will use it and under what conditions...what will it "cost"?
What improvements are necessary to guarantee supply? (quantity, reliability, methods, cost)

SOIL

Consider soil in terms of:

How much soil is needed for seed beds and potting?
What is required to improve texture or fertility?
If soil is to be brought into the nursery, where will it come from?
Will it cost money or need to be compensated for?
How will it be transported?
Are these means sustainable?

PROTECTION

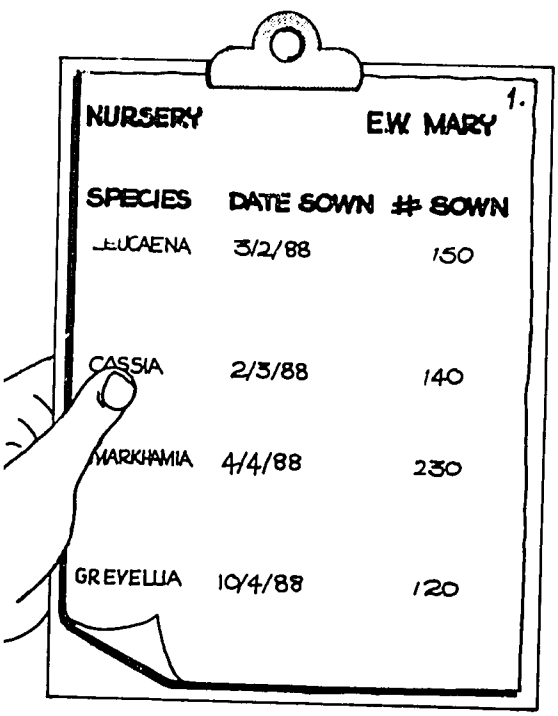
What protection of the nursery needs to be provided?
Will seedlings, tools, water, etc. be stolen?
How will the nursery be protected from wildlife or livestock?

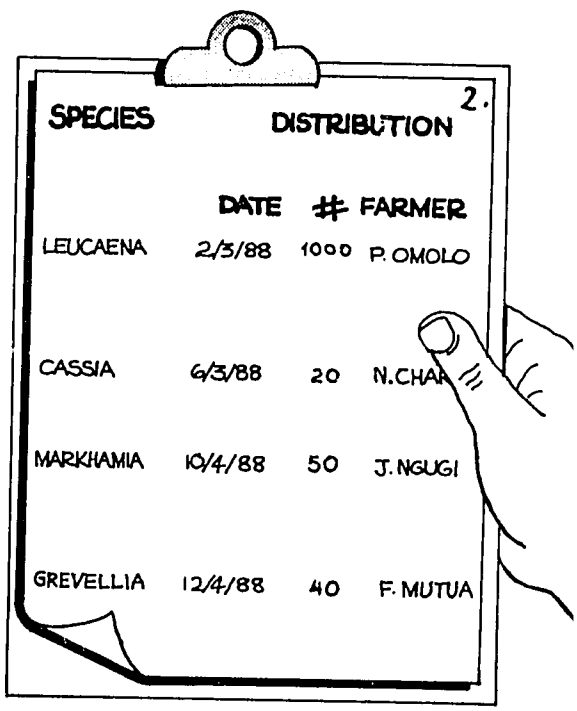
NURSERY ACTIVITY CALENDAR

How many reliable planting seasons are there each year?
When is it likely that rains will begin each planting season?
How much time do seedlings of each species require in the nursery?
How long will it take the nursery group to prepare the site, prepare the seed beds, fill the pots and sow the seeds?

MONITORING

What information will be recorded and monitored?
Who will do this?
Who are the best record-keepers in the group?
How often will information be recorded?





Lesson 3 NURSERY MANAGEMENT

OBJECTIVE

Trainees will be able to identify and describe methods for managing and operating tree nurseries based on observations made at various nurseries.

METHOD

This lesson uses field trips to highlight different nursery management techniques and procedures. Materials needed for this lesson are notebooks and pens for the trainees to record their observations.

EXAMPLE

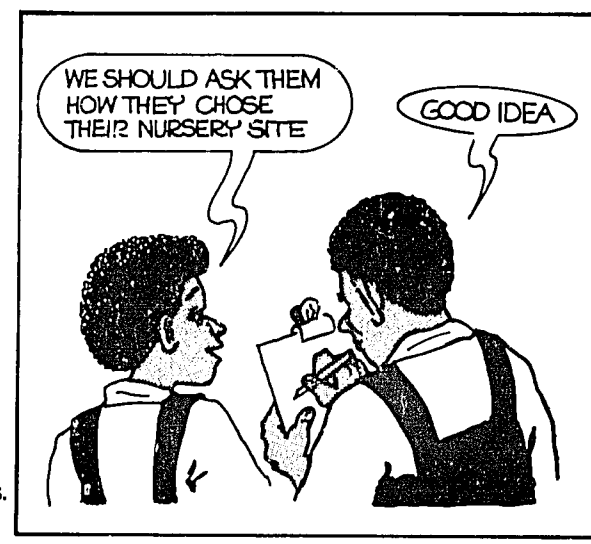
Prepare

Trainers should plan field trips to visit at least two or three tree nurseries. Various size nurseries supported or operated by different organizations, including government, should be included.

Arrange an appropriate time and date for each visit with each nursery site. Explain the purpose of your visit and what you expect of the nursery staff being visited.

Trainees should be told that the field trips have been organized with the objective of observing, comparing and reviewing different nursery management techniques and operations. These observations should help them in preparing plans and design of their project nurseries.

Divide the trainees into groups of two, three or four depending on the size of your group. Each group should prepare a list of factors they will be observing and asking questions about. These lists should provide a guideline for their observations at each nursery site. Encourage them to take a broad view of nursery management and operations. Specific questions, for example, about seed treatment and sowing techniques can be saved for later. Their objective should be to get a broad understanding of how the inputs and outputs of each nursery are planned, managed and monitored.



Ask trainees to record answers to their questions. in their field notebooks.

Facilitate

Ask each group to list on newsprint the questions they asked the nurseries visited and answers for each. Encourage a discussion about each group's responses so that one list of factors and responses might be written.

Trainees should be encouraged to include the factors mentioned in the LEARNING NOTES for Lesson 2 in this Module. If certain factors have been left out of their lists, help them recognize the importance of considering them in planning and developing tree nurseries.

Ask trainees to evaluate the quality of each tree nursery visited in terms of nursery management and operations. Ask them to consider:

NURSERY SITES

Were they well placed?
Which nursery sites were?
Which were not?

Why were they well placed?
Why not?

NURSERY INPUTS

What did you think of the way the natural resource inputs were obtained/provided at each nursery?
What of its material inputs?
Its labor inputs?

NURSERY OPERATIONS

How well do you think each site dealt with the activities of shading, watering, pruning, weeding?
Why?
How is the nursery protected?
Was this appropriate? Adequate?
What was the level of output at each nursery?
Do you think this is high, low, or about right?
Why?
What did you think of the record-keeping procedures?
What happens to seedlings after they leave the nursery?
Is this recorded anywhere?
Who monitors the production and operations of the nursery?

If trainees find fault or are critical of certain aspects of tree nursery management and operations, ask them how management might be done differently. Ask them to consider the role of farmers in tree nursery management and how their participation might improve things.

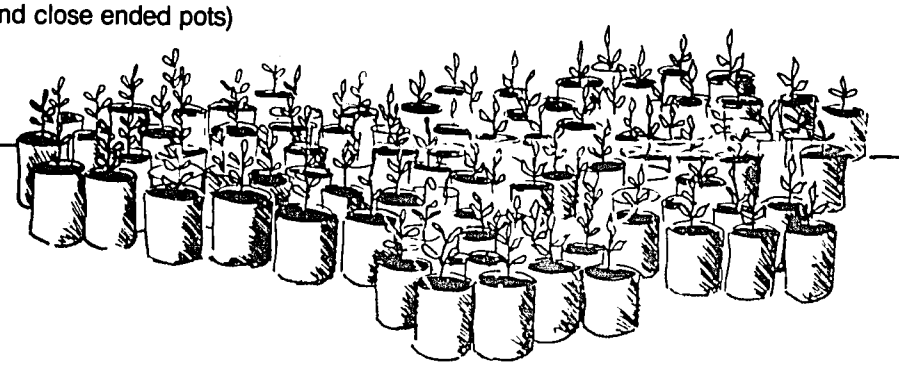
Trainers should contribute to the discussion and points raised as appropriate. It is not necessary here to define the "best way" to ensure good tree nursery management. The objective is to stress the different approaches and strategies used in siting and managing tree nurseries so that Extension Workers have various ideas about how to do things when it is their responsibility to help communities establish nurseries.

Lesson 4 NURSERY OPERATIONS

OBJECTIVE

Trainees will be able to perform effectively the following nursery operations:

Soil mixing
Pot filling (both open and close ended pots)
Seed pre-treatment
Sowing
Shading
Pricking out
Weeding
Watering
Root pruning
Pest control



METHOD

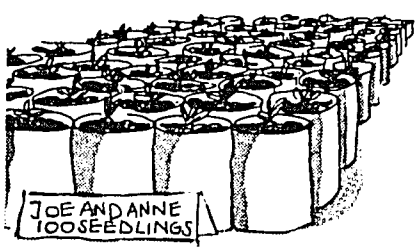
You will require all the tools and materials necessary for starting your own nursery, preferably one reflecting local conditions and realities. If a nursery site already exists, then you can use it for demonstration purposes; if not, then a nursery site developed close to the project office or field station is most appropriate.

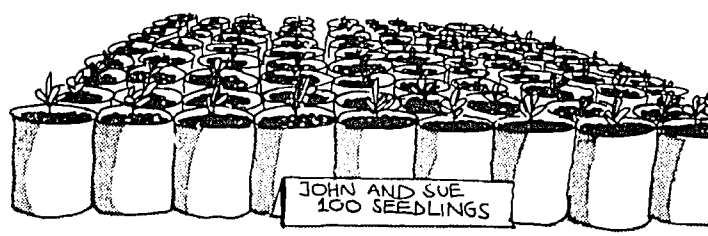
EXAMPLE

Prepare

A small nursery, developed near the project or field office, is one of the most effective ways to provide your trainees with practical experience in basic nursery operations.

Plan to establish a nursery which contains at least 100 potted seedlings for each pair of trainees. In order to benefit from this experience, this part of the training should take place early in the agroforestry training program.





When planning your nursery with trainees, be sure to have the following materials:

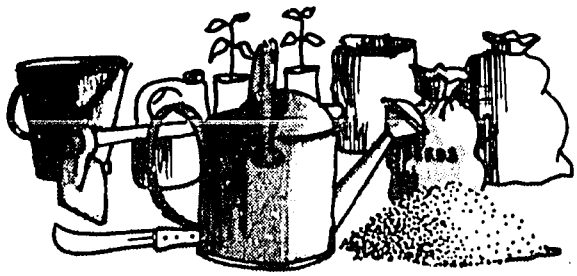
Tools

Soil mixture ingredients (topsoil, manure, sand)

Seed species important to the area

Polybags or other containers, as appropriate

Watering cans or other vessels, as appropriate



SOURCEBOOK SUPPORT MATERIALS (9-5), **Use of the Method Demonstration as a Teaching Device,** will be helpful to this lesson.

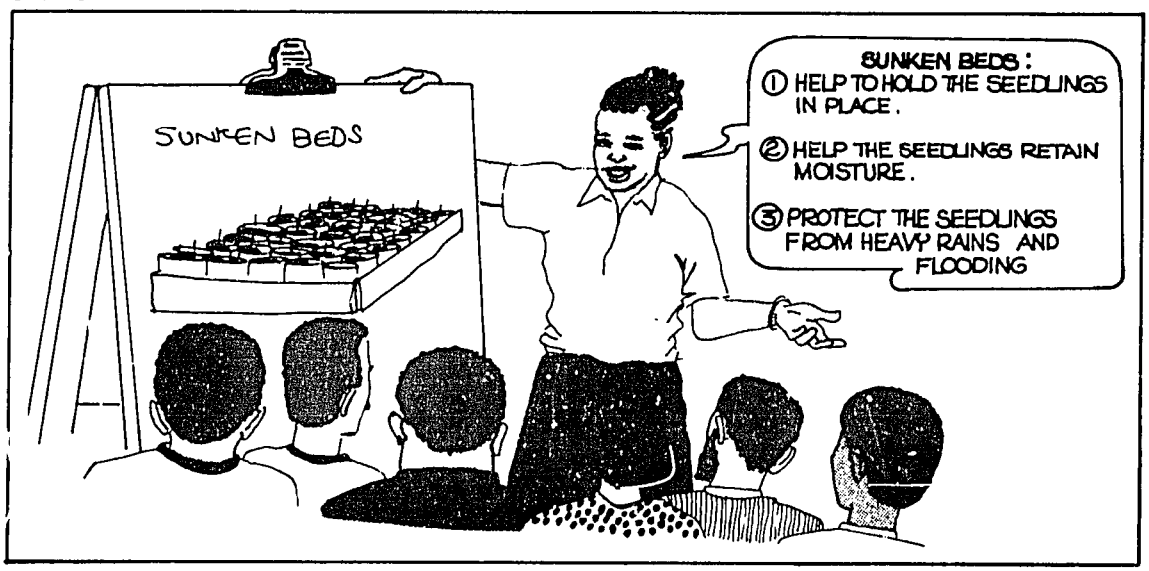
Facilitate

Conduct practical demonstrations on the operations listed below. Use SOURCEBOOK SUPPORT MATERIALS (9-6) for additional guidance and help.

Your use of the **method demonstration** technique is important. Be sure that each trainee has the opportunity to practice each nursery operation you demonstrate. Your supervision of each operation will help ensure trainees understand each of the practices.

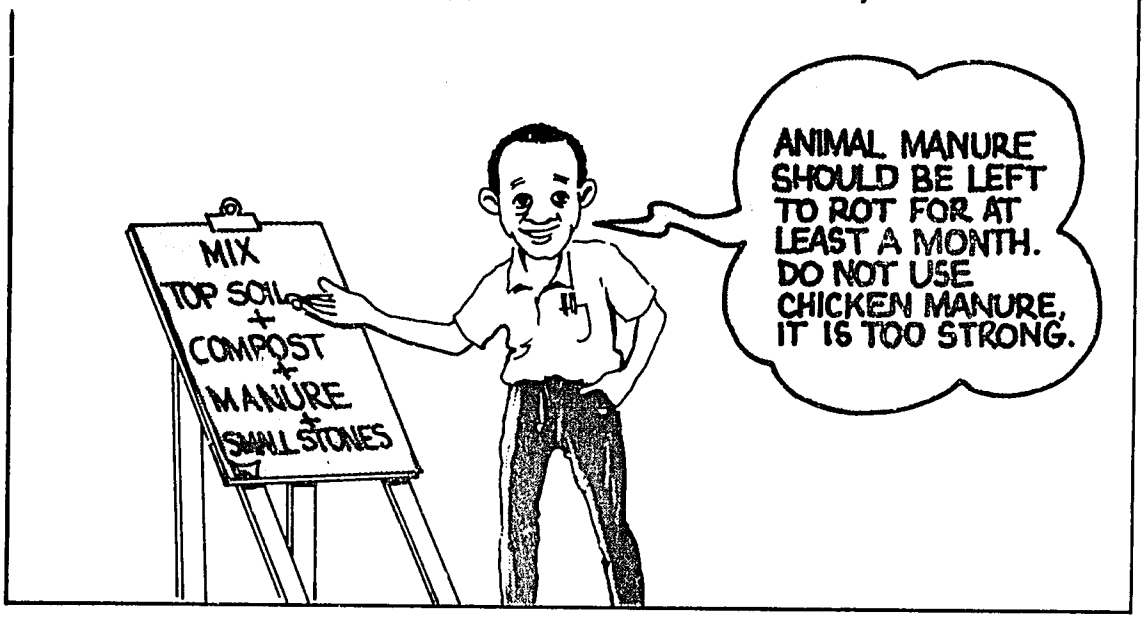
NURSERY BED CONSTRUCTION

Explain which nursery bed you will be constructing and why it was chosen. Also explain the different methods that can be used to construct nursery beds. For example, refer to **sunken** or **non-sunken** pot beds, and the Swaziland bed method. Discuss the benefits of arranging them in lots which are easily counted.



MIXING NURSERY SOIL

Your nursery soil mixing demonstration should explain what the different ingredients of a good nursery soil mixture are, and why each is important. Explain where and how these ingredients can be obtained. Tell them if the ingredients have been pre-treated and why. Discuss the advantages and disadvantages of soil mixtures for the nursery, and why pre-treatment is, or is not necessary.



FILLING POTS AND WATERING

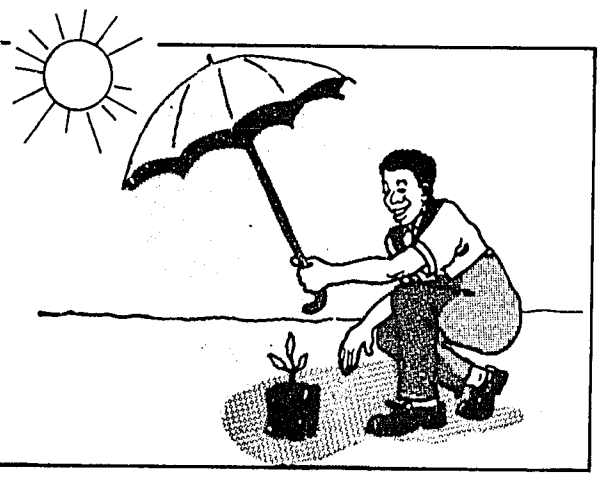
Demonstrate pot filling. Discuss the use of different containers; their size, open vs. close-ended polybags/containers, pot color and source of containers. Discuss the reasons why you selected the container demonstrated. Explain the reason why pots are watered before they have been sown.

SEED TREATMENT AND SOWING

Most of this information is covered in Module 8, Seed Supply. This demonstration should be a good opportunity to review seed pre-treatment and sowing.

SHADING

Demonstrate the importance of shading plants from direct sunlight and the importance of gradually removing shade from seedlings. Discuss how tree seedlings are affected by this practice. Discuss the different types of materials which can be used for shading. Explain your reasons for having selected the shading materials you are using. Explain the need for different heights of shading materials above the seedlings and which ones you have selected. Explain why you selected these.

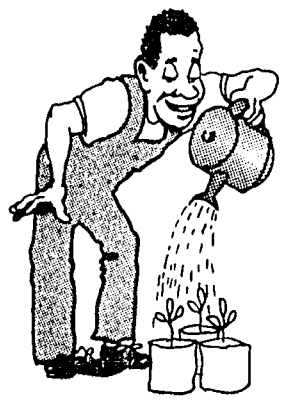


PRICKING OUT

Demonstrate how to prick out, two to four weeks after sowing. Explain how to identify which species are ready to be pricked-out and why this is important.

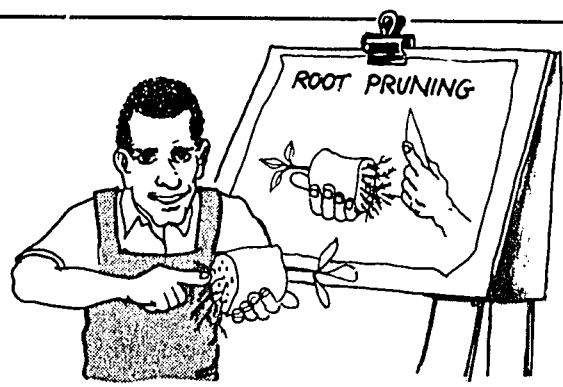
WATERING AND WEEDING

Describe the importance of watering two times in the day in dry areas; once in the morning and once in the evening. Explain how to determine when watering is necessary, and when too much watering has occurred. Explain the importance of watering gently, best done with a watering can. Trainees should be made aware that farmers often tend to over-water their seedlings thinking they are doing the best thing. Farmers should be made aware of possible damping-off problems and encouraged to avoid this through correct watering.



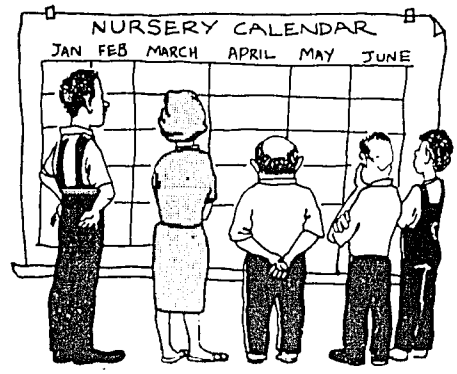
ROOT PRUNING

Although there are no roots in your demonstration nursery to prune yet, you can describe why it should be done. Root pruning can be demonstrated later.



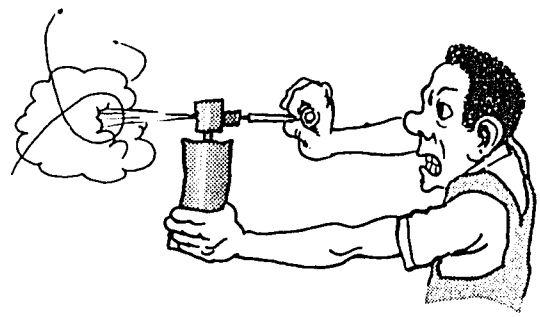
RECORD KEEPING

Use the nursery calendar in SOURCEBOOK SUPPORT MATERIALS (9-7) as an example of a nursery planning calendar. There are many different formats which can be used for recording information about nursery operations and seedling growth. The project staff will need to develop one for use in your project. Trainees, and even farmers, might be involved in the development of a nursery planning calendar for your project.



PEST CONTROL

Each project will have to deal with pests, both in and out of the tree nursery. For most projects dealing with small-scale farmers, chemical pesticides are expensive and often inappropriate. Discuss the issue and use of pesticides with your trainees. Consider issues of potential health dangers, use and expense. Discuss how farmers in the project area already control harmful pests, and which practices might be adopted for the protection of nursery seedlings.



A nursery planning calendar and record keeping are important aspects of nursery operations. Your discussion with trainees about the use of these **planning** and **monitoring** tools needs to stress their importance, as well as methods for recording information. Record keeping should record information on:

THE DATE THE SEEDS OF EACH SPECIES ARE SOWN.

THE TYPE OF SEED PRE-TREATMENT APPLIED.

THE DATE OF FIRST GERMINATION FOR EACH SPECIES.

THE PERCENTAGE OF EACH SPECIES THAT GERMINATED AT THE TIME OF 'PRICKING OUT.

THE NUMBER OF SEEDLINGS THAT SURVIVED BY THE TIME OF DISTRIBUTION TO FARMERS.

THE NUMBER OF POTS OF EACH SPECIES AFTER PRICKING OUT.

Once Nursery Managers (field staff or farmers) are familiar with nursery operations and the performance of various species in the nursery, it may no longer be necessary to record information about seedlings at germination and pricking out stages. It is important, though, at early learning stages of the project.

Summarize

Each pair of trainees should be responsible for three to four hundred seedlings for the rest of the training period. Groupings of trainees can be larger if materials and space are in short supply.

Use your method demonstrations and practice sessions to show what happens after germination occurs. Demonstrate how to prick out seedlings from one pot and plant them in new pots which have been filled with your soil mixture. You should also try four or five different species, at the same time. Groups of trainees should sow these seeds in newly filled pots. 100 pots is a good number for each group and an easy base for trainees to use to calculate percentages.

Trainees are responsible for the care of their seedlings. They should be responsible for all aspects of nursery operations dealt with in this lesson. Trainees should record appropriate information, and any personal observations on record-keeping forms. Tell them to keep these records in field notebooks or their Training Workbooks.

Keeping their own tree nursery is a good way for trainees to learn and appreciate nursery operations. They will begin to appreciate what is involved in all the tasks without having to worry too much about organizing other labor and additional management.

Encourage trainees to ask questions as their tasks in the nursery continue. A record of questions, possible answers, observations and ideas can be helpful to other trainees and project staff. Encourage trainees to seek answers to their own questions. Problem-solving through trial and error, a good exchange of information and keen observation are important to agroforestry.

Lesson 5 NURSERY SITING

OBJECTIVE

Trainees will be able to work with farmers/project participants to site a small-scale tree nursery which is managed by farmers.

METHOD

This lesson makes use of Role Plays and practical exercises in the project area. It takes place over several days.

EXAMPLE

Prepare

Read through this lesson carefully. Select a farmers' group with whom you are ready to begin establishing and siting a nursery. It is important that the group have a strong interest in raising tree seedlings. It is best if the group has already been involved in Agroforestry Diagnosis. Agree with the group that their nursery will also be used as a training site.

Organize trainees for the Role Play. Plan your field trip.

ROLE PLAY NOTES

Planning and Siting a Nursery

This Role Play concerns the discussions and negotiations for tree nursery planning and siting between a project staff person and a farmers' group.

Situation

A project staff person approaches a farmers' group at the home of a leader or at a group meeting, whichever is appropriate. He wants to talk with the entire group.

It is best if the project staff person begins with a review of the results of the Diagnosis activities. (See Module 5). This will help set the stage for discussion on the need for seedlings and the best way to get them.

The rest of the trainees take the roles of the farmers' group. They should respond with suggestions on where the tree nursery should be located and what obstacles, problems and solutions are possible.

This Role Play is helpful for trainees to emphasize the information and problems which might be encountered when siting a tree nursery. Have trainees use their experience and knowledge of the project area to respond to issues being raised by the person in the project staff role.

Critique Role Play

Once the Role Play is finished, have your group review and critique the activity. Most importantly, encourage trainees to discuss how information was shared and to what degree were farmers encouraged to participate and express their views.

PLAN NURSERY SITE

Conduct your field trip after you are satisfied that trainees are aware of the issues involved and can lead a good group discussion on nursery siting. Select one member from the training group to lead the discussion with the farmers' group.

The objective of your visit is to work with the farmers' group to identify and site a tree nursery. This may not happen in one visit. A second visit may be necessary.

When your discussions with the farmers' group have resulted in a possible nursery site, help the group determine the quality of the site.

Consider:

The availability of water,
Effort required to clear and level the site,
Land ownership and who is entitled to use the land under what conditions/terms,
Protection required and how it can be provided,
The possibilities for shade.

Use these factors to help the farmers' group select the best site.

The group is now ready to begin the planning of a nursery site. SOURCEBOOK SUPPORT MATERIALS (9-4) are helpful for this purpose. Project staff should work with the farmers' group to decide upon the best plans for the nursery's development. Work together to determine:

1. NURSERY SIZE

IT IS BEST TO BEGIN TREE NURSERIES ON A SMALL SCALE. NURSERIES WHICH ARE BIG REQUIRE MORE MANAGEMENT, LABOR AND TIME. THE GROUP'S FIRST NURSERY SHOULD ALLOW PARTICIPANTS TO BECOME FAMILIAR WITH NURSERY OPERATIONS AND MANAGEMENT. TRY NOT TO LET THE NURSERY OVERWHELM THE PEOPLE AND THE PRODUCT-TREES! WORK WITH THE FARMERS' GROUP TO DETERMINE THE NUMBER OF SEEDLINGS THEY WILL NEED AND CAN TAKE CARE OF IN THE FIRST SEASON. THE TREE NURSERY CAN GROW BASED ON THE SUCCESS OF THE FIRST SEASON.

2. LAYOUT

CONSIDER HOW BIG THE NURSERY IS, AND WHERE IT MIGHT GROW. YOU WILL NEED TO CONSIDER FENCING, WIND PATTERNS AND SUN DIRECTION. SOMETIMES THE SIZE OF THE LAND IS A RESTRICTION TO FUTURE POSSIBILITIES FOR INCREASE IN NURSERY SIZE.

3. PROTECTION AND WATER

DISCUSS THE BEST WAY TO PROVIDE PROTECTION FOR THE NURSERY FROM ANIMALS, PEOPLE AND WIND. THE GROUP WILL NEED TO PLAN FOR WATER AS IT IS NEEDED EACH MORNING AND EVENING DURING THE EARLY STAGES OF THE NURSERY.

4. SOIL MIXTURE

DISCUSS THE BEST STRATEGY FOR OBTAINING THE INGREDIENTS FOR THE SOIL MIXTURE.

Establish Nursery Site

If all these factors have been considered and agreed upon by the group, it is now ready to begin development of the nursery site.

Should fencing be required, consider the types of fencing that will be built. Fencing plans are a good opportunity for project staff and farmers' groups to learn from one another. Local fencing techniques can be taught to trainees, while the construction of a wire fence might be something trainees can teach farmers.

Construction of seed beds is also a good way for you, trainee, and farmers to both instruct and learn the practical steps and skills needed. Emphasize the importance of proper drainage for seed beds. Demonstrate the construction of appropriate shade for seed beds. Shade construction is another good way of instructing and learning between project staff and farmers.

If soil is to be **pre-treated,** demonstrate to farmers how to do it. Soil mixing, in preparation for potting and the sowing of seeds should be demonstrated.

If you have completed all these steps in siting and developing a tree nursery site...GOOD WORK!

Lesson 6 TEACHING NURSERY OPERATIONS AND MANAGEMENT

OBJECTIVE

Trainees will be able to instruct and supervise nursery labor in nursery operations and to advise on nursery management.

METHOD

This lesson makes use of both classroom and field sessions. Have newsprint and markers on hand to record important points and questions raised. This lesson is conducted over several days.

EXAMPLE

Prepare

You should develop a general nursery planning calendar. See SOURCEBOOK SUPPORT MATERIALS (9-7) for examples.

The calendar provides a plan for the timing of nursery activities. This is important in order to ensure seedlings are ready to leave the nursery when the rains begin. Make sure you consider:

Which tree species are being used . Approximate time in the nursery for each species . Number of seedlings required How much time and labor is required to prepare the pots

Facilitate

Share your nursery planning calendar with your trainees. Discuss the factors involved in developing a calendar which helps you plan each activity and the time of seedlings in the nursery. Explain the need to assist farmers in the planning process, and how staff advice and assistance may be needed for more than one season. Encourage them to involve farmers in the planning process whenever possible.

FIELD:

Trainees should now be ready to demonstrate practical methods to farmers, for conducting the following nursery operations:

Soil Mixing
Pot filling
Pot Watering and Weeding
Seed Pre-Treatment
Seed Sowing
Seed Watering and Weeding
Pricking Out
Shading and Shade Removal
Record Keeping

You may need to repeat and supervise each one of these nursery operations more than once. Both trainees and farmers will require regular feed-back and advice to help ensure that each operation is done correctly. Encourage trainees to learn side-by-side with farmers. This can only help to increase the learning and communication between them.

CLASSROOM:

Discuss the following topics with your trainees after completing demonstrations of practical nursery operations:

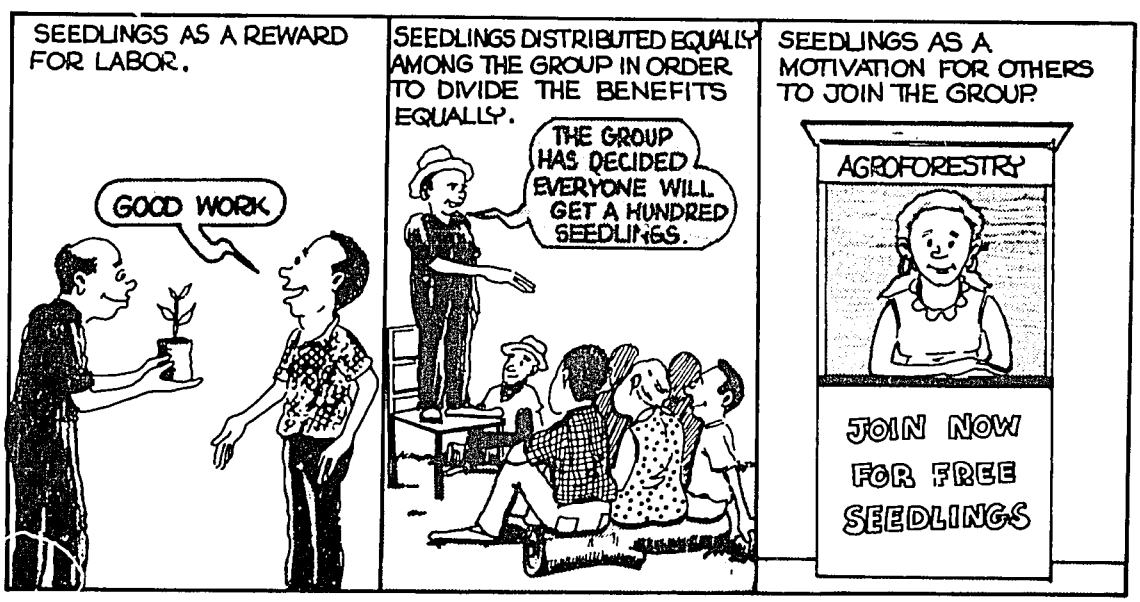
- **Organizing and motivating local participants to work in the nursery**
- **Seedling Distribution.**

Ask trainees for their opinions on how they think farmers are best motivated and organized for voluntary participation. Record their responses on newsprint.

Assist them with suggestions that the farmers should be left to organize themselves. The project's responsibility is to make sure that farmers understand all the tasks involved in nursery operations and management. After providing participants with information and skills, the project staff should be careful to act as advisors. Care should be taken not to supervise or direct the group.

Then ask trainees how they think seedlings should be distributed. Are seedlings to be distributed only on the basis of how much labor has been put into the nursery? If not, what other criteria might be used? Should seedlings be sold or distributed freely to nursery workers? Should seedlings be made available to others? At what cost?

You might suggest that farmers make their own decisions about seedling distribution. The project's role is, again, to advise and suggest. Suggestions on seedling distribution might include:



It is up to you to make clear that agroforestry extension projects are not out to support the distribution of seedlings to only a few, privileged members of the community. This needs to be shared with trainees as well as farmers' groups.

Upon completion of your discussions of these two important aspects of nursery operations and management, ask your trainees to bring up the issues of labor organization and seedling distribution with the farmers' group.

After your discussion with farmers' groups, review and critique the results of the discussion with your trainees. Will this discussion with farmers need follow-up?

Ask trainees to summarize what they think is needed to be good community/farmers' nursery supervisors. Ask them to consider what skills, information, attitudes and behavior help support good community nursery supervision. Also ask them to consider:

What problems do they think will arise in the future?

What procedures should be followed to deal with such problems?

Advise trainees that procedures and issues are not always easy to identify and deal with in the early stages of nursery development. There is no single, best way to proceed. It is best to encourage community or farmers' involvement in how nursery operations and management can most effectively be done. The project staff role should be to encourage farmers to take control of their own nurseries and to facilitate solutions to management problems. If you (as staff) lose their support and confidence, you risk losing the opportunity to improve their methods and activities.

TRAINING MODULE 10 TREE PLANTING, PROTECTION AND MANAGEMENT

INTRODUCTION

This Module will help prepare trainees to work with farmers and advise them on the best way to establish trees on their farms. The information in Module 10 is most concerned with advising farmers on how to keep trees alive. Survival of trees depends on effective planting and protection.

This Module also addresses tree management in agroforestry. Extension Workers should become familiar with promoting the best use of trees, or what is also known as tree management.
Although this is the last Training Module in the Sourcebook, it is key to helping trainees ensure that their work with farmers results in the best establishment and management of trees on their farms. After establishing trees successfully on farms, we can begin to monitor and measure the effectiveness of our extension efforts and of the trees performance in improving farms in our project area. GOOD LUCK.

CONTENTS

The following lessons are covered in this Module:

Lesson 1 **HOW TO PLANT A TREE**

Lesson 2 **BUILDING AN A-FRAME AND LAYING OUT CONTOURS**

Lesson 3 **MICRO-CATCHMENTS FOR WATER AND SOIL CONSERVATION**

Lesson 4 **WATERING TECHNIQUES: DRIP CANS OR CLAY JARS**

Lesson 5 **SEEDLING PROTECTION**

Lesson 6 **TREE MANAGEMENT IN AGROFORESTRY**

These lessons are varied. The time they take is dependent upon the readiness of trainees to learn and practice tree planting, protection and management, and to work with farmers doing the same. Plan on five to ten days to sufficiently cover the material.

It is important that some of these lessons be adapted to local conditions. Ensure that you have knowledge of local techniques and materials specific to the lessons. You will also need access to information about appropriate management techniques for the specific agroforestry interventions your project will promote.

Lesson 1 HOW TO PLANT A TREE

OBJECTIVE

Trainees will be able to plant a tree seedling correctly and effectively demonstrate proper tree planting methods to farmers.

METHOD

This lesson, as all lessons in this Module, makes use of practical demonstrations, discussion and good question and answer techniques. Be sure trainees have an opportunity to practice what they see demonstrated.

EXAMPLE

Prepare

Review the material in SOURCEBOOK SUPPORT MATERIALS (10-1), and (10-2).

Plan a practical demonstration on tree planting for your trainees. Use your own experience and judgement about techniques most appropriate to your environment. Explain to your trainees that for this exercise, we are assuming two things: (1) a reasonable rainfall, and (2) average/good soil. Other planting conditions will be discussed later.

Be sure to have all the necessary tools with you.

Facilitate

Begin by demonstrating practical tree planting to your trainees. Next, give each trainee an opportunity to practice planting a tree. Select an area where trainees will have an opportunity to see the planted trees often.

Once they have learned the skill to your satisfaction, and theirs, ask them to practice teaching tree planting to other trainees. Other trainees should take the roles of farmers, officials, school children, etc. Critique each trainee's teaching and demonstration efforts.

Summarize

After the exercise is complete summarize important points and skills. Give all trainees copies of SOURCEBOOK SUPPORT MATERIALS on tree planting for their Training Workbooks.

TREE PLANTING

Tree seedlings must be planted carefully. To ensure seedling survival, these five factors must be considered: time of planting, site preparation, care of seedlings, how to plant, and soil protection and shading.

Time Of Planting

Seedlings must be planted at the start of the rainy season. They need the entire rainy season to become established. Plan carefully to be ready. Seedlings will do best if at least 20 cm of the soil is moist at the time of planting.

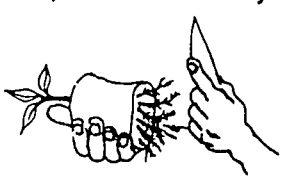
Site Preparation

Dig a hole approximately 40 cm deep and 40 cm wide. Mix dead leaves or grass with the soil, and add compost or manure to the mixture. Then put most of the soil back in the hole. Pour a bucket of water into the hole. Seedlings planted in dry ground will die.

Holes can be prepared in advance. However, if you live in an area with less than 1,200 mm yearly rainfall, holes should be dug just before planting so the soil does not dry out.

Care Of Seedlings

Seedlings must be handled carefully. Removal of open-rooted stock from the soil often causes root damage. Roots must be pruned so the seedling will not lose moisture. Protect roots from the sun and keep them moist. Open-rooted stock can be packed in wet mud. Potted seedlings should be kept in their containers until they reach the planting site. Never carry seedlings by their stems. Most seedlings should be planted before they are 30 cm high.



① PRUNE ROOTS.

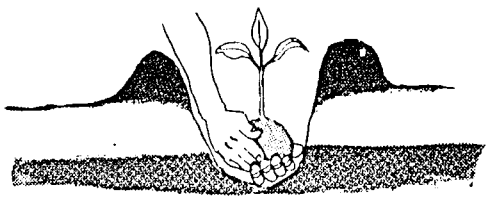
② CARRY SEEDLINGS CAREFULLY.

③ SHADE AND KEEP MOIST.

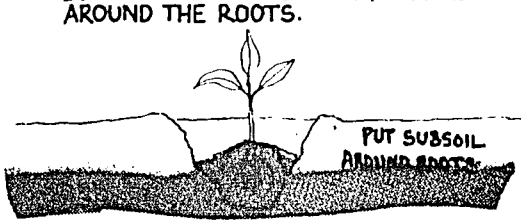
HOW TO PLANT

PLANTING OPEN ROOTED STOCK

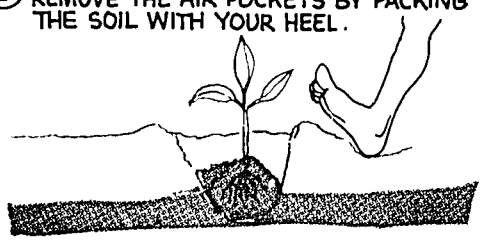
① DIG A HOLE. PLACE THE SUB-SOIL AROUND THE EDGE. HOLD THE SEEDLING ABOUT 3 CENTIMETERS BELOW ITS FINAL POSITION.



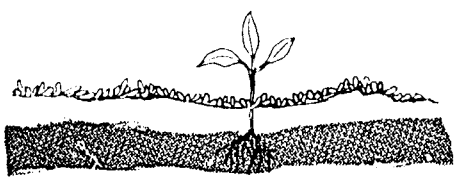
② RAISE THE SEEDLING TO ITS FINAL POSITION BY PLACING SOME SOIL UNDER AND AROUND THE ROOTS.



③ REPLACE THE SOIL AROUND THE SEEDLING. REMOVE THE AIR POCKETS BY PACKING THE SOIL WITH YOUR HEEL.



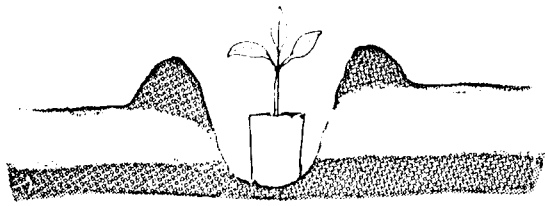
④ MAKE A SLIGHT DEPRESSION AND MULCH AROUND THE SEEDLING.



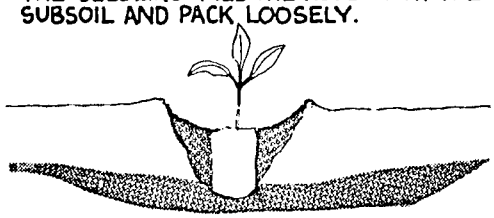
PLANTING POTTED STOCK

CUT OR REMOVE THE CONTAINERS FROM THE SEEDLING. NEVER PLANT SEEDLINGS IN THEIR CONTAINERS BECAUSE IT PREVENTS THE ROOTS FROM EXPANDING.

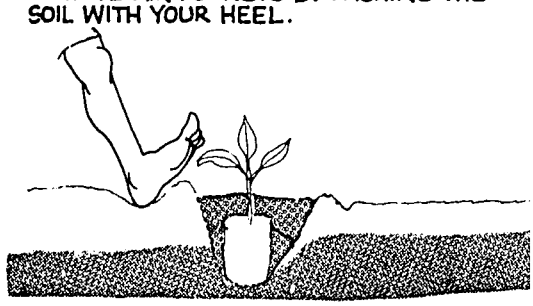
① DIG A HOLE. PLACE THE SUBSOIL AROUND THE EDGE. PLACE THE SEEDLING IN THE HOLE, WITHOUT THE CONTAINER.



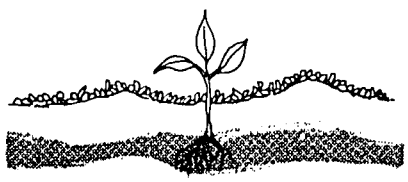
② POSITION THE SEEDLING IN THE HOLE BY ADDING SOME SOIL UNDER AND AROUND THE SEEDLING. FILL THE HOLE WITH THE SUBSOIL AND PACK LOOSELY.



③ REMOVE AIR POCKETS BY PACKING THE SOIL WITH YOUR HEEL.



④ MAKE A SLIGHT DEPRESSION AND MULCH AROUND THE SEEDLING.



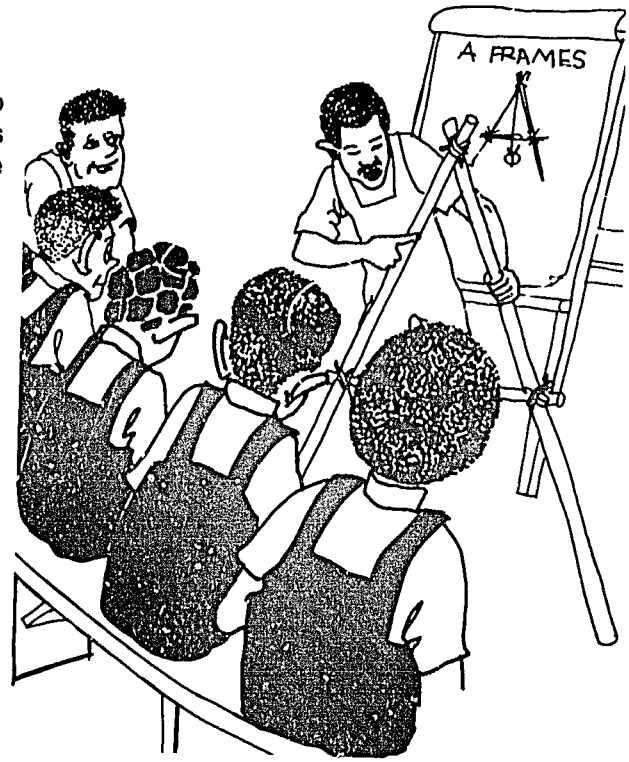
Soil Protection And Shading

Protect the soil around your seedling by applying mulch. This will keep the soil from drying out and will provide shade to keep temperatures low.

Lesson 2 A-FRAMES AND LAYING OUT CONTOURS

OBJECTIVE

Trainees will be able to demonstrate how to build an A-Frame for laying out contour strips on slopes. They will also be able to explain the reasons for and importance of contour strips.



METHODS

You will need to lead a discussion on A-Frames and conduct a practical demonstration on how to build and use them. You will also lead a discussion on contour strips and their importance. Remember to collect the materials and tools needed for the demonstration.

EXAMPLE

Prepare

Review the materials in SOURCEBOOK SUPPORT MATERIALS (10-3), Rustic Transit. This should provide a practical guide for building and using an A-Frame. In addition, you will want to prepare for a discussion on contour planning and its role in agroforestry, based on the notes below.

Facilitate

Begin by discussing the reasons and importance of contours and their planning as part of agroforestry.

> Consider:
>
> If soil erosion has been identified as a problem during our Diagnosis, then soil conservation becomes an important part of our Agroforestry Design. Trees and bushes have an important role to play in soil conservation, but tree planting alone does not solve soil erosion problems.
>
> Trees planted on the contours, in association with grass strips, or terraces, can help both to stabilize soil and to add economic value to these strips or terraces. Trees in this configuration can provide benefits in terms of fruits, firewood, fodder, etc.

If, however, trees are poorly located on the landscape, they can actually contribute to soil erosion. If trees are planted on slopes where water does not penetrate, a heavy rain can cause gullies around these trees.

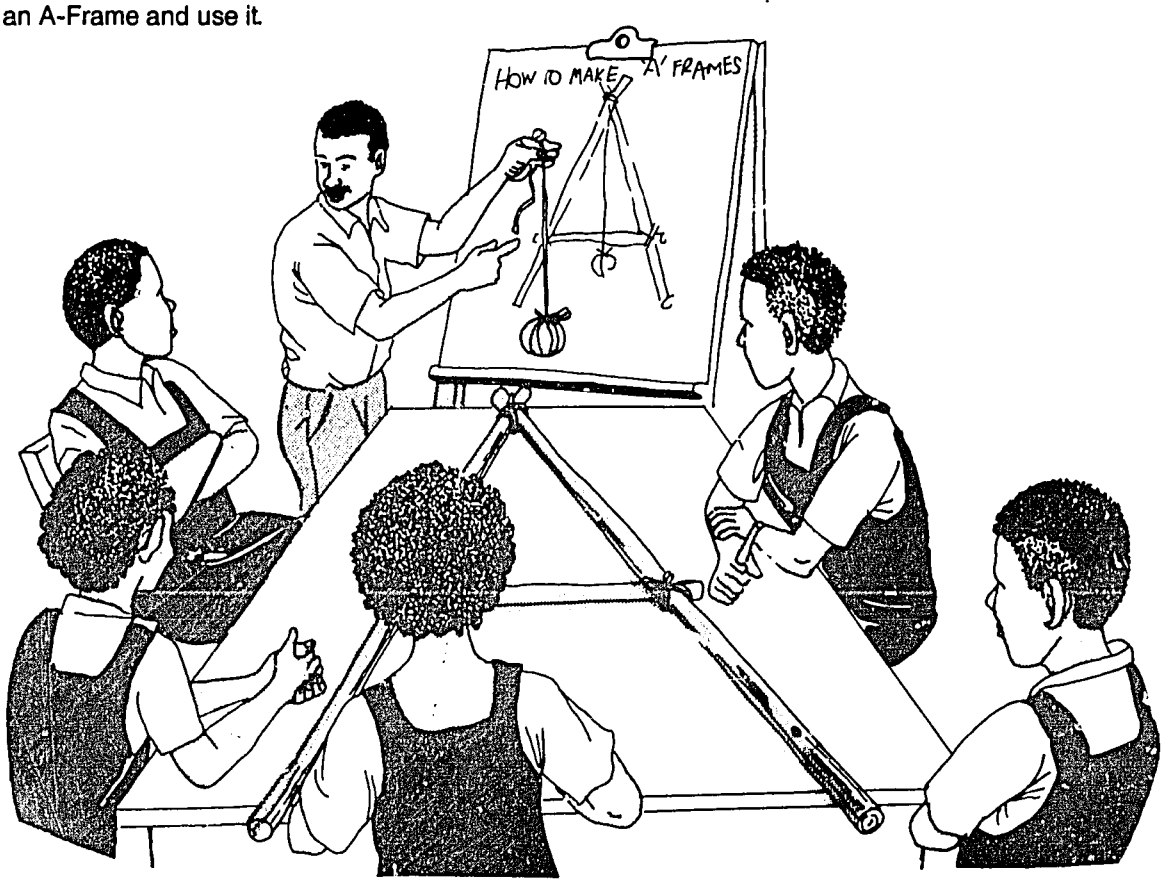
It is our responsibility to make sure that farmers understand how to lay out contour lines when planting. They should be instructed in how to lay out contours so that trees provide the benefits they need.

There is a simple tool for helping farmers to lay out contour lines. It is called an A-Frame. Our responsibility will be to know how to build one, how to use it and when to use it.

The best time to assist farmers in laying out contours is towards the end of the Agroforestry Design Process. We will need to incorporate ideas on species to be used, their spacing and management when constructing contours with farmers.

After your presentation and discussion on A-Frames and soil conservation using trees and contour strip, show trainees how to make an A-Frame.

Practical demonstrations should include instruction, as well as an opportunity for each trainee to build an A-Frame and use it.



Summarize

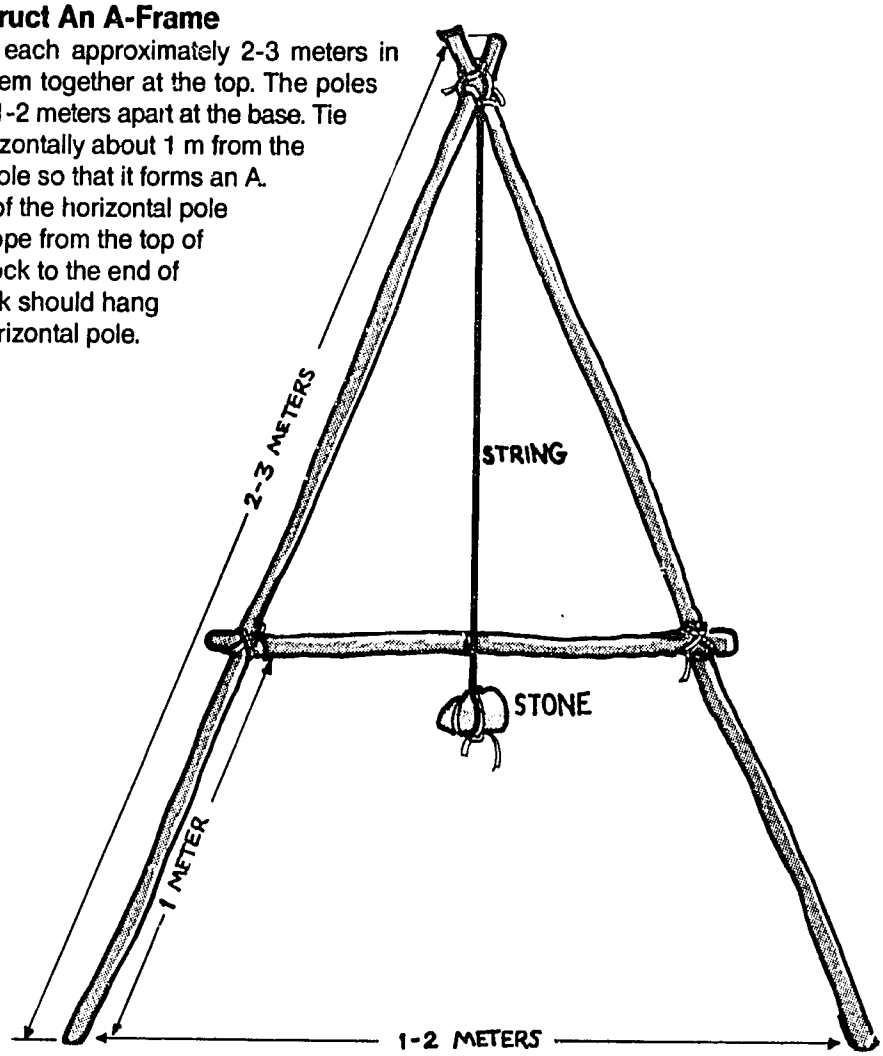
Summarize demonstrations and discussions by highlighting important aspects of soil conservation, contour strips and tree planting for soil conservation purposes.

BUILDING AN A-FRAME

Soil and water erosion is often a problem on steep slopes. Planting trees or other vegetative cover along the contours of a slope is an effective technique to prevent erosion. An A-frame can be used to determine the contour line.

How To Construct An A-Frame

Take two poles, each approximately 2-3 meters in length, and tie them together at the top. The poles should be about 1-2 meters apart at the base. Tie another pole horizontally about 1 m from the bottom of each pole so that it forms an A. Mark the center of the horizontal pole clearly. Hang a rope from the top of the A, and tie a rock to the end of the rope. The rock should hang just below the horizontal pole.

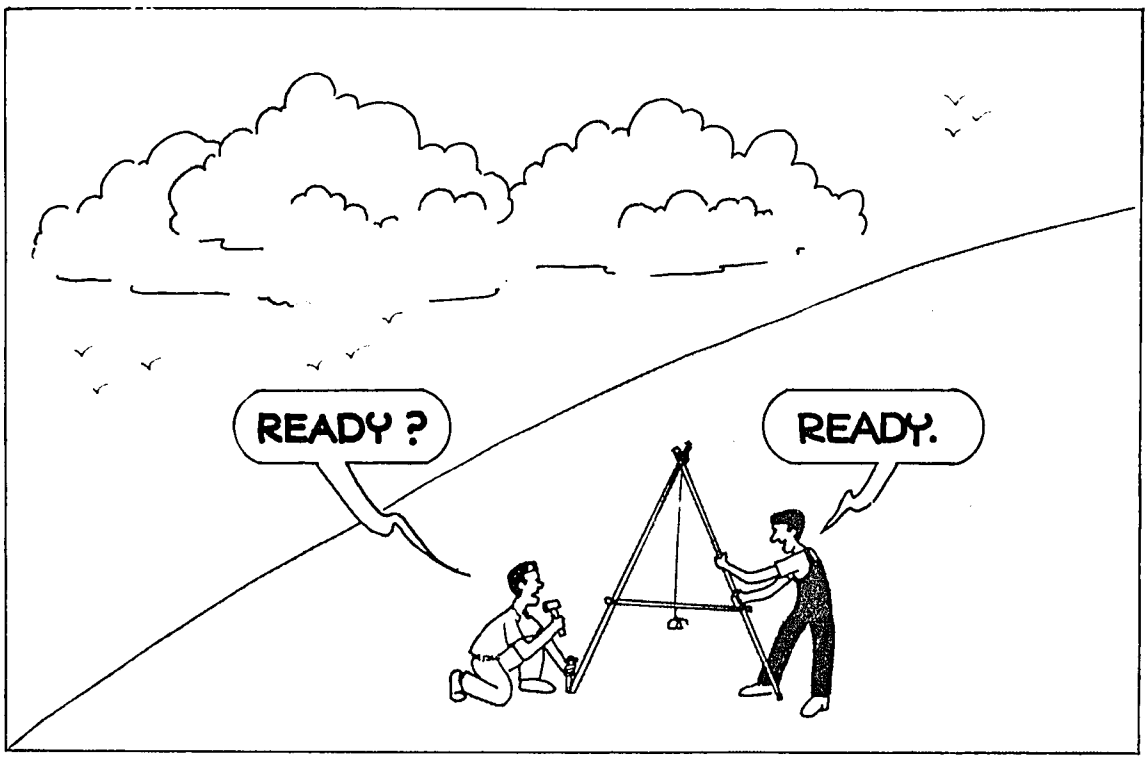


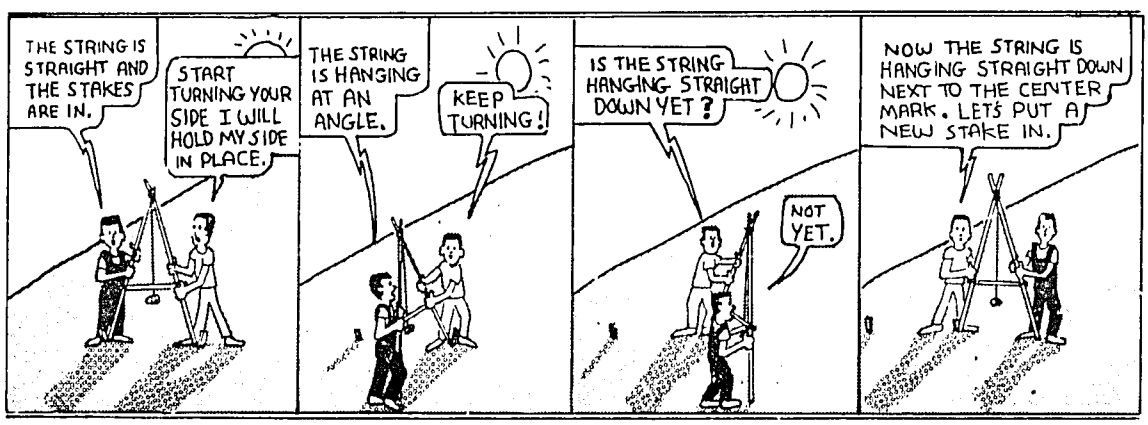
How To Use An A-Frame

A-frames are used to determine where the contours of the slope lie. Once you have planned your contours, you can dig ditches and start to plant trees, shrubs or grasses to stabilize the soil. Distance between terraces or rows of plantings depends upon the degree of slope of the hill. Refer to SOURCEBOOK SUPPORT MATERIALS (10-3) for assistance.

Place your A-frame so that the poles go across the hill, rather than downwards. Adjust it until the rope hangs straight downwards, next to the mark you put on the center of the horizontal pole. Place stakes in the ground beside each base of the A-frame.

Then pivot one of the poles around until the rope again hangs straight down. Continue across the slope, making sure to place stakes each time you move the A-frame. When you have completed the desired distance, you are ready to begin again and lay another contour in another location on the hill.





Lesson 3 MICRO-CATCHMENTS FOR WATER AND SOIL CONSERVATION

OBJECTIVE

Trainees will be able to describe what a micro-catchment is and under what conditions it can be used to help tree survival. They will also be able to construct a micro-catchment and instruct farmers in micro-catchment construction.

METHODS

As in the previous lesson, trainers will want to conduct both a discussion and a practical demonstration on micro-catchments. You will need to collect locally available tools for this lesson, as micro-catchment construction should reflect local conditions and tools.

EXAMPLE

Prepare

Review SOURCEBOOK SUPPORT MATERIALS (10-4). The paper and your knowledge of the project area should help you determine how practical it is to use and construct micro-catchments.

SOURCEBOOK SUPPORT MATERIALS (10-5) contain some good illustrations on micro-catchments. Use them as necessary when conducting your presentation.

Facilitate

Lead a discussion on the importance of micro-catchments as a soil and water conservation technique in specific circumstances and conditions. Use question and answer techniques to learn how much trainees already know about this practice. You can relate soil conservation issues to your discussion in the previous lesson on contour planting.

Conduct a practical demonstration on micro-catchment construction. Ideally, you should choose at least two different sites where micro-catchments can be used to help tree survival. Select a relatively flat area and a moderately steep slope.

Encourage the trainees to practice construction of their own micro-catchments. They should use the same tools as the farmer.

Upon completion of their construction efforts, have them practice teaching micro-catchment construction to other trainees, who act the role of farmers.

Summarize

Summarize impcrtant aspects of your demonstration and discussion. Remember to highlight aspects of micro-catchment construction which help in tree establishment and survival, as well as soil and water conservation.

MICRO-CATCHMENTS

Water and soil erosion is frequently a problem on steep slopes. Tree planting alone will not halt erosion, and can often make it worse. If water is not able to penetrate the soil, gullies may form around the trees. Micro-catchments are an effective means of slowing down run-off and concentrating water where it can best benefit the tree. This technique is especially useful in arid and semi-arid areas where rainfall is low (300-600mm/yr) and sporadic.

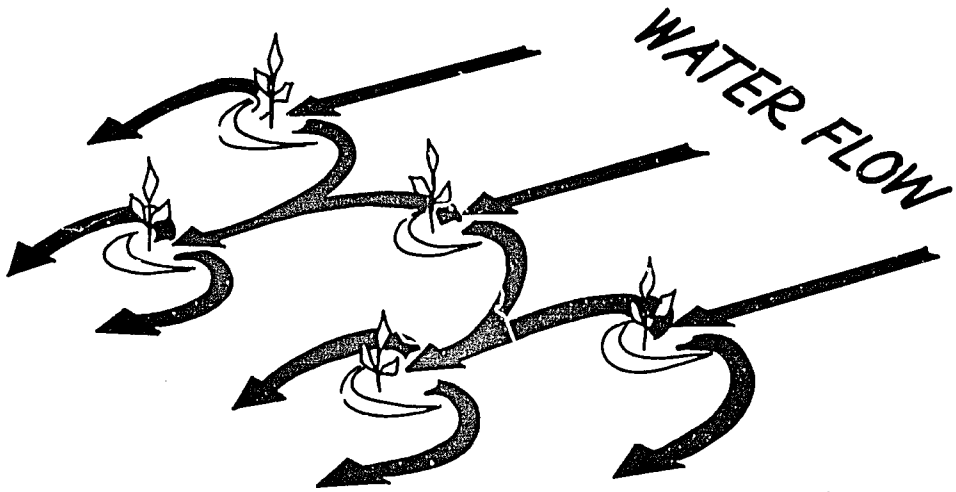
How To Make A Micro-Catchment

Micro-catchments should be carefully laid out along the contours of the slope. Dig holes approximately 60 cm wide and 60 cm deep. Form a terrace, or tip, to guide run-off into the hole. The hole should be able to hold 20-30 cm of water.

Construct your micro-catchments at the onset of the rainy season. However, do not plant your seedlings immediately after constructing the micro-catchment. Wait until after the first or second rainfall so that the soil will have a chance to soak. Ideally a reservoir of water should form in the pit.

Placement Of Micro-Catchments

Correct placement of micro-catchments is essential. The placement should be in rows with intermittent spacing. A micro-catchment in a lower row should always be placed between two micro-catchments in a higher row.



Lesson 4 WATERING TECHNIQUES: DRIP CANS OR CLAY JARS

OBJECTIVE

Trainees will be able to demonstrate drip can and/or clay jar watering techniques.

METHOD

Practical demonstrations are used to help teach drip-can and/or clay jar watering techniques. These techniques are most commonly used in dry areas. Should you choose to demonstrate these techniques in your area, collect the necessary materials for a practical demonstration.

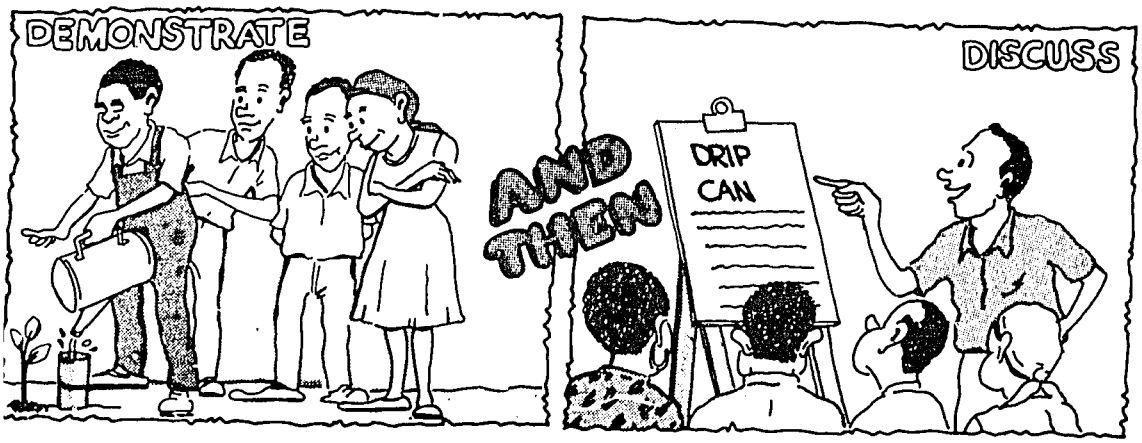
EXAMPLE

Prepare

Prepare for a practical demonstration by reading SOURCEBOOK SUPPORT MATERIALS (10-6). These materials emphasize drip can and clay jar watering techniques which can be used in arid areas. If you think these techniques are readily applied to your project area, then continue to discuss and demonstrate appropriate watering techniques.

These techniques can also be particularly fun to practice with school children.

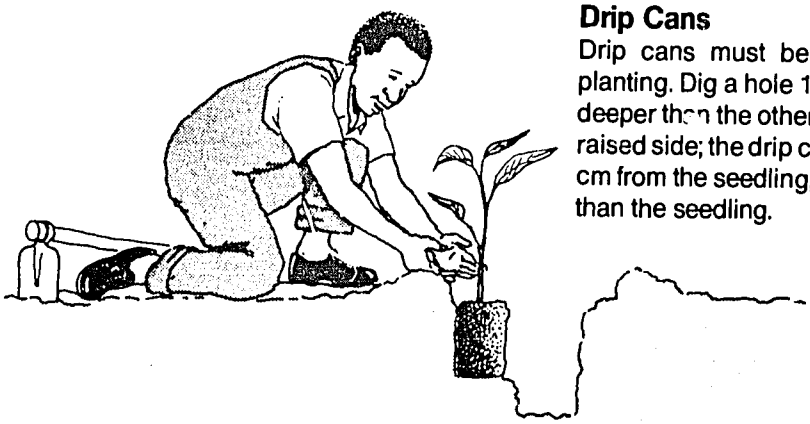
Facilitate and Summarize the lesson along the same lines as in previous lessons in this Module.



LEARNING NOTES

DRIP CANS AND CLAY JARS

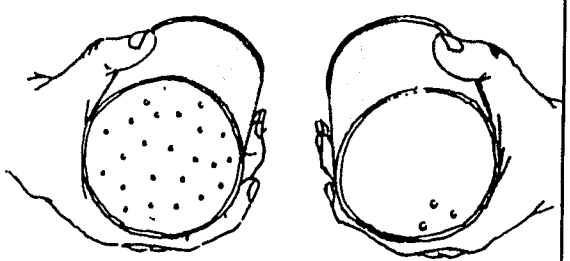
In arid and semi-arid areas seedling survival can be increased by using drip cans or clay jars. Both methods effectively improve survival and growth rates by providing the roots of the seedling with an even, constant water supply. The tap root grows downwards towards the water source, and the surrounding soil does not become hard and crusty as it often does when watered at the surface. In addition, the amount of water required is reduced by one to two thirds because there is less evaporation at the soil surface.

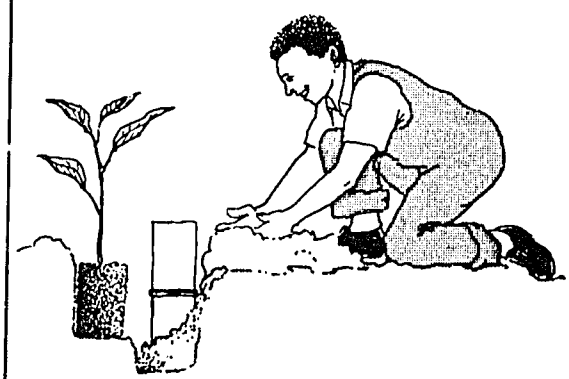


Drip Cans

Drip cans must be installed at the time of planting. Dig a hole 1 m x 1 m, leaving one side deeper than the other. Plant the seedling on the raised side; the drip can will be placed about 20 cm from the seedling, and its base will be lower than the seedling.

Find two tin cans of the same diameter. Put several holes in the base of one, and three small holes on the edge of the base of the other.





Place the tins one on top of the other, in the hole. The tin with the three small holes should be closest to the seedling. The upper tin should emerge 5 cm from the soil so that soil will not clog the holes. Fill the hole with a mixture of soil, mulch, and compost or manure. Make sure to put a lid on the drip can to prevent evaporation.

Clay Jars

Install clay jars just as you would drip cans. However, make the hole in the bottom of the jar approximately 4 cm up from the bottom.

Watering

The flow of water to the roots should be slow and steady. Holes in the can or jar should allow for a sufficient supply of water to the tree by filling the container two to three times a week during the first weeks after planting. Following this period watering can be less frequent. Fruit tree seedlings and other trees planted around the compound will benefit from occasional surface watering. Instead of throwing out your waste water, give it to your trees.

Lesson 5 SEEDLING PROTECTION

OBJECTIVE

Trainees will be able to determine the need for seedling protection and describe methods for protecting seedlings. They also will be able to demonstrate appropriate protection techniques.

METHOD

Discussion and practical demonstration are used in this lesson. You will need to prepare for the demonstration by having materials and tools on hand. Also have newsprint and markers.

EXAMPLES

Prepare

Review the material in SOURCEBOOK SUPPORT MATERIALS (10-7). Use it to help prepare and lead a discussion on seedling protection.

Facilitate

Begin your discussion by asking trainees about local conditions and the need for seedling protection when planting.

> Consider:
>
> **What are the threats to a young tree's survival?**
>
> **What of these threats can the project or farmers have some control over?**

Explain specific situations which require protection of seedlings, and which techniques are used. Record ideas and local experience on newsprint.

Consider:

During our project's diagnosis phase, did you notice if and how tree seedlings were protected?

Which did you notice? What techniques were being used?

What are local or traditional methods for protecting crops from livestock?

Given local customs and traditions, which methods of crop or seedling protection are most appropriate?

How can we introduce various agroforestry features to reduce the threat from livestock? Could farmers plant a fencerow which livestock will not eat, in order to protect other, more vulnerable tree/bushes?

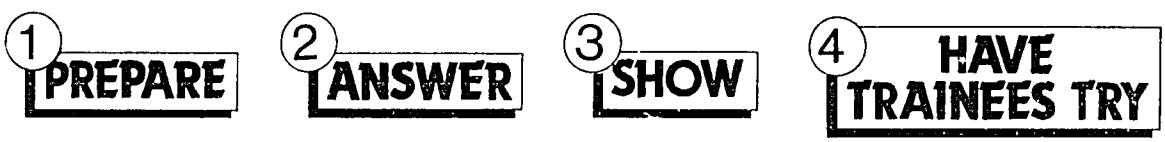
If we promote the construction of barriers to protect tree seedlings, what materials, methods and species are most appropriate?

Who will do this work?

Do we need to convince farmers and others in our project area of the need to protect trees or tree seedlings? If so, what are the best methods of doing this?

After discussing these issues and relating these questions to your situation, consider demonstrating appropriate local techniques for protecting trees and tree seedlings. See SOURCEBOOK SUPPORT MATERIALS (10-7) for additional information and help. Prepare a practical demonstration on protection of young trees.

Practical demonstrations should use the same steps as in previous lessons in this Module:



Summarize

Once the trainees are familiar with the techniques and methods for protecting young trees, have them summarize the important issues which arose in your discussion. This summary should help emphasize how important tree protection is.

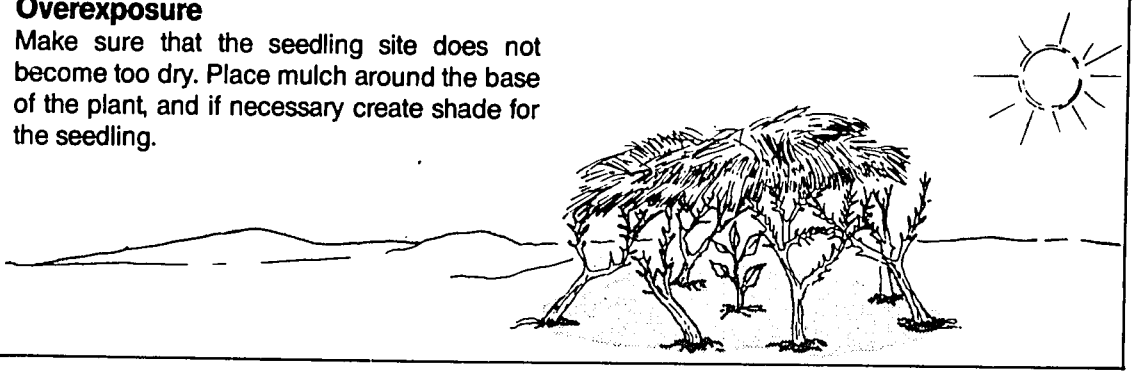
LEARNING NOTES

PROTECTING YOUR SEEDLINGS

Once you have planted your seedlings, care must be taken to protect them from overexposure to the sun, as well as from livestock and other pests.

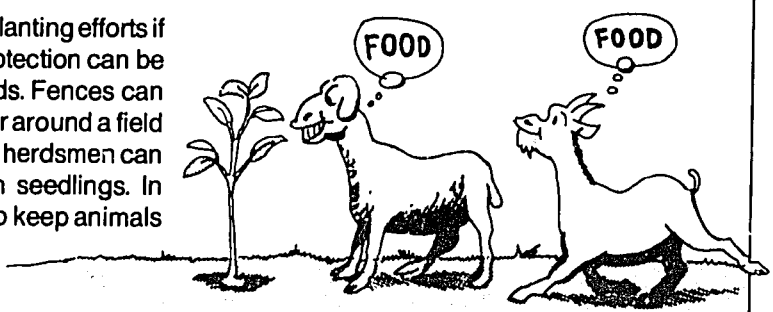
Overexposure

Make sure that the seedling site does not become too dry. Place mulch around the base of the plant, and if necessary create shade for the seedling.



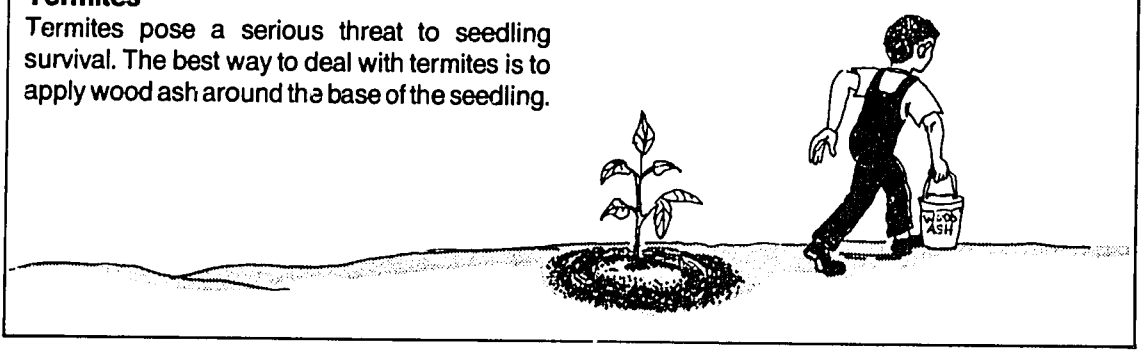
Livestock

Livestock can destroy your tree planting efforts if seedlings are left unguarded. Protection can be accomplished by several methods. Fences can be built around individual trees, or around a field containing many seedlings. Also, herdsmen can direct their livestock away from seedlings. In some areas, guards are posted to keep animals away.



Termites

Termites pose a serious threat to seedling survival. The best way to deal with termites is to apply wood ash around the base of the seedling.



Rats And Other Pests

Small seedlings are susceptible to many different types of pests. Use your imagination to cope with each situation. Rats can often be a problem. How would you protect your seedling from this pest?

Lesson 6 TREE MANAGEMENT IN AGROFORESTRY

OBJECTIVE

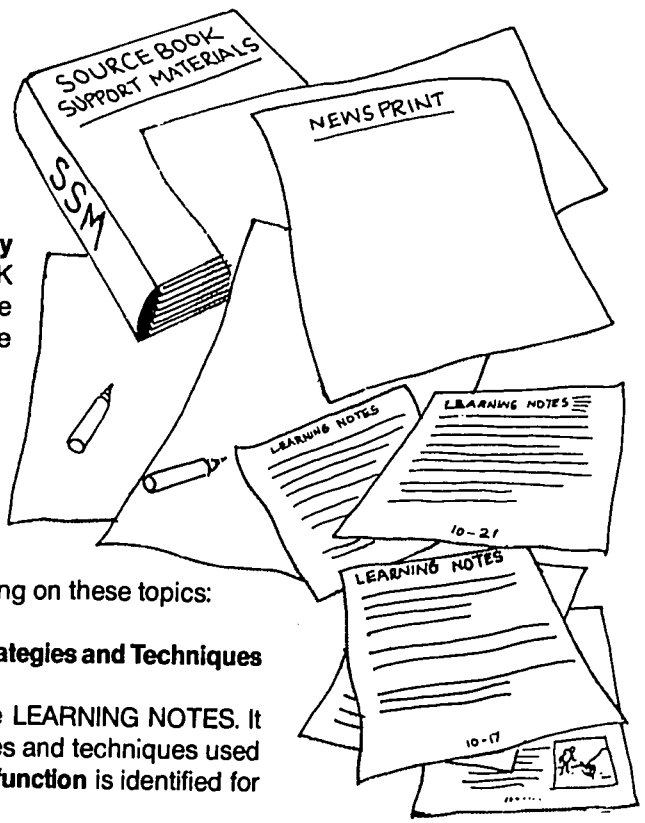
Trainees will be able to describe the objectives and techniques of tree management and apply these to at least two existing tree management practices being used in the project.

Trainees will be able to describe general tree management objectives and techniques related to the project's agroforestry designs. They also will be able to demonstrate the correct techniques for tree management for some specific species promoted by the project.

METHOD

This lesson is longer than previous lessons. It requires a carefully planned series of discussions and field activities. Read the entire lesson and LEARNING NOTES first, before beginning. Review SOURCEBOOK SUPPORT MATERIALS for additional information as well.

EXAMPLE



Prepare

Review the LEARNING NOTES, **Agroforestry Tree Management,** and SOURCEBOOK SUPPORT MATERIALS (10-8). These will be used to help facilitate a discussion on tree management in agroforestry.

Facilitate

STEP 1

Conduct a presentation and discussion focusing on these topics:

Understanding Different Tree Management Strategies and Techniques

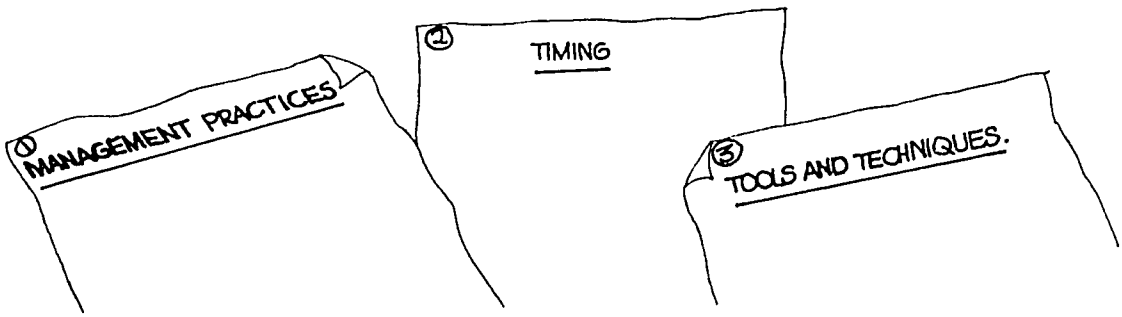
This topic is drawn most specifically from the LEARNING NOTES. It should highlight examples of different strategies and techniques used in tree management, when a specific need or **function** is identified for each agroforestry **species** and **configuration.**

Tree Management Information

This topic addresses how little we still know about agroforestry tree management. Modern agroforestry is still young in terms of experience and information. Stress the importance of collecting and analyzing experience in the project's agroforestry efforts. Also stress that tree management is crucial to the success of local agroforestry efforts.

STEP 2

Use three pages of newsprint and label them:



On the first sheet labeled, Management Practices, ask trainees to contribute information on tree management practices they know about in the project area for specific, well-known species.

On the newsprint sheet labeled, Timing, fill in information on when in a tree's development the practice is initiated, how often it is repeated and when, during the year, the practice is carried out.

On the newsprint sheet labeled, Tool(s) and Techniques, fill in information on which tools and techniques are used to carry out these tree management efforts.

After trainees have attempted to fill in this information, ask them to consider these questions:

Are the tree management practices used in the project area the best possible management of these trees?

Can we make improvements in management practices, especially if we change the timing or the techniques used?

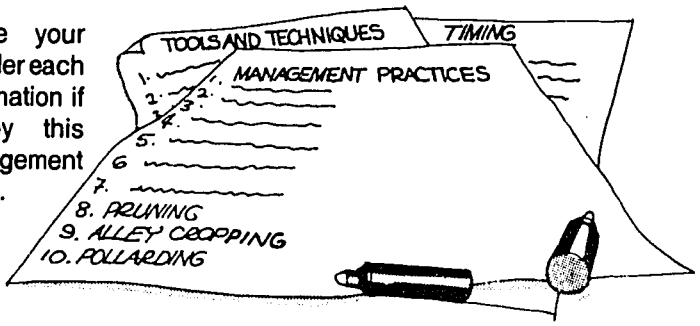
Trainers will probably find that there will be blank spaces on the newsprint under each category. Leave these; we will come back to them later.

STEP 3

Explain to trainees that our efforts will now be focused on filling in these blanks under each category. Trainees should be assigned, in pairs, to contact farmers they have already met during the diagnosis and design phase, to find out more about tree management practices. Have them note examples of local tree management practices, timing, and tool(s) and techniques used. Encourage them to look for as many examples as possible.

STEP 4

After this field exercise, continue your discussion by filling in the blanks left under each of the three categories. Add new information if appropriate. Trainees should copy this information about existing tree management practices into their Training Workbooks.



STEP 5

Plan to conduct a practical demonstration on local tree management with the help of a local farmer. Prepare for the demonstration by asking the farmer to explain the following to the trainees:

Why he has chosen each particular tree management practice

How he decides when to practice tree management, and which tools and techniques he uses

Ask him to demonstrate how he **manages** the tree.

This demonstration should help trainees better appreciate farmers' methods and ideas about local tree management. We have a lot to learn from their existing management practices.

STEP 6

Training groups should now prepare a summary of tree management objectives that correspond to the agroforestry designs which are promoted by the project, and which were selected in Module 6. Use SOURCEBOOK SUPPORT MATERIALS (10-8), **Tree Management,** for additional reference and help.

STEP 7

Your project's management **objectives** should provide important material for a discussion.

List on newsprint which **interventions** the project is promoting and the objectives of each. Suggest tree management strategies for each species and configuration involved.

Highlight which strategies are based on reliable information and which strategies still need to be tested, practiced and confirmed. This step is important for trainees, as it will help them appreciate which strategies are in most need of careful **monitoring** and **evaluation.**

Summarize this discussion by asking trainees to consider:

How does existing tree management by farmers compare to the agroforestry practices the project is proposing?

Will management requirements increase?

If so, how will we introduce this information and these practices to farmers?

Farmers, both men and woman, will need to be made aware of management requirements related to either new or intensive agroforestry tree management on the land. This will be part of the information you will share when discussing where and at what spacing they plant various agroforestry **configuration** and **species.**

Tree management in agroforestry requires us to know who will be doing the tree management. We must address our information to **him** or **her,** accordingly!

The project's management ideas are suggestions based on good assumptions and good information, but they can only be suggestions. Encourage farmers to offer their own ideas about tree management before specific agroforestry efforts are started on the land. Encourage them to discuss regularly their ideas on tree management with Extension Workers.

Emphasize which management procedures are worth the effort and which ones may give only limited benefits relative to farmers' efforts.

Discuss ways in which management tasks and procedures might be made easier.

Discuss management techniques which should be introduced and tried on a limited basis in an effort to see the effect and the farmers' reaction to it.

Discuss what might happen in a situation where more active and intensive tree management is needed and suggested, but not practiced.

Summarize

Summarize this lesson and its many points by emphasizing the need for regular and careful attention and monitoring of tree management. Once trees are planted and established, tree management will be a very important concern of the project's extension efforts. We must be ready and willing to use practical ideas from farmers as well as outside information to improve tree management practices.

Remember to encourage farmers to take the lead role in tree management. This is important in the early stages of our extension activities for tree management. A good extension approach suggests, encourages, and then learns from the farmer.

TREE MANAGEMENT IN AGROFORESTRY

TREE MANAGEMENT STRATEGIES

Tree Management Strategies are based on good agroforestry design. Their selection depends on what **products** or **functions** you and the farmers **want** from your trees, and the trees' characteristics. The selection of tree management strategies also depends on what configurations the tree species were planted in.

REMEMBER, trees planted for agroforestry meet a need and an objective. Good tree management is needed to meet these objectives as rapidly and sustainably as possible.

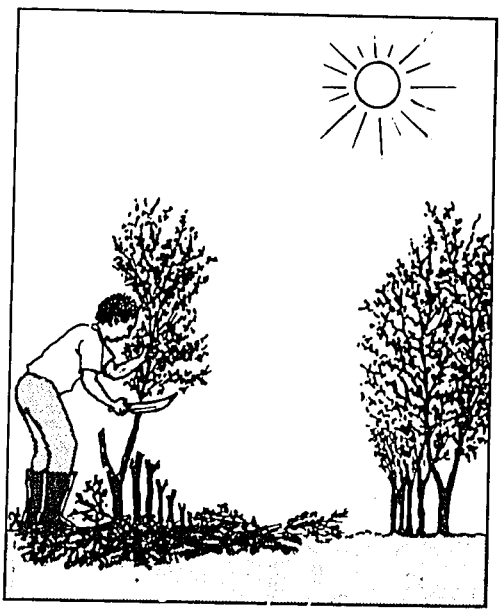
EXAMPLES OF TREE MANAGEMENT STRATEGIES

Some species of trees are selected to provide a rich, nutrient-restoring **mulch** and **stickwood for fuel.** We might then want to suggest the following tree management:

Species Calliandra calothyrsus, Leucaena leucocephala, Sesbania sesban and others

Configuration Alley Cropping or Hedgerow Intercropping

Management Seasonal; cut between knee and waist high at the end of the dry season; leave cuttings on cropland so that water will leach nutrients from leaves into soil; return 3-4 weeks later to collect stickwood; stack and dry stickwood for fuel.

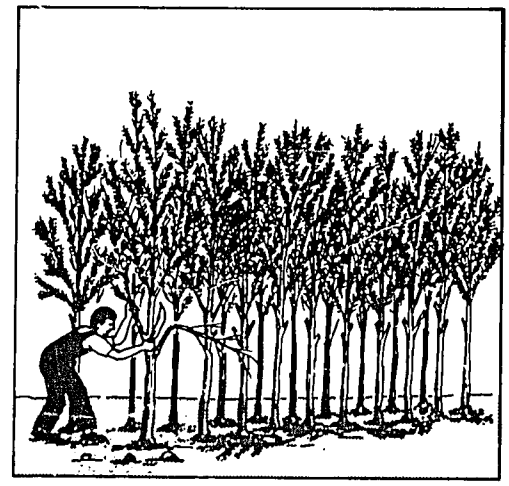


Some border and boundary plantings are managed primarily for pole production. We might want to suggest the following:

Species Grevillea robusta, Cassia siamea, Markhamia platycalyx and others.

Configuration Boundary or Border Planting; close, even spacing in a double row border or alley.

Management Cut off (lop) lower branches as tree develops to encourage straight upward growth; thin out trees as they continue to mature; harvest poles for building or market.

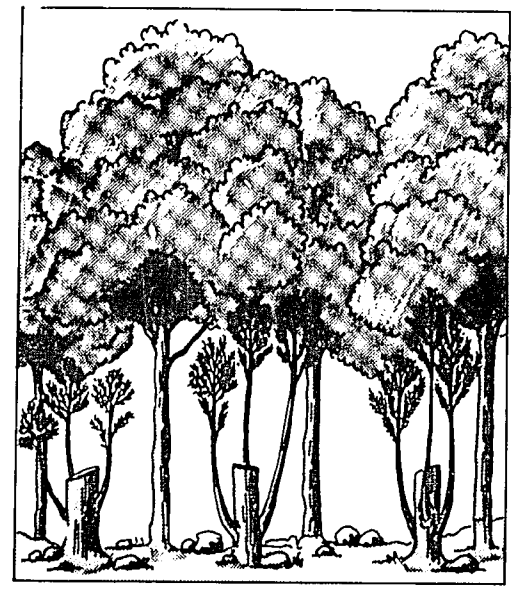


Some of the best fuelwood and pole producing species are best grown in **woodlots** or evenly spaced **clusters of trees** located away from crops where they cannot interfere with their growth. The following type of management is appropriate for small, farm-scale woodlots:

Species Acacia mearnsii (Black Wattle) and Eucalyptus spp.

Configuration Woodlot; 2m x 2m or appropriate close, even spacing.

Management Weed until the tree canopy closes; thin trees as they grow - optimum tree spacing may be to keep the spacing about half the average height; use or sell thinned trees for poles and fuelwood; coppice mature trees, allowing two strongest shoots to develop as poles, by cutting back inferior shoots for use as firewood sticks.



TREE MANAGEMENT TECHNIQUES

Tree Management Techniques involve doing something to a tree or its surroundings to obtain a specific result now or later. Sometimes tree management involves removing and replacing entire **stands** or **groups** of trees. Forest departments are best known for this technique. Most commonly in agroforestry, tree management techniques involve removing parts of trees or thinning groups of trees for improved growth or performance.

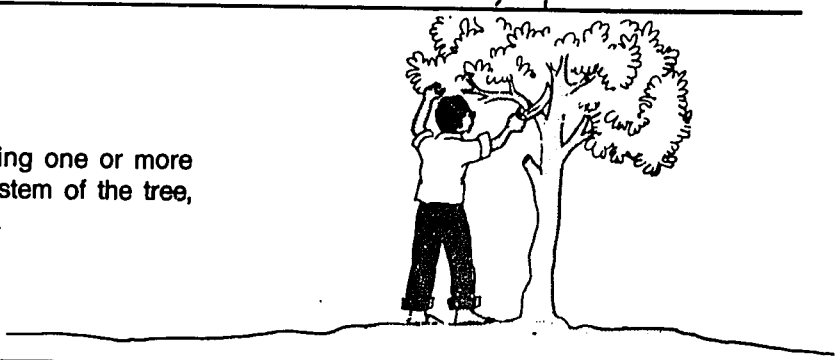
POLLARDING

This technique involves cutting back the crown or top branches of a tree with the following objectives:

harvesting small wood
harvesting browse
producing new growth beyond the reach of animals
reducing shade cast by the crown

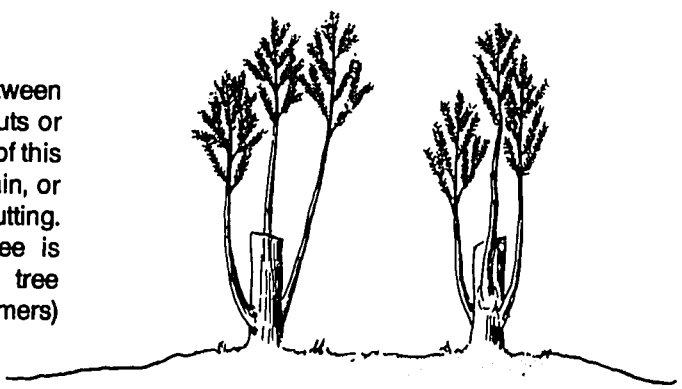
LOPPING

This technique involves cutting one or more branches from the trunk or stem of the tree, usually for fuel and/or fodder.



COPPICING

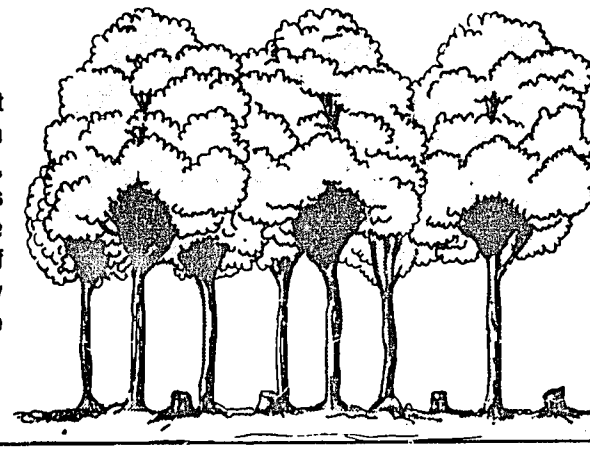
This technique involves cutting trees between ground and waist level to produce sprouts or new growth. Coppicing is also the effect of this cutting on tree species which shoot again, or produce branches from the stem after cutting. Coppicing also may occur when a tree is damaged. A number of agroforestry tree species are well-known (and liked by farmers) for their ability to coppice, or shoot again.



CUTTING BACK

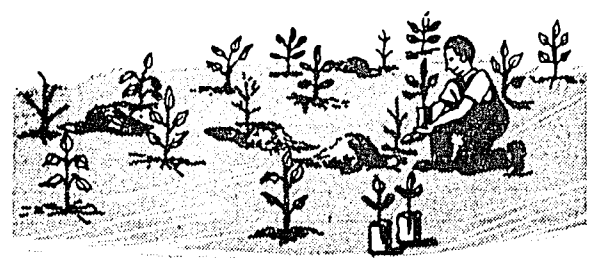
This technique is similar to coppicing. It is a term often used to describe the action which produces the effect of coppicing. It is often used on young plants in the nursery, where both root and shoot are trimmed. Sometimes the term pruning is used to describe the cutting back of branches. Cutting back is often applied to alley-cropping or hedgerow management when using trees that coppice.

THINNING



This technique is used when we take out specific trees in a group or stand of trees. In most stands where trees are densely planted, thinning can occur naturally. We can apply this techniques when we want to encourage farmers to practice the thinning of a stand of trees, so that those trees which remain grow well and remain healthy. Trees which are thinned can be sold or used as well.

BEATING UP



This technique is used when a planted area has failed to grow and additional planting or sowing is needed. Other words for this technique include: reinforcement planting, blanking, filling, gapping, infilling and recruiting.

WEEDING

This is a simple but important management technique that applies to all trees, especially during the first year or two of their development. It involves the removal or control of vegetation which competes with a tree's growth.