



## Module 10: Growing Timber Trees and Perennials



### Goal

Farmers will use appropriate nursery techniques to cultivate timber and perennial seedlings to plant in their Forest Gardens.

### Learning Objective

1. Learn how to treat selected timber tree seeds for planting.
2. Learn timber tree nursery propagation techniques.
3. Learn timber tree nursery management best practices.
4. Learn how to propagate and plant perennials.

### Venue and Timing

This module should be timed to give selected species enough time in the nursery for outplanting prior to the start of the following main rainy season. This workshop should take place on the lead farmer's or a participant farmer's farm. The farm should have a protected nursery site prepared prior to the workshop.

### Relevant Technical Manual Chapters

Before this training event, the facilitator should read, review, and thoroughly understand the following chapters and sections in the Technical Manual:

- Chapter 4: Seeds
- Chapter 5: Seedling Propagation
- Chapter 11: Pruning, Harvesting, and Tree Management
- Chapter 12: Cut and Carry Livestock Management
- Chapter 15: Optimizing your Forest Garden Understory (Earthworks section)

### Preparation

- Identify a tree nursery site (on the lead farmer's or participant farmer's land) where the training will take place and inspect the site to make sure it is protected with a

- fence or otherwise safe from animals. The host farmer can use the agroforestry or fruit tree nursery site, if there were no problems with that location.
- Determine which timber tree seeds to provide, based on Module 9 discussion, and acquire some for use in the training event.
  - Instruct lead farmer to prepare 5 timber seedling sacks with multiple seedlings in each sack. These should be started about 6 weeks before the training event, depending on the species. The seedlings should be about 5 to 10 cm tall.
  - Determine which nursery production method and seed pretreatment techniques need to be covered or reviewed with the group
  - Pretreat seeds for planting if the species requires overnight soaking or another process that cannot be completed during the workshop.
  - Collect perennial planting material.

## Supplies

- ½ wheelbarrow of wood ash
- ½ wheelbarrow of charcoal ash
- sifting screen material
- 1 sharp knife
- 3 wheelbarrows of sand or topsoil
- 2 wheelbarrows of manure
- 15 tree sacks per participant
- 5 spade shovels
- 3 watering cans
- 1 wheelbarrow of *Azadiractha indica* or *Eucalyptus* sp. leaves (where available)
- nail clippers (1 set for each participant and 1 set for each facilitator)
- 5 pretreated seeds and 5-10 untreated seeds per participant
- 5 tree sacks with several germinated trees (~5 to 10 cm tall)
- 50 liters of water for watering seedlings
- 5 sharpened, clean machetes or other tools for pruning
- String

## Total Time

Approximately 4 hours

## Handouts in Farmer's Workbook

- Soil and Water Conservation Techniques
- Examples of Berms and Swales
- Perennials

# Module 10: Growing Timber Trees and Perennials

## Summary of Activities

**Opener:** Harvesting and pruning agroforestry trees (1 hour)

- Visit field to inspect green wall and demonstrate proper pruning techniques
- Volunteers demonstrate how to harvest fuelwood, fodder and fertilizer.
- Farmers practice harvesting.

**Activity 1:** Timber tree considerations (30 mins)

- Discuss timber trees and their growth considerations
- Timber tree spacing and planning

**Activity 2:** Pretreat timber tree seeds for sowing (30 mins)

- Discuss benefits of timber trees
- Discuss seed quality
- Facilitator demonstrates pretreatment method for selected timber trees
- Farmers practice seed pretreatment methods

**Activity 3:** Sow timber tree seeds in the tree nursery (30 mins)

- Volunteer demonstrates how to sow
- Farmers practice sowing
- Review best practices in nursery management

**Debrief and Take Home Activity 4:** Build your timber tree nursery (15 mins)

- Prepare nursery site
- Sack and seed distribution
- Follow-up

# Opener: Harvesting and Pruning Agroforestry Trees

## Description

Farmers practice pruning a green wall and harvesting fuelwood, fodder and fertilizer from the agroforestry trees planted in their Forest Gardens.

## Instructions for Farmers

### 1. Visit field to inspect green wall and demonstrate proper pruning techniques

Your green walls need regular pruning to grow strong and dense. The more you cut them, the more they will branch into each other! Today we will review and practice the correct way to prune and harvest the green wall and agroforestry trees to use for fodder and fuelwood. Who would like to come demonstrate how to prune the green wall?

- How and when should you prune your green wall? How do you ensure the green wall forms a solid barrier?
- What do you need to do before pruning your trees? (sharpen and clean the knife/machete)
- How do you cut the stems to be sure you're not damaging the trees?

### 2. Volunteers demonstrate how to harvest fuelwood, fodder and fertilizer.

Who would like to demonstrate how to harvest fodder and fuelwood?

- How should you prune your alley crops/contours? Which parts of the tree do you prune? At what angle do you cut?
- What should you do with the agroforestry trees you dispersed throughout the Forest Garden? (It's up to you. Cut them if you want the wood/leaves; leave them if they're not competing for sunlight with your crops and you want larger pieces of timber down the line)
- When should you prune your alley crops/contours? What time of day? What time of year? How should you harvest fuelwood? Where do you cut? At what angle do you cut?
- When should you harvest fuelwood?
- How should you harvest fodder? Which parts of the tree do you harvest? Where do you cut? At what angle do you cut?
- When should you harvest fodder? What time of day?
- How can you store fodder?
- How should you harvest for fertilizer? Which parts of the tree do you cut? How do you use the tree for fertilizer?
- When should you harvest for fertilizer?
- What are other ways you can harvest and use the leaves and stems from the trees?

### 3. Farmers practice harvesting.

Each farmer should use the tools provided to practice pruning and harvesting. I will come around and answer any questions.

## Activity 1: Timber Tree Considerations

### Description

The facilitator discusses different considerations for timber trees, including growth characteristics, spacing, and management.

### Instructions for Farmers

#### **1. Discuss timber trees and their growth characteristics**

Today we will discuss timber trees and practice planting them in nurseries.

- Why is it beneficial to plant timber trees in your Forest Garden?
- What qualities do we want to see with timber trees? What are the best growth characteristics of timber trees?
- What are some timber species would grow best in your area?
- Where do you want to plant timber trees in your Forest Gardens? Why?

#### **2. Timber tree spacing and planning**

- What spacing should you use for planting your timber trees in your Forest Garden?
- How should you care for your timber trees as they grow?
- Should you ever thin your timber trees? Why? When?
- What spacing should they be thinned to?
- Should you prune your timber trees? How? When?
- How long should you let your timber trees grow before harvesting them? (As long as you want; the longer they grow, the more you can sell them for)
- What should you do when you cut them down? (replant them; it is best to cut them in segments then replant what is cut so there is a constant rotation of trees at different ages)

## Activity 2: Treat Timber Tree Seeds for Sowing

### Description

The facilitator discusses seed quality and instructs farmers how to treat the selected timber tree seeds before sowing. After instruction, participants practice pretreating seeds themselves with monitoring and feedback from the facilitator.

### Instructions for Farmers

#### 1. Discuss benefits of timber trees

In the last workshop we talked about ways to better use the space in your Forest Garden by growing plants at different heights or layers. Today we will start nursing timber trees to fill out the top layer in your Forest Gardens.

- What are two reasons to plant timber trees?
- What are some valuable types of timber trees that grow here?
- What time of year do those types of timber trees produce seed?
- How long do each of these species require in the nursery before outplanting? What makes a good timber tree?

#### 2. Discuss seed quality

Seed quality determines the quality of the tree that grows from it, so pay close attention to where your seed comes from. Proper storage between harvesting and sowing the seed is also very important to ensure the seed is viable when you plant it.

- Why is seed quality important? (discuss genetic diversity and physical seed traits)
- How can you tell if a seed is likely to be good?
- Is it a good idea to plant seeds from any tree of the species you want to plant?
- How do you ensure good genetic quality and diversity in seeds?
- How do you prepare the seed for storage? How do you store it? How long can you store it?

#### 3. Facilitator demonstrates pretreatment method for selected timber trees

Some timber tree seeds need to be treated before planting. I will now demonstrate how to treat the timber tree seeds we are planting today.

- How do you treat this type of timber tree seed? What are two reasons to treat seeds before sowing?

#### 4. Farmers practice seed pretreatment methods

Now you all will practice the technique I demonstrated.

- Do all seeds need to be pretreated before sowing? Examples of which seeds do and don't? What are different seed pretreatment methods? When do we pretreat seeds?

## Activity 3: Sow Timber Tree Seeds in the Tree Nursery

### Description

The facilitator will request a volunteer to demonstrate sowing techniques appropriate for the seeds provided and workshop participants will practice sowing. Farmers will review best practices for how to care for trees in their nurseries and demonstrate proper watering, weeding and thinning techniques.

### Instructions for Farmers

#### 1. Volunteer demonstrates how to sow

For each seedling production method, I would like a volunteer to demonstrate the sowing technique.

- What time of day is it best to sow seeds? Why?
- How deep should you plant the seeds?
- **Sacks:** How many seeds should you sow per sack?
- **Bareroot:** How should seeds be spaced in a nursery bed?

#### 2. Farmers practice sowing

Everyone will now practice sowing using the techniques you learned.

- How long do timber trees stay in the nursery?
- What is the spacing for this type of tree in the field?

#### 3. Review best practices in nursery management

For your tree nursery to grow, you need to take proper care of your seedlings.

- What are the three most important things to do to care for the tree nursery?
- How and when do you water the nursery?
- How and when do you weed the nursery?
- How and when do you thin the seedlings in the nursery?
- How and when do you outplant seedlings to the field?
- If some species selected for planting require less time in the nursery, when should those species be sown?

## Take Home Activity 4: Build your Timber Tree Nursery

### Description

Following the training, farmers will each be given 10 tree sacks (where applicable) and instructed to set-up those tree sacks in their nurseries. Farmers are expected to use soil and water conservation techniques, as applicable, in their gardens.

### Instructions for Farmers

**1. Prepare nursery site**

Prepare the nursery beds and prepare the tree sacks we will give you today.

**2. Sack and seed distribution**

If your nursery looks good when the lead farmers comes to inspect it, the lead farmer will give you more tree sacks and seeds to sow in your nursery.

### Follow-up

When the lead farmers visit participants, he/she will observe and counsel participant farmers to pretreat and sow several seeds, ensuring proper technique. When the lead farmer is satisfied with what the farmer has done s/he will distribute the appropriate number of sacks and seeds to the farmer.



# Evaluation Checklist for Skills Learned in Module 10



At the end of the year you will be evaluated on the following practices that you learned and discussed during training events. Those in bold are topics that we discussed or practiced today. In demonstrating that you have completed the Year two evaluation criteria, you will be invited to continue into the fourth year of the project.

## Year 3 Evaluation Criteria

- Green Wall
  - Three rows, fully surrounding the Forest Garden site
  - Gaps replanted
  - Well-managed
  - Dead fence surrounding green wall if still needed (for all projects where this is determined to be a requirement)
- Alley Cropping and/or Contour Planting
  - Optimum number planted
  - Gaps replanted
  - Well-managed
- Fruit Trees
  - At least 4 species planted
  - At least 2 species grafted
  - Proper spacing between trees
  - Each tree mulched and weeded
- **Timber Trees**
  - **At least 1 species planted**
  - **Proper spacing between trees planted**
  - **Each tree is weeded and mulched**
- Compost
  - Three active piles
  - Well-managed
- Permagarden
  - Multiple species
  - Demonstrated use and explanation of at least 3 IPM measures
  - Production timed for demand
  - Demonstrated use of the 4 S's
  - Perennials planted on berms around garden

## Module 10: Facilitator's Notes



The facilitator should use the following pages to note down any questions or findings from the group that should be kept for or addressed at a later time. Depending on the module this may include species selection by group, crops identified in seasonal calendars, or anything else that should be noted.