



Module 4: Permagardening for the Family



Goal

Using provided seeds and tools, farmers will meet their family's priority subsistence needs by nursing, planting and maintaining at least 6 types of nutritious vegetables, including 3 not previously planted.

Learning Objectives

1. Motivate interest in growing new types of nutritious vegetables.
2. Understand considerations for nursery and garden site selection.
3. Learn best practices for growing a variety of nutritious vegetables, including land preparation, spacing, nursing, and planting methods.
4. Understand how companion planting and triangular spacing can increase yield and reduce pests and moisture loss.
5. Learn basic garden care including soil amending, mulching, watering and natural pest control.

Venue and Timing

This module should be given about six weeks before the start of the main gardening season, commonly the cool dry season that follows the rainy season. The training can be held at the lead farmer's Forest Garden or a participant farmer's Forest Garden.

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 5: Seedling Propagation (Soils section)
- Chapter 13: Permagardening

Preparation

- Ask lead farmer what vegetables his/her family would like to plant during Module 4.
- Prepare lead farmer to give smart answers to nutrition-related questions in the Opener activity.

- Ask lead farmer to prepare nursery site, including double digging the beds.
- Purchase the vegetable seeds that will be used for the training event.
- Ensure lead farmer begins nursing vegetables in seedling beds 4-6 weeks before workshop.
- Identify three literate farmers to read the nutrition story in the opener activity. Go over the story with the “actors” in advance if the farmers are not literate.
- Review the module instructions and corresponding permagardening sections of the Trees for the Future Forest Garden Technical Manual.

Supplies

- Vegetable seeds
- 5 hoes or picks
- 5 shovels
- 1 wheelbarrow of finished compost
- 1 bucket of charcoal powder
- 1 bucket of wood ash
- 3 watering cans
- 5 buckets
- String
- Flip chart
- Markers

Total Time

4-5 hours

Handouts in Farmer’s Workbook

- diagram of garden setup/design, triangular spacing

Module 4: Permagardening for the Family

Summary of Activities

Opener: Nutrition story (30 mins)

- Volunteers read/act out story
- Debrief nutrition lessons learned from story
- Discuss nutrition needs of the lead farmer's family

Activity 1: Permagarden design (45 mins)

- Discuss garden site selection criteria for lead farmer's Forest Garden design
- Make a plan for the lead farmer's permagarden

Activity 2: Germination beds (1 hour)

- Instruct large group on how to prepare nursery site and nurse vegetable seeds

Activity 3: Small group Learn-and-Teach (1 hour)

- Farmers form small groups, collect vegetable seeds or seedlings, and discuss planting methods
- Small groups prepare beds for their assigned vegetable
- Small groups start planting/transplanting the first section of their bed
- Call all groups together for first Learn-and-Teach
- Continue Learn-and-Teach

Take Home Activity 4: Start your germination beds and permagardens (30 mins)

- Debrief Learn-and-Teach and discuss permagardening best practices
- Design your permagarden
- Follow-up

Opener: Nutrition Story

Description

The facilitator or volunteers read a story that demonstrates the importance of planting a variety of crops on the field. In this story, modified from a story originally developed by Farm Radio International, the wife and husband grow one crop - millet. In bad times when millet doesn't grow well, the wife has limited income and cannot buy enough nutritious food for herself and her family and her health suffers. Another farmer, the wife's friend, intercroops vegetables in the millet field. In addition, she grows other vegetables in a garden. By diversifying what she grows, her family has enough food to stay healthy.

Emphasize that one of the benefits of crop diversification is the variety of foods produced. Different kinds of foods provide different nutrients, all of which are needed for good health. It is especially important for infants and children to eat a variety of food, including colorful fruits and vegetables. The facilitator can bring examples of nutritious red, green, orange, and white vegetables from the market. After the debrief, discuss the nutrition needs of the lead farmer's family.

Instructions for Farmers

1. **Volunteers read/act out story (on the following page)**

Can three volunteers, one man and two women, come to the front and read a story about millet farmers? After we hear the story, we will discuss it.

2. **Debrief nutrition lessons learned from story**

- What did you think of the story?
- What is the friend doing in the story that is good for her family?
- What are some examples of nutritious foods that you should try to include in our family's diets?

3. **Discuss nutrition needs of the lead farmer's family**

Now we will hear from the lead farmer's family about which vegetables they want to grow in their home garden and why.

- What types of foods have the most nutrients?
- Is it important for you and your family to eat a variety of nutritious vegetables? Why?
- What are some ways that you currently make sure that your family and children have enough nutritious food to eat?
- Which of the nutritious vegetables do you already grow? Which do you know how to grow? Which do you want to start growing? Which do you currently buy?
- What will you plant this year? Help lead farmer to decide which red, orange, green, and white vegetables to grow to improve the nutrition for his/her family.

The Story of Two Families Growing Millet

Have three participants read the story. Replace the names with names appropriate for the community you are in.

First Day

Wife: (breathless) Oh my goodness, friend, it's hot today.

Friend: Yes, it certainly is.

Wife: (groaning) Ohhhh ...

Friend: (worried) Are you alright?

Wife: (weakly) What happened?

Friend: You fainted. You don't look well. Have you eaten today?

Wife: (hesitant) Umm...no, I haven't.

Friend: You haven't eaten? No wonder you fainted. Why didn't you have some breakfast?

Wife: (hesitant) To be truthful, we don't have much food in the house these days. But I really don't want to talk about that right now. You know, I think I should get back to the house.

Friend: Alright, let me help you up. If you lean on me, we can walk home together.

Husband: Wife! Are you okay? What happened to you?

Friend: She fainted in the field. Let's help her to sit down.

Husband: Oh, this isn't good. Wife, didn't you eat today?

Wife: No, there wasn't any millet left after I fed the children. Oh, Husband, what are we going to do? ... I'm so worried that

Husband: (interrupting and whispering) Shhh ... shhh. Let's not talk about it now.

Second Day

Friend: I am happy that your wife is feeling better, though she did tell me that you're having problems. I know that your harvests were good last year. What happened this year?

Husband: Last year, millet prices were good - we received a lot of money for our crop. So this year we decided to put all our land into one crop - millet. But, then we had a Striga infestation and millet prices were low. We received almost nothing.

Friend: What about your other crops?

Husband: We didn't grow any other crops. We used all the land for one crop - millet.

Friend: Well that explains it. My friends, I know that farmers are being encouraged to grow improved variety millet. But when farmers grow nothing but millet, it is dangerous for the family's nutrition and well-being.

Wife: I know, I know. I especially worry about the children because they need more variety in their diet.

Friend: They certainly do. You all do. That's why you are so weak - you need to eat more than just millet to stay healthy. You need a variety of foods.

Husband: Well tell us, friend, how do you survive? You have the same amount of land as we do. But you don't seem to suffer.

Friend: We saw that many people made money growing improved variety millet the last few years. But we didn't want to put all our land into just the millet. It seemed like a big risk, especially with the threat of Striga and the changing rainfall patterns. After all, the prices can be high one year and low the next.

Wife: Um hmm.

Friend: So we decided to lower our risks by planting a variety of different crops.

Wife: (curious) How did that help?

Friend: We grow several crops at the same time to give us security. Growing different crops is called diversification. If any crop fails, we always have something else to eat or sell.

Wife: Hmmm. And this way you are not dependent on one crop or one market. No matter what happens in the market, you always have food to eat.

Friend: Exactly!

Husband: But how do you grow so many crops on a small plot of land?

Friend: I can show you how. Why don't you both come by tomorrow and visit my plot? I'll show you how we do it.

Third Day

Friend: Here is where we grow our millet. You'll see that we intercrop beans and squash beneath the millet. We cook the bean leaves into our foods because they are rich in vitamins. So, we have many crops from one piece of land!

Wife: Do you grow anything else?

Friend: Yes. I also grow several different types of vegetables in my garden. You see? It is right next to my house, so I can care for them regularly and pick a variety of vegetables easily before meals.

Wife: There's much more than just millet growing here!

Friend: Exactly. With the millet we intercrop two vegetables - beans and squash or pumpkins. Then I fill my garden with different vegetables so we always have something to eat. Sometimes there are six or eight different crops growing here! The beans help combat Striga infestation, and this variety of grains and vegetables provides a good diet for the children.

Husband: By making such a great effort to diversify crops and provide good nutrition to your family, you are a farmer who deserves congratulations!

Activity 1: Permagarden Design

Description

The lead farmer and participant farmers create a design for the lead farmer's vegetable nursery that demonstrates understanding of garden site selection criteria, earthworks, triangular spacing, and companion planting. Farmers will design the garden using a medium selected by the facilitator, such as drawing on flip chart paper, using vegetable cutouts on flip chart paper or the ground, or as a more interactive session where volunteers represent the different vegetables and stand in the section of the garden where that vegetable will be planted.

Instructions for Farmers

1. Discuss permagarden site selection criteria for lead farmer's Forest Garden

Let us look at the Forest Garden design for the lead farmer's field that we completed during the first workshop. Where is the garden located within the Forest Garden? What criteria should we look at when deciding where to put the garden?

- Location – Does the site have easy access? Is it near the home so that family members can easily check on and work in it regularly and so that the products can be easily harvested for meals each day?
- Sun – Garden vegetables need lots of sun. Is there an open area that receives direct sunlight for a good part of the day? During a heavy rain, how will water flow through the garden? How can you reduce erosion?
- Slope – Is the garden area flat? Or does it slope?
- Water – Where will the family get water for the garden? Can rainwater be captured or guided underneath the garden beds from the roof of the home or nearby slopes?
- Soil – Vegetables need healthy soil to grow. Is the soil fertile? Is there any bedrock near the surface of the soil? How can you improve the soil?
- Protection – Is the area protected from wind, intruding animals and children?
- Space – Is there enough space to move around the garden? Where will the compost piles be located?
- Sectioning – Should you divide the garden into sections? Should you plant anything to separate the sections?

2. Make a plan for the lead farmer's permagarden

Now that we know where to put the garden, we will create our permagarden design before we go and plant.

- What will the lead farmer's family grow this year?
- How many beds should we dig?
- How big should you make the beds?
- Is the soil fertile? How can we improve the fertility?
- What vegetables should we plant next to each other? Why?
- What vegetables should we not plant next to each other? Why?
- What type of spacing will grow more vegetables in the garden?
- When is the best time to start nursing seeds?

Activity 2: Vegetable Nursery

Description

The facilitator takes farmers to the nursery, started a few weeks before the workshop, and instructs farmers on why and how to prepare a nursery and nurse vegetable seeds.

Instructions for Farmers

1. Instruct large group on how to prepare a vegetable nursery site and nurse vegetable seeds

We started some of the vegetable seeds in this nursery a few weeks ago. Today we will plant some of the nursed seedlings in the garden.

- What are three benefits of the nursery and transplant system over direct seeding?
- What are the three most important things when deciding where to build your vegetable nursery?
- How do you prepare soil for a nursery? How do you reduce weeds?
- How do you protect the nursery? From goats? From pests/ants? From the sun? From heavy rains?
- How do you plant seeds in the nursery?
- How closely should the seeds be spaced?
- How do you care for plants in the nursery? How often do you weed? When do you thin?
- When do you water the nursery? How much water should you use?
- What are some reasons seeds do not germinate?
- Which of the vegetables we discussed today should be nursed? Which should be direct seeded?

Activity 3: Small Group Learn-and-Teach

Description

Farmers form small groups and each group is given a vegetable seed or seedling. Each group should include a farmer with experience growing that vegetable. Using the Learn-and-Teach approach, each group practices planting their assigned vegetable and then teaches the larger group. After the small group provides instructions on how to plant the vegetable, a few volunteers act out what they learned based on instructions called out by the rest of the large group. This is repeated until each small group has had a chance to teach about their assigned vegetable. The facilitator should select different volunteers each time so that most farmers get hands on practice.

The facilitator and lead farmer should decide how large of the garden area to use for the practical activity. Depending on group size and time available, the farmers might not be able to complete planting the entire garden during the workshop.

Instructions for Farmers

1. Farmers form small groups, collect vegetable seeds or seedlings, and discuss planting methods

Form small groups with one group for each of the vegetables we will plant in the lead farmer's garden. Each group should include someone who has experience growing the vegetable. Then I will hand out the different vegetable seeds or seedlings to each group. You will discuss with your group the proper technique for planting the vegetable you are given.

- Do you need to nurse the vegetable before planting? How long to nurse?
- What is the spacing between planting?
- What are the companion plants?
- What plants should this vegetable not be planted near?
- What are common pest problems? How can you address those pests?

2. Small groups prepare beds for their assigned vegetable

Now that you know how to plant your vegetable, go to the section of the garden marked for your vegetable in the garden design. Work in your small group to prepare beds for your vegetable.

- The lead farmer has already double dug the beds, but who can remind us what double digging is, and why it is important?
- What do you do after double digging the beds? (add amendments, remove rocks and break down soil chunks for a smooth surface)
- How do you maximize the number of plants you can grow in a bed without planting them too closely? Is it best to line them up evenly in rows or to stagger them like triangles?
- What other benefits do you get from triangular spacing?

3. Small groups start planting/transplanting the first section of their bed

Once the beds are prepared, work with your group members to start planting your seeds. You will either seed directly or come and collect plants started in the nursery. Prepare to tell the rest of the group how to plant your vegetable. After we have all planted a section of our bed, I will call all the groups together and we will have the small groups tell us what they are doing.

4. Call all groups together for first Learn-and-Teach

Everyone stop working in your beds and come to Group 1. Group 1 will tell us how to plant their vegetable.

Then I will ask for three volunteers to come and demonstrate how to plant this vegetable. We will do something a little different. The volunteer can only move when you give them instructions.

- How can you measure the correct spacing without a tape measure?
- How do you plant your vegetable seed/seedling?
- For nursed plants:
- How do you know the vegetable is ready to transplant?
- How do you prepare your vegetable seedling for transplanting?

5. Continue Learn-and-Teach

We have learned from Group 1 how to plant [vegetable type]. Now we will learn from Group 2.

Take Home Activity 4: Start your Vegetable Nursery

Description

The facilitator distributes a portion of vegetable seeds, those that need to be nursed before planting, to the farmers. Farmers take these seeds home to immediately begin establishing their vegetable nurseries.

Instructions for Farmers

1. **Debrief Learn-and-Teach and discuss permagardening best practices**

Everyone has learned how to grow a variety of vegetables today. After the workshop, you will take some seeds and start your own vegetable nursery. The lead farmer will come inspect your nursery within 2 weeks and, if the nursery is satisfactory, will distribute the rest of the seeds that need to be nursed before the permagardening season.

- What are the top 3 challenges you might face in your garden?
- How and when do you water your garden?
- Why do you mulch?
- How can you control pests?

2. **Design your permagarden**

Draw a design for your own home garden with the site selection considerations in mind—location, sun, slope, water, soil, protection, space and sectioning.

Follow-up

The lead farmer visits participant farmers' Forest Gardens within 2 weeks. Once the lead farmer inspects the vegetable nursery and reviews the permagarden design, he/she will distribute the remaining vegetables seeds for farmers to plant in their gardens.

At the beginning of the permagardening season, the lead farmer will visit each participant farmer's permagarden again to inspect that their gardens were sited well, and the beds were double dug and amended, and to check on the progress of the vegetable seedlings. If things are satisfactory, the lead farmer will distribute the rest of the seeds that will be direct seeded.

- How will the seeds and seedlings be arranged in the beds?
- What spacing should be used for each of the vegetables?
- After planting the vegetables, what will you do next? (mulch and water)

Evaluation Checklist for Skills Learned in Year One

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. After demonstrating that you have completed the year one evaluation criteria, you will be invited to continue in the second year of the project.

Year 1 Evaluation Criteria

- Green Wall
 - At least one row planted, surrounding the entire site
 - At least part of the second row is planted
 - Proper spacing between rows
 - Proper spacing across lines
 - Terminal buds pruned
 - Brush and weeds cleared
 - Dead fence surrounding green wall (for all projects where this is determined to be a requirement)
- Alley Cropping and/or Contour Planting
 - Minimum of 1 row planted across cropping area
 - Agroforestry trees interspersed throughout site
 - Proper spacing between rows
 - Proper spacing between trees within rows
 - Contour lines followed (on sloped sites)
- Compost
 - Appropriate placement
 - At least two active piles
 - Good mix of materials (N, C, water, air)
 - Passes stick test when the pile's stick is pulled out; if the stick is warm it passes the test)
 - Demonstrated product and application
- **Permagarden**
 - **Double-dug beds**
 - **Raised or sunken beds**
 - **Amended soils**
 - **Mulching**
 - **Triangular spacing**
 - **Adequate spacing between plants**
 - **At least four species/plant types**
 - **At least two species/types that were not planted previously by the family**
 - **Companion planting**

Module 4: 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.