

Engaging with Academia and Research Institutions (ARIs) to support Family Farmers and Food System Transformation During and Post COVID-19 Pandemic in Asia



With technical assistance from the FAO Regional Office for Asia and the Pacific

Home gardens for resilient local food systems

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Siem Reap, Cambodia

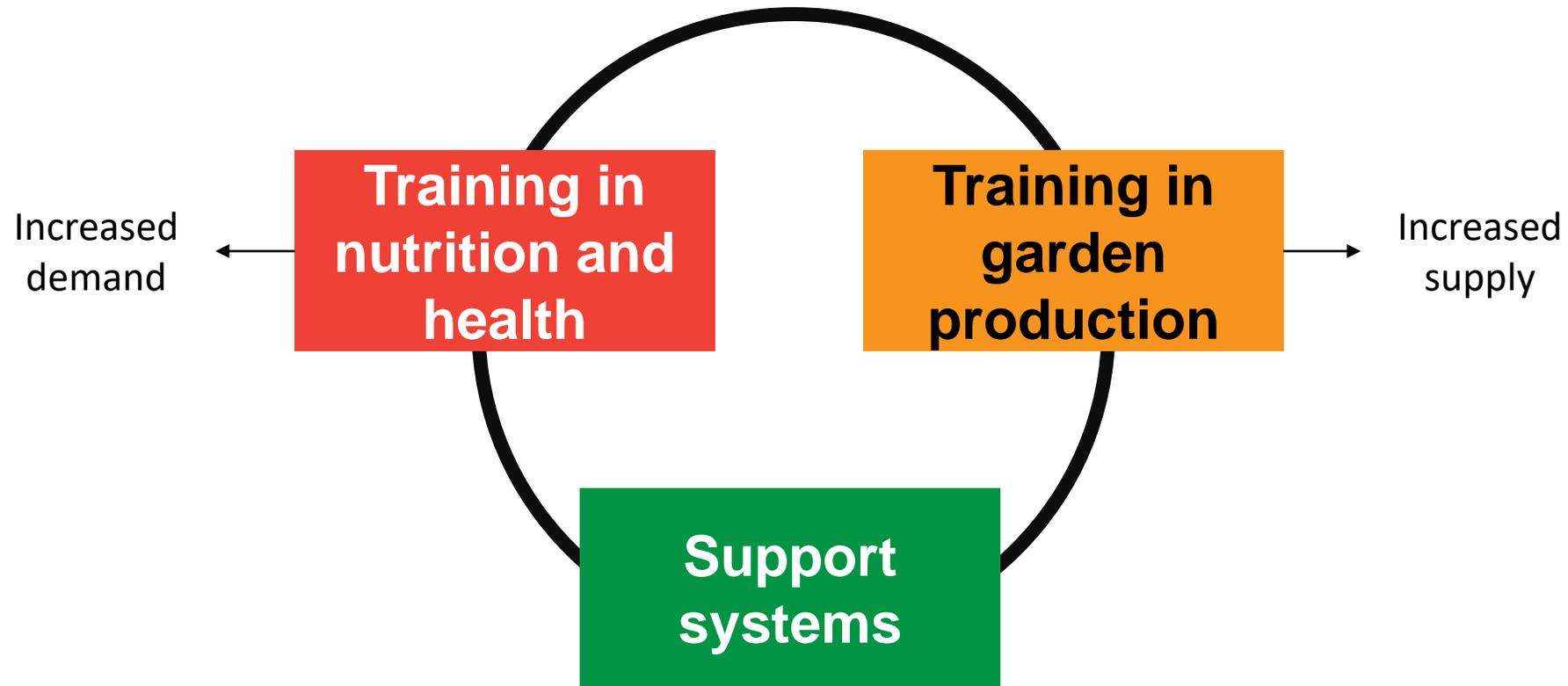


Sikasso, Mali



Sindhupalchok, Nepal

Home garden interventions



Objective

Our initiative aimed to develop high quality home garden training materials and share these publicly so that many organizations can incorporate these in their own intervention designs.



Approach

- Guides developed by Lauren Pincus with the help of Evan Clayburg, Elin Duby, Sheena Shah, Archie Jarman from Nov 2020 to Apr 2021
- Review of existing home garden materials of WorldVeg and other organizations
- Each draft was reviewed by WorldVeg staff for accuracy and feasibility
- Final drafts formatted with pictures representing diversity of people and landscapes served by WorldVeg

The home garden toolbox

- A set of 8 facilitator guides, 10 crop guides, training aids, instruction videos
- Tailored to an adult audience with low literacy skills
- Participatory learning methods
- Can be adapted to specific locations

<https://toolbox.avrdc.org/>

	No. of guides	No. of training aids	Total hours of training
Garden design and establishment	9	3	22.5
Healthy soils	2		5.5
Production planning	2	2	5
Composting	1		4
Seeds and seed saving	1		3
Pests and diseases	2	2	6.5
Water management	2		3.5
Healthy diets	1		2.5
Crop growing guides	10		
Training aids: Engaging Participants, Building Gardening Support Groups, Conducting a Cooking Demonstration	3		

MODULE 01 Garden Design and Establishment
FACILITATOR GUIDE 3

Establishing Your Garden



MODULE 02 Healthy Soils
FACILITATOR GUIDE 2

Building Healthy Soils



MODULE 03 Production Planning
FACILITATOR GUIDE 1

Planting Your Garden



MODULE 04 Compost Making
FACILITATOR GUIDE 1

Understanding and Making Compost



MODULE 05 Seeds and Saving Seeds
FACILITATOR GUIDE 1

Seed Saving for Home Gardeners



MODULE 06 Pests and Diseases
FACILITATOR GUIDE 1

Identifying Pests and Diseases



MODULE 07 Managing Water
FACILITATOR GUIDE 1

Water for Home Gardening



MODULE 08 Nutritious Eating
FACILITATOR GUIDE 1

Healthy Diets for a Healthy Life



MODULE 2 Healthy Soils

☰ QUICK DOWNLOAD (ALL MODULES)

DOWNLOAD FULL MODULE 2 📄

FACILITATOR GUIDES



Understanding and Identifying Healthy Soils

Gardeners will understand the importance of healthy, living soils and learn a series of simple steps to test a soil's health.

📄 DOWNLOAD GUIDE



Building Healthy Soils

Gardeners will be able to assess their landscape and climate and understand how to most efficiently grow food in this environment.

📄 DOWNLOAD GUIDE

Building Healthy Soils



OVERVIEW

LEARNING OBJECTIVE

Gardeners will understand how to improve and maintain soil health using simple techniques.

MATERIALS NEEDED

- Flipchart and markers
- 1 small bucket of finished compost
- Small bag of water-soluble inorganic fertilizer, like urea
- 2 cups or empty water bottles
- Water

DURATION



KEY CONCEPTS

- Soil health can be maintained or improved by consistently using multiple good soil management practices. Each practice on its own is helpful, but soils will be most protected when multiple practices are used together.
- Even severely degraded soils can be restored to good health by adding compost or well-rotted manure and keeping soils moist and covered at all times.
- Inorganic fertilizer contains nutrients that plants need but must be applied carefully in order not to harm the soil and its living organisms.

TRAINING AGENDA

Number	Topic	Activity	Duration
1	Introduction and warm-up	DISCUSSION	10 mins
2	Gardening practices that improve and maintain soil health	DISCUSSION	1 hour
3	How to restore degraded soils back to health	DISCUSSION	15 mins
4	Understanding inorganic fertilizers	DISCUSSION	45 mins
5	Closing discussion	DISCUSSION	10 mins

10 min

1. Introduction and warm-up

Welcome gardeners to the training. Do a brief introduction to today's topic and review the training agenda. You may want to outline the training agenda on your flipchart or board so gardeners can see it when they arrive.

Conduct a warm-up exercise or ice-breaker to make sure all gardeners feel welcome and are ready to fully participate. Suggested warm-up and ice-breaker activities can be found in the Facilitator's Guide: Encouraging Learning through Participant Engagement.

Participant Engagement Guide

1 hour

2. Gardening practices that help improve and maintain soil health

INTERACTIVE DISCUSSION

GOAL OF DISCUSSION: Gardeners will discuss practices that help improve and maintain soil health using locally available resources.

MATERIALS NEEDED: Flipchart and markers

1. On your flipchart, draw a grid like the one below. Going up the left side of the paper, write "What We Can Do" and then list various soil management practices. Across the top of the paper, write "The Result We Can Get" and list desirable soil characteristics. You may wish to do this before gardeners arrive.

What can we do?	The result we can get					
	Not-too-hot temperature	Earthy, sweet smell	Lots of pores and air pockets	Moist, but not wet	Abundant soil life	Deep topsoil
Apply mulch	X			X		X
Add compost and other organic matter		X	X	X	X	X
Use cover crops	X	X	X	X	X	X
Reduce compaction	X	X	X	X	X	X
Plant a diversity of crops					X	X

2. Ask gardeners to break into pairs or small groups to think about how each soil management practice will affect the soil. What outcomes can they expect from consistently using each practice?
3. Starting with "applying mulch," have each small group report their thinking about one soil management practice to the larger group. Fill in the grid on your flipchart with an "X" when the larger group agrees that the practice will help build the desired soil characteristic.
4. Have the small groups take turns presenting until each soil management practice has been covered.
5. Ask gardeners to describe any other soil management practices they have used that they find beneficial. List these practices below the other soil management practices and discuss with the group how they could contribute to healthier soils.

KEY MESSAGES

Soil health can be maintained or improved by consistently using multiple good soil management practices. Each practice on its own is helpful, but soils will be most protected when multiple practices are used together.

What can we do?	The result we can get					
	Not-too-hot temperature	Earthy, sweet smell	Lots of pores and air pockets	Moist, but not wet	Abundant soil life	Deep topsoil
Apply mulch 	X			X		X
Add compost and other organic matter 		X	X	X	X	X
Use cover crops 	X	X	X	X	X	X
Reduce compaction 	X	X	X	X	X	
Plant a diversity of crops 					X	X

Why do we mulch?

Mulch can be dried leaf litter, dried grasses, dried crop residues, or paper spread on the soil in between crops. Mulch forms a protective covering over the soil that reduces evaporation, so soils remain moist for longer, and regulate soil temperature. Mulches help control soil erosion by cushioning the impact of raindrops and slowing runoff. They suppress weeds by shading them out and will enrich soils as they decompose.

Why do we apply compost and other organic matter?

Compost and other forms of organic matter will return nutrients to the soil that otherwise will be lost. Organic matter is any plant material, such as crop residues, kitchen waste, leaf litter, or dried grasses. Manure and urine from plant-eating animals are also organic matter. Enriching the soil with organic matter will improve the soil's structure and its ability to hold water. Soils that contain a lot of organic matter will have an earthy, sweet smell. Organic matter also provides food and habitat for many forms of soil life. Thus, adding organic matter can improve soil life. Over time, topsoil that is enriched with organic matter will get deeper. Soils have an amazing ability to absorb organic matter; it is nearly impossible for a gardener to add too much organic matter to their soil!

Why do we use cover crops?

Cover crops are often leguminous plants that pull nitrogen, an important plant nutrient, out of the air. When parts of these plants die, this nitrogen is added to the soil. Cover crops keep beds "covered" because they are planted in between cropping seasons when garden beds are normally bare. This reduces erosion and regulates soil temperature. The roots of cover crops will slowly add nutrients to soil, create pores for water infiltration, and provide food for soil life as they die. This can create a more porous soil texture and a deeper topsoil over time.

Why do we reduce soil compaction?

Soils can become compacted when animals and humans walk on them. When soils are compacted, it becomes harder for plant roots to grow and for water to penetrate the soil surface. A sign of soil compaction is when water is pooling on top of the soil instead of infiltrating. A compacted soil is hard to dig and can be either very wet or dry. When we reduce compaction by not walking on our beds, we preserve the soil pores created by roots and insects. These pores allow plants to easily access water and air. It also reduces stress on plant roots so that they can easily grow.

Why do we plant a diversity of crops?

Each vegetable crop uses soil nutrients and soil space differently. Some plants use more of one particular nutrient than others and are considered "heavy feeders," while others are "light feeders." The rooting system of each crop is also different. Some vegetable crops have fibrous root systems that form a web of small roots that use nutrients from the upper portion of the soil, while others have a taproot system that pulls nutrients from deep within the soil profile.

When gardeners grow a diverse set of plants, they can use more of the nutrients already within soil and reduce competition for soil space between their crops. This leads to more productivity, but it can also enrich the soil. When plant roots grow, they create pores of different sizes and at different depths. When plant roots die, they add organic matter to the soil and encourage a diversity of soil life to multiply within the soil. This can create a more porous soil texture and a deeper topsoil over time.

INTERSPERSING ROOT TYPES

Alternating a row of fibrous roots followed by a row of taproots or bulbs (repeated across the bed) can use different zones within the soil.



15 min

3. How to restore degraded soils back to health

INTERACTIVE DISCUSSION

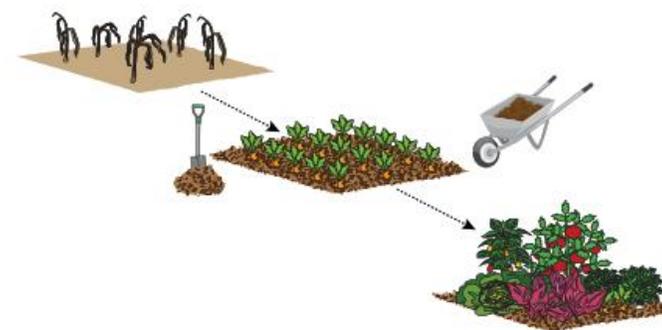
GOAL OF DISCUSSION: Gardeners will discuss how these soil improvement methods can be used over the long term on degraded soils if needed.

MATERIALS NEEDED: Flipchart and markers

1. Ask gardeners to share their opinions: have they ever seen soil health improve over time or have they only seen it get worse? Ask gardeners to raise their hands to show how many think that poor soils only become worse over time. How many think that poor soils can improve over time? Why?
2. Tell gardeners that even poor soils can improve if they are taken care of. A household that lives on a plot of land that has very poor soil might want to invest time and energy into improving the health of the soil in a spot where they intend to garden long term.
3. Discuss the steps of "nurturing" poor soils back to good health. Why is it important to carefully pick a small plot of land to improve?

KEY MESSAGES

Even severely degraded soils can be restored to good health by adding lots of organic matter in the form of compost or well-rotted manure and keeping soils covered and moist. It will take many years of consistent effort to rebuild the health of degraded soils, but it might be very beneficial for gardeners who do not have easy access to good soil. Gardeners should start by picking a small plot of land that will be their garden bed for many years to come. Starting small is important! Multiple wheelbarrows of compost or manure can be used in a 1m x 1m plot each year. The more compost or well-rotted manure they can apply to the same plot of land, the better. They may wish to apply compost several times a year. The soil surface should be covered all year with either crops, mulch, or cover crops and extra water applied periodically to help decomposers. Gardeners will see yield benefits during the first season. After several years of effort, they will be able to see a clear difference in the soil's color and structure. This can be a very productive place to have a continuous supply of vegetables for household consumption.



Future plans

Guides currently in English, but some are being translated into French

[Home garden videos](#)

We are testing the guides in ongoing projects

We encourage other organizations to use the toolbox

Conclusion

- The importance of home gardens for fruit and vegetable supplies has increased during the COVID-19 pandemic
- Home gardens contribute to food system resilience but also have many other benefits, including agroecology
- The promotion of home gardening requires a carefully designed approach
- The WorldVeg Home Garden Toolbox can benefit organizations operating in this area