



Basic Vegetable Gardening

Lesson 4: Starting Your Plants from Seeds

Lesson Summary: In this activity, members will discuss the advantages of starting seeds in small containers or a nursery and transplanting them to the garden. They will learn the important steps to take when planting seeds and how to care for their seeds. Members will plant seeds during this lesson.

Note that it is not necessary to transplant seeds, but if your garden site gets frequent, harsh rains or scorching sun, starting with transplants allows the seeds to grow in a protected environment until about 4-5 weeks old.

Intended Learning Outcomes:

Members list several advantages of starting seeds in a nursery or indoors.
Members understand the important steps in planting seeds.
Members plant seeds and care for them.

Leader/Trainer/Advisor Preparation:

During this lesson, members will plant seeds into small containers. If you will be using ordinary topsoil from your garden, it needs to be sterilized a few days before planting by baking it in the sun. This will kill some diseases in the soil. Cover the soil with a piece of clear or black plastic so that the soil can get very hot from the sun. Let it sit under the sun for several days. This will help to sterilize it before the members plant the seeds. If members will be planting beans and peas, soak the seeds in warm water about one hour before planting.

Length: 60 minutes

Materials:

Chalkboard or large paper for the leader
A variety of seeds to plant
Small containers to plant seeds in (metal cans, short boxes, pails, etc.)
Soil
Compost or animal dung
Water

Background: This lesson can be done independently from the other lessons.

However, it should be done a few weeks before planting the garden.

Before beginning this lesson, seeds for a variety of plants need to be gathered. This lesson is part of Step 3 *Planting the Garden*.

The complete list of steps are:

1. Choosing a site: Where to put your garden
2. Preparing a site: Choose your garden design
3. Planting the garden



4. Tending the garden
5. Harvesting, preparing and eating the food

Lesson Steps

1. (2 minutes) – Introduction

Review what was done during the last lesson by asking a member to report to the whole group. If you finished Lesson 3 and did seed germination tests, members should report about the tests and that they began to work up the soil.

2. (10 minutes) – Members discuss the results of the germination experiment

Question to investigate: How do the results of the germination rate test affect our plan for planting?

2.1 (5 minutes) 5-7 days after starting the germination experiment, members should have checked their germination rates by counting how many seeds sprouted and dividing that number by the total number of seeds planted. Since each small group tested a different plant, have each group report their germination rate to the whole group.

The members should have recorded this chart in their notes during the previous lesson. They can now fill it in with the data (test results) from each group. Draw the chart on the board if necessary.

Type of Plant	# Planted	# Germinated	Germination Rate
<i>Example: Corn</i>	20	15	75%

2.2 (5 minutes) Ask a few general questions to start members thinking about how many seeds they are going to plant.

- How did the germination rates of the various plants compare to each other?
- Are there any generalizations that can be made from the numbers?
For example: What if all the squash and pumpkins had very low germination rates? or What if all the seeds that came from a particular source had excellent germination rates?
- How did the germination rate of your plant compare to what you predicted would happen?
- How will you compensate for a low germination rate?
Answer: Plant more seeds than the instructions say or is traditional.
- If the germination rate is very low, is there another reason?
Answer: The seeds may be too old.

3. (10 minutes) – Discuss the advantages of starting seeds in small containers or in a nursery.

Question to investigate: Is it beneficial to start our seeds in small containers or nurseries and then transplant them to the garden?

3.1 (5 minutes) As a whole group, challenge members to brainstorm reasons that planting seeds in small pots or in a sheltered nursery, letting them grow for several weeks, and then transplanting them into the garden would be an advantage. Write their ideas on the chalkboard.

Expected results: Members may brainstorm some of these reasons: Plants would be more protected from pests that eat them, including insects. Plants would be more protected from the weather, including harsh rain or sun. It would be an advantage to plant the seeds in small containers, because then they would only transplant the ones that were growing well, if space is limited.

3.2 (5 minutes) After you have discussed the advantages of starting seeds in small containers, decide as a group if that is something that the group will do, or if they will plant the seeds directly into the garden. If they will plant them in small containers, decide where you will put the plants for the first few weeks while they germinate and start to grow.

The planted seeds can be kept indoors, with adequate sunlight, or they could be planted in a place outdoors that has a covering, such as branches with leaves or palm fronds. You may even want to make a small shelter out of poles and shade netting and/or leaves. Note that some light should penetrate through the shading roof; do not make the roof too dense. The shelter does not need to be very big for an average school garden. One meter wide by three meters long should provide plenty of space for the transplants.



4. (30 minutes) Plant seeds in nursery

4.1 (5 minutes) With the whole group, look at the list of plants you have decided to plant. Some plants such as carrots, radishes, and spinach do best when directly seeded into the garden because they do not transplant well. If you are planting melons, cucumbers and squash, plant them in large containers so that they can be more easily transplanted. Or just plant them directly into the garden without transplanting.

Using the chart below, write a list of plants you will start in the nursery on the board. Have members record this list in their notebooks.

Vegetables for Transplanting from the Nursery vs. Direct Seeding			
Best for transplanting seedlings		Best for direct seeding	
Vegetable	Seedlings ready for transplant	Vegetable	Seedlings ready for full sun
cabbage	3-5 weeks	amaranth	1-2 weeks
eggplant	4-6 weeks	beet	immediately
kale	3-5 weeks	carrot	1-2 weeks
okra	4-6 weeks	green bean	immediately
onion	3-6 weeks	pumpkin	2-3 weeks
pepper	5-6 weeks	spinach	3-6 weeks
tomato	4-6 weeks	squash	2-3 weeks

4.2 (5 minutes) Instruct members how to plant their seeds by showing them the picture on the next page.

Steps for Starting Transplants

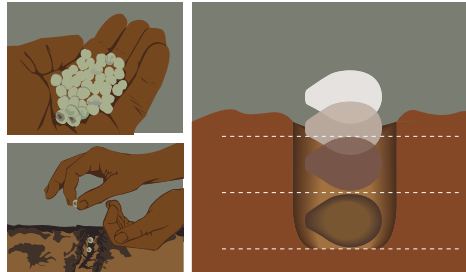
1. Mix half sterilized garden soil with half good compost or well-rotted dung.
2. Make holes in the bottom of the containers for water drainage.
3. Fill the container with the soil/compost mixture until it overflows. Then pat it down gently.
4. Sow the number of seeds as appropriate for the size of container. Most seeds should be planted in the soil twice the depth of the seed size. Example – plant a 1 cm seed 2 cm deep.
5. Cover the seeds with a little bit of soil. Do not plant the seeds too deep or they will not be able to germinate. Press lightly. Each seed should have contact with soil. This will not be a problem if your soil is fine.

6. Water gently with a watering can or spray lightly over a palm leaf. Take care not to water with a strong stream or you may erode the soil and wash the seeds out.

Other tips:

Some seeds may be soaked in water to improve germination; for example, soak beans and peas one hour in warm water before planting.

Planting Depth



4.3 (20 minutes) Assign a specific plant to each small group of members and give them time to plant their seeds. As they plant the seeds, walk around and take special note of the planting depth of the seeds. Some people tend to plant them too deep. The plants must first be clearly marked or labeled, then can be set aside in the nursery or in the designated place. Allow time to clean up.

5. (8 minutes) - Summary and Debrief

5.1 (3 minute) After everyone is finished planting their seeds, labeling them, storing them, and cleaning up their area, wrap-up the lesson by gathering everyone together again. It is very important to set up a watering schedule. Decide who will check on the plants each day and water them when necessary. Keeping the soil moist is very important at this stage of development.

5.2 (4 minutes) Ask the members the following questions:

- What did we do today?
Answer: Today we discussed the results of the germination tests, decided on what plants to transplant, and started seeds.
- Why is it necessary to sterilize soil before planting in a nursery?
Answer: The heat will kill some pathogens (viruses or bacteria) that would harm the plants.
- What are some things we need to remember when planting?
Answer: Planting depth should be no more than twice the depth of the seed. Water well when finished. Consider germination rate when deciding how many seeds to plant.
- When you plant a garden at home, would you plant the same plants in transplanting containers or a nursery? Why? Why not?

6. (1 minute) - Close



Tell members that they will be transplanting the seedlings at the next gathering. Until then, they must take good care of their seeds and water them when necessary, which is probably every day or every other day.

