Basic Vegetable Gardening
Lesson 10: Making and Using Compost

Lesson Summary: Members will learn about the benefits of composting and will set up a compost heap or pit.

Intended Learning Outcomes:

Members will identify the benefits of composting.
Members will understand the important steps of composting.
Members will start a composting heap or pit.

Length: 60 minutes

Materials:

Organic materials for composting
Tools to cut composting materials – machetes, rakes or hoes

Background: Composting is an important part of gardening. You can begin your garden with compost and add it through the growing process.

Lesson Steps:

1. **(5 minutes) – Introduction**
   Take some time to review the last lesson.

2. **(10 minutes) – Learning about the benefits of composting**

   Question to investigate: How does composting benefit the garden?

   2.1 (10 minutes) Ask the group what they know about compost. Have members share their ideas or experiences.

   What is compost?

   Compost is created by combining organic materials to make a natural fertilizer. It can make a big difference in how well the garden produces.

   Compost is made from organic materials, is easy to make and costs nothing. It can be made with leaves, plant stalks, grasses, fruits and vegetables and animal dung. When materials decay, they create a nutrient-rich compost. Basically, a compost heap is a large pile of decomposing fruit and vegetable scraps, wood, and animal dung. Some people make compost in a pit. When compost is ready, it is put in the garden to fertilize plants.

   Adding nutrient-rich compost to a garden will reintroduce required nutrients to the soil.

2.2 Write the equation for compost on the board or large sheet of paper. Discuss each point. Have members copy it into their diaries or notebooks.
It is important that each of the essential ingredients be present in compost:

Air + water + carbon + nitrogen + micro-organisms = compost

Microorganisms such as fungi and bacteria make the materials decompose. After the microbes begin the decomposition, larger organisms such as worms and insects also help to break down the organic materials. Some people add mature compost to a new heap to introduce micro-organisms.

From the organic compost materials, the microbes use the carbon (C) for food and the nitrogen (N) to build proteins. Without both types of materials (such as dung that is high in nitrogen and dried grass that is high in carbon), the microbes cannot do their job and the compost process will be slow.

3. **(15 minutes) Discuss compost materials**

3.1 (5 min.) Discuss what can be put in compost.
Even though anything that was once alive can be composted, you should not put everything in your pile.

Not good for compost:

- Protein such as meat scraps and bones. – They will attract unwanted animals.
- Cat, dog, or human dung. – It may contain disease
- Diseased parts of the tomato plant family.
- Large materials like sticks and big chunks of wood. – They take too long to decompose. Use a machete to chop into smaller pieces before adding to the pile.

Good for compost:

- Palm leaves and dead logs.
- Small materials like sawdust or chopped leaves. – They have more surface area which means the microbes have more area available on which they can do their work.
- Green material high in nitrogen. – Green materials come from things that are green or relatively fresh.
- Brown materials high in carbon. – Brown materials come from things that are brown or drying up.
- Animal dung from cattle, chicken, goats.
- Kitchen wastes like banana peels, coffee or tea grounds, eggshells, fruit waste.
- Green leaves and weeds.
- Bean pods, corn stalks, dried grasses, dried leaves, millet stalks.

Good compost includes both green and brown materials. Some examples:

Green Materials	Brown Materials
High in Nitrogen Come from things that are **green or relatively fresh.**	High in Carbon Come from things that are **brown or drying up.**
animal dung from cattle, chickens, goats **(**not ok: dung from cats or dogs) kitchen waste banana peel coffee and tea grounds egg shells fruit waste green leaves green weeds banana leaves-fresh	banana leaves-old banana stalks-old bean pods corn stalks dried grasses dried leaves millet stalks old newspapers

Have members copy this chart into their notebooks. Have them list other things they can think of.

Ask: It is common to see things like old pens, soft drink tops, and plastic packaging in compost pits. Are these materials organic? If not, why are they in the compost?
Answer: Sometimes we are lazy. Sometimes people do not know that a pit is for compost, not rubbish. You can help by making a sign that says what the pit or heap is for and what others can contribute to the compost. This can help keep out rubbish.

3.2 (5 minutes) Discuss the value of moisture in compost.
Good compost will be made when the compost materials are damp, not wet. If it is too wet, the decomposing material will have a foul odor and will be cool in the center. If it is too dry, the material will not break down quickly into compost. During the rainy season, cover the materials with a layer of grasses or long leaves to shed the extra rain. In the dry season, covering with leaves will help keep the moisture at the best level. After several weeks, turn and mix the compost to accomplish two important steps. Turning will start the heating or decomposition process again and will provide you with an opportunity to check the moisture level. Add dry leaves if the compost is too wet. Sprinkle it with water if it is too dry.

3.3 (2 minutes) Discuss wood ash
Sprinkle a little clean wood ash on the layers of materials when starting compost. Clean means no plastics have been burned in the ashes. Ash neutralizes the natural acidity that builds up during the composting process. While adding ash is not absolutely necessary, doing so may make the compost evolve more quickly. A little calcium (often called "Cal") or limestone (often simply called "lime") can also be used in place of ash to neutralize the compost.

3.4 (3 minutes) Decide if you will have a compost pit or a compost heap for your garden.
Discuss with the members if you will heap the compost on top of the existing ground, or dig a pit to put the compost in. Either method is successful, so choose which one will work best for your group. Instructions for both are found below. Decide where to make compost.

4. **Discuss where and when to use compost.**
Compost can be used as both a soil and a fertilizer as it has lots of nutrients.

Compost is ideal for small gardens or container gardens. Use 100% compost for the soil.

Compost is an excellent fertilizer. When transplanting seedlings, work a lot of compost into the soil before planting. After harvesting a vegetable in a square meter garden, add compost to the square and plant a new vegetable.

5. **(25 minutes) Start a compost pile or pit near the garden**

Make a Compost Heap or Pile
1. Cover an area 2 meters x 2 meters square with a thick layer of brown/high carbon materials.
2. Add a layer of green/high nitrogen materials.
3. Sprinkle with wood ash, calcium, or limestone.
4. Add a few full shovels of finished compost or good garden soil.
5. Repeat the process until the pile is heaped high.
6. Water well and cover.
7. Turn the pile in a few weeks, adjust the moisture level and cover again.
8. Turn one more time.
9. After several more weeks the compost should be complete and ready to use. Finished compost should look like fine soil.

> Good gardens need a LOT of compost. You should be starting compost heaps or pits almost every week so that you have compost ready all the time for planting and fertilizing.

Make a Compost Pit
1. Choose a place at the edge of the garden to dig a compost pit.
2. Dig a pit 2 meters long x 2 meters wide and 1 meter deep.
3. You may build a shade structure to conserve moisture.
4. Mix two parts brown/high carbon materials to one part green/high nitrogen materials.
5. Let the mix rest for 1-2 weeks until it breaks down. Move it to another pit and begin again.
6. You may want to make several compost pits so that you have compost at different stages and ready for fertilizer when you need it. If so: Spread compost from Pit 3 on the garden. Move compost from Pit 2 to Pit 3. After 2 weeks, move compost from Pit 1 to Pit 2. Start new compost in Pit 1.

5. **(5 minutes) – Summary – Gather the members together and discuss today's activities.**
   Ask the members the following questions:
   - What did we do today?
   - Why is it important to use compost in the garden?
     Answer: It is an excellent fertilizer and provides necessary nutrients for the plants.
   - Do you think it would be important to spread compost around plants you are planting at home?
   - What can you do to help speed up the compost pile or pit?
     Answer: Add materials to the pile or pit. Encourage members to start saving materials from around the school area such as coffee and tea grounds, fruit and vegetable scraps, and plant debris. They can also start a compost heap at home.

6. **(1 minute) - Close**
   Encourage the members to keep track of the progress of their compost heaps or pits in their notebooks.

Compost as an Organic Fertilizer

- Make compost above ground in a heap or below ground in a pit.
- Start with a layer of brown materials (high in carbon), alternate with layers of rich, green materials (high in nitrogen).
- Chop all materials into smaller pieces.
- Add water in the dry season.
- Sprinkle in garden soil or mature compost as you make the pile.
- Cover the pile with banana or palm leaves to maintain moisture.
- Turn the pile once every two weeks until the compost is complete.
- Compost is ready when it does not heat or smell and when original materials are not recognizable.
- Add a handful of compost when transplanting vegetables.
- Compost supplies nitrogen, phosphorus and potassium in a 2-1-1 ratio.