

# Milk Jug Composting

---

## Standards of Learning

Science: 3.1, 3.6, 3.10, 4.1, 4.9

## Objective

Students will:

- Explore how organic material decomposes and becomes part of the soil.
- Create a compost jug in order to investigate decomposition.
- Understand how worms play an important role in nutrient rich soil.

## Materials

- Clear, plastic gallon milk jug
- 2 plastic plates, 1 with holes
- Gravel
- Bedding mixture: shredded paper, peat moss, grass clippings, leaves, dryer lint, etc.
- Water
- Red worms (can be purchased via Amazon)
- Chopped fruit and vegetable scraps
- Plastic garbage bag

## Background Knowledge

Soil is a vital natural resource as the majority of our food depends on it for growth and production. Natural soil is something that comes from rotting plants and other materials. Rotting plant materials make the soil rich in nutrients. This is a natural cycle called *decomposition*. Composting speeds up and intensifies decomposition.

Worms are very beneficial to healthy soil, in fact, they are often called the gardener's best friend. They act as nature's recyclers because they eat both living and dead plant material. When they digest this material it is passed back into the soil as nutrient rich "castings." Castings contain much nitrogen, potassium, and phosphorus that are nutrients that are essential to plant growth. Each day an earthworm produces its weight in castings. Further, as worms burrow into the soil, they aerate the soil which loosens it and allows plant roots to deepen in the soil.

## Procedure

1. Cut the top from a clean, clear plastic milk jug.
2. Poke holes in the bottom of the jug for drainage. Poke small holes on the sides for air flow.
3. Place a plastic plate or dish underneath to collect excess drainage.
4. Add 1 inch of gravel to the bottom of the jug. Poke holes in a plastic plate and place over the gravel.
5. Create a simple bedding mixture with shredded, moist newspaper and lay on top.
6. Add 3-4 worms. Red worms will eat the garbage.
7. Sprinkle some fruit and vegetable scraps on top of the worms. You may choose to put the scraps in a food processor or blender first to make them easier for the worms to eat.
8. Cover with more bedding materials.
9. Spritz with water from a spray bottle, being careful not to soak the contents.
10. Place a plastic garbage bag on the top so to control the moisture level and provide darkness. You may remove it daily to gently stir and record observations. Add water and food as needed.



For more resources to connect children to agriculture visit [AgInTheClass.org](http://AgInTheClass.org).

**Extension**

Have students investigate the importance of moisture for composting with the Compost Lab below.

**Compost Lab**

1. Start with the 2 short soda bottles (4 inches) that have their tops already cut off. Fill each of them with a mixture of grass clippings, leaves, vegetable scraps, and shredded newspapers. Fill until it is 1 inch from the top. Spray one bottle with water until it's very damp. Leave the other bottle dry.
2. Take a tall soda bottle (9 inches) and turn it upside down over the damp bottle. Slip the tapered end of the taller bottle inside the shorter one and push them together, making sure the seal is snug. Repeat the same thing to the dry bottle. Make sure both soda bottle cylinders fit tightly. If the compost bottle with the holes (see below) begins to dry out, take it apart and spray more water on it.
3. On the WET composting bottle, use a thumbtack to gently punch 15 small holes into the top cylinder of the bottle. Do NOT punch any holes in the other compost bottle. Use tape to seal the connection between the 2 bottles.
4. What are the environmental differences between your two compost bottles? Is that going to impact what will happen in the compost bottles? Explain.

---

---

---

5. Predict what you will see in each bottle over time.

---

---

---

6. Over the next 7 days, you will record your observations on the chart. At the end of 7 days, which compost bottle promoted faster decomposition? Explain.

---

---

---



For more resources to connect children to agriculture visit [AgInTheClass.org](http://AgInTheClass.org).

<b>Date &amp; Time</b>	<b>Wet Compost Bottle</b>	<b>Dry Compost Bottle</b>	<b>Air Temperature</b>
1			
2			
3			
4			
5			
6			
7			



For more resources to connect children to agriculture visit [AgInTheClass.org](http://AgInTheClass.org).