

Pop Bottle Composter



Learning Objectives

Students will:

- Simulate the decomposition process using a pop bottle and organic material.
- Observe the simulation over time and make statements about the decomposition process.



Method

Students create a miniature composter using a plastic pop bottle and observe the decomposition process in action.



Materials

- 2-litre pop bottle with lid
- Scissors
- Notebooks
- Writing supplies
- Spray bottle
- Water
- Soil
- Organic materials: brown (dried leaves, sawdust, paper, etc.) and green (fruit and vegetable scraps, grass clippings, eggshells, etc.)

Background

Composting is nature's way of recycling organic matter (things that were once living) into a nutrient rich soil amendment. Microorganisms such as bacteria and invertebrates such as worms eat our food scraps and yard waste and excrete it out as an odourless, earthy fertilizer for plants.

Composting has many benefits.

- It returns nutrients to the soil in a slow and safe manner, allowing plants to absorb nutrients without burning their roots or forcing performance (as happens with chemical fertilizers). As a result, people, wildlife and the environment all benefit from the prevention of runoff of unabsorbed nutrients that pollute our groundwater, lakes and rivers.
- It improves the structure of the soil, loosening heavy clay and binding sand. It also helps with water retention, drainage and aeration.
- It diverts about 30 percent of the garbage sent to landfills. This helps our landfills to last longer, saving taxpayer money and preserving habitat for wildlife. Keeping organic matter out of landfills also results in less toxic leachate being produced by our garbage.

For additional resources visit:

CanadianWildlifeFederation.ca/Education

In Advance

- Collect your soil from an outdoor space. Do not use potting soil, as it may contain chemicals.
- Collect a mix of brown and green organic materials. Avoid using citrus or onion skins as they can delay the composting process.
- Fill your spray bottles with water. Avoid using treated tap water.

Activity

1. Prepare your pop bottle:
 - Rinse it and remove the label.
 - Use the scissors to cut off the top of the bottle, just below the neck.
 - Cut edges of the bottle may be sharp, so handle with care.
 - Use the scissors to poke 15-20 tiny holes in the sides of the bottle to help air reach the contents.
2. Add materials to the bottom of the pop bottle, as follows:
 - First, a 1-inch layer of the soil.
 - Next, a layer of brown material.
 - Then, a layer of green material.
3. Repeat the pattern, creating several layers of each material, until the bottle is almost full.
4. Using the spray bottle, mist the materials in your pop bottle until they are damp all the way through.
5. Tape the two parts of your pop bottle back together to keep the moisture in.
6. Place the bottle in a sunny spot.
7. Check back once a week and record any changes to the contents by writing down your observations in a notebook, taking photos, or drawing pictures.
 - In 3-6 weeks you should see a big change in the contents of the bottle.
 - Over time if your compost starts to look dry, mist it with additional water.

Discussion

- What changes do you see happening over time?
 - Can you still recognize any of the materials?
 - Has the level of the materials gone down?
 - Has the colour changed?

Extensions

- When you've finished the activity, use the compost you created to fertilize plants in your home or school garden!

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