

Composting




Objectives

- ◆ Students will compare and contrast: “browns” and “greens”.
- ◆ Students will discover the importance of air, water, organic matter and “nature’s helpers” in composting.
- ◆ Students will construct a compost column.



Standards

- ◆ E.12.C.4 Students know processes of obtaining, using, and recycling of renewable and nonrenewable sources. E/S
 - ◆ E.12.C.5 Students know soil, derived from weathered rocks and decomposed organic material, is found in layers. E/S
 - ◆ N.12.A.5 Students know models and modeling can be used to identify and predict cause-effect relationships.
 - ◆ N.12.B Students understand the impacts of science and technology in terms of cost and benefits to society.
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Vocabulary

- ◆ **Organic Matter:** plants or animals that are alive or were once alive. They are central to the composting process. It is the food in the process.
- ◆ **Browns:** browns are items that contain large amounts of carbon. These are woody type matter including dried leaves, dead plants, and paper.
- ◆ **Greens:** greens are organic matter that contain large amounts of nitrogen. They are generally items that are freshly cut. They are also most of the food scraps that you would throw away from your kitchen (fruits and vegetables).
- ◆ **Nature's Helpers:** nature's helpers are microorganisms, worms, and insects. They all help break down the organic matter in the compost pile. Microorganisms include bacteria, fungus, and enzymes.

Vocabulary Continued

- ◆ **Compost**: the result of the process of decomposition of organic material. It is generally used for fertilizer or soil conditioning.
- ◆ **Air**: it is important to the decomposition process. Decomposition happens when microorganisms break down the organic matter. In order for microorganisms to survive, they need to have air.

Vocabulary Continued

- ◆ **Lack of air is one reason that items do not fully decompose in a landfill.**
- ◆ **Water:** Microorganisms also need water to survive. Water is also important because other organisms like worms and insects are comfortable in moist environments. These other organisms are important in the decomposition process.

Constructing Your Compost Column

- ◆ Pour kitchen waste, leaves, paper, pencil shavings, and compost starter into the mixing bowl.
- ◆ Mix with your hands or spoon.



Lesson: Constructing Your Compost Column

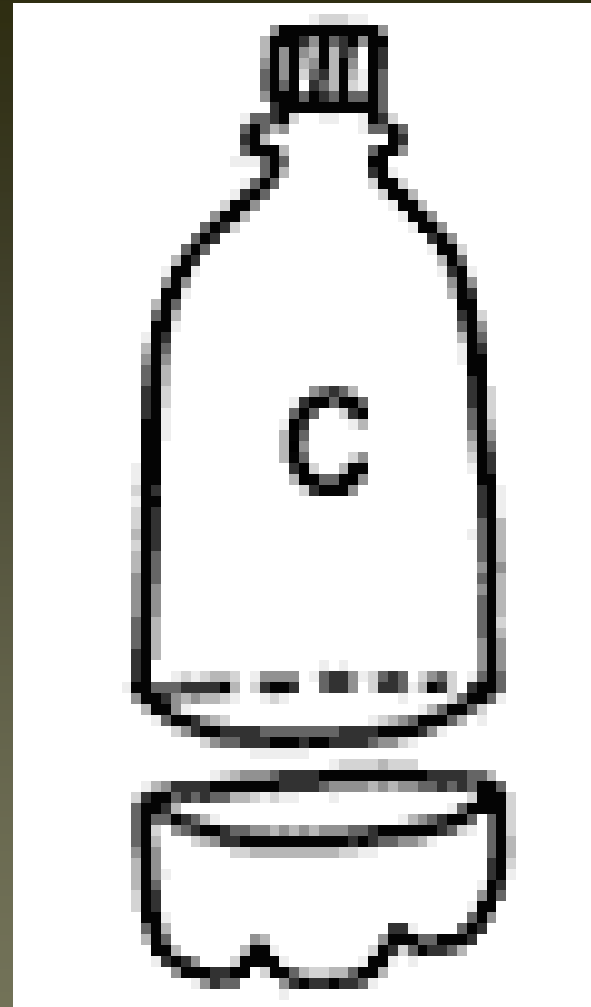
- ◆ Cut the top off of bottle #1, 2-3 cm below shoulder, so that the cylinder has straight sides. Label the bottle pieces throughout the lesson as shown in pictures.



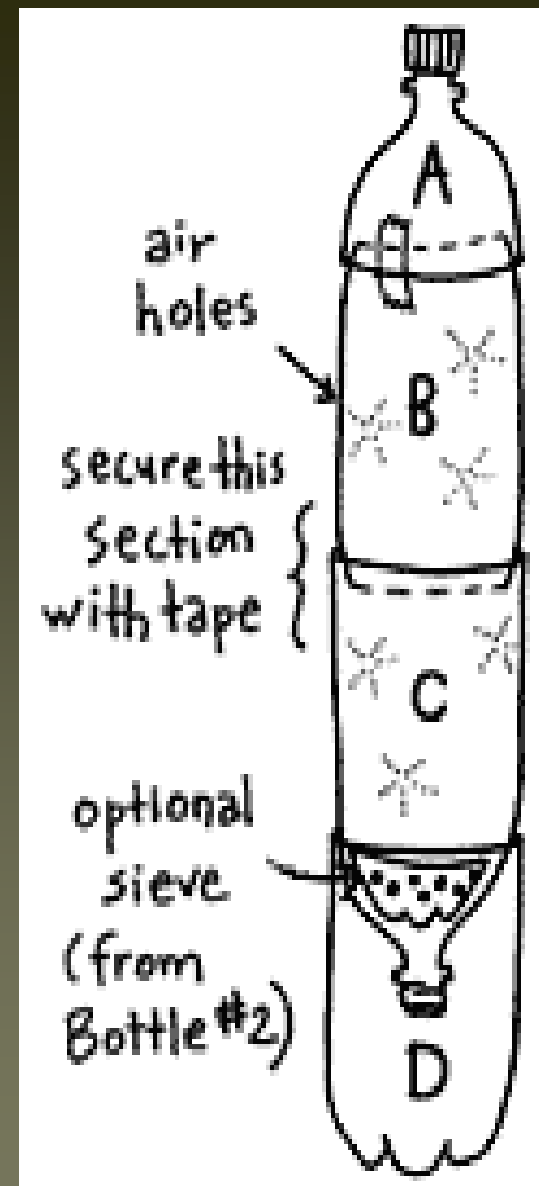
- ◆ Cut the top off of Bottle #2, 2-3 cm above shoulder. Cut bottom off 2-3 cm below hip, so the resulting cylinder has two tapered ends. Poke holes in bottom piece (not labeled) and label "sieve".



- ◆ Cut bottom off Bottle #3, 1-2 cm above hip, so cylinder has a straight end.

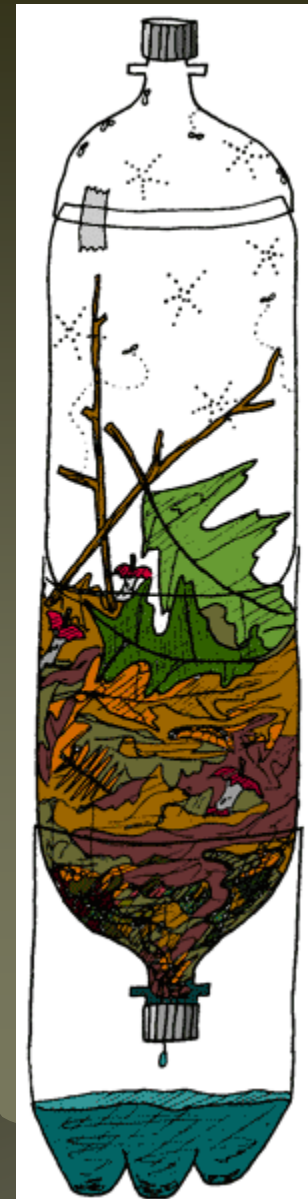


- ◆ Invert "C" and stack into base "D". Insert sieve into bottom of "C". Stack "B" and tape middle seam securely. Poke air holes. Add top "A" with a piece of tape for a hinge to the bottle column. Poke air holes in column and cap.



Construct Your Compost Column

- ◆ Place 1 cup of soil in bottle through hinge top "A", followed by bowl mixture of waste.
- ◆ Add 1 cup of soil on top to act as a cover layer.
- ◆ Add just enough water to keep soil moist. Allow a few drops to drain to the bottom of the column.
- ◆ Remember: air, organic matter, moisture, and nature's helpers are all necessary components in the composting process.



Questions to Answer

- ◆ Why is air important in composting?
- ◆ Why is water important in composting?
- ◆ Why is organic matter important in composting?
- ◆ Green material contains a lot of nitrogen. Name some items that would be considered greens.

Questions to Answer

- ◆ Brown material contains a lot of carbon. Name some items that would be considered browns.
 - ◆ Nature's helpers help with the decomposition process. Name some items that would be considered nature's helpers.
 - ◆ Compare and contrast browns and greens.
 - ◆ What costs and/or benefits could composting have on society?
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