COMPOSTING Teaching Tips

LEARNING OBJECTIVES

Youth will be able to:

* Define composting.
* Describe what compost organisms need to grow and multiply.
* Explain how to build and care for a compost pile.

HOW TO USE THE COMPOSTING SCIENCE PAGE

Ask youth what happens to their household food scraps, yard trimmings, and fallen leaves. Explain that these organic materials make up 20-40% of the total wastes that go to landfills and incinerators in the U.S. Yet these valuable resources could be composted to produce a soil amendment that can greatly improve garden soil.

Show youth various materials, some of which can be composted (for example, leaves, newspaper, and kitchen scraps) and others (for example, metal and plastics) which cannot decompose. Have the youth separate the materials into two piles, one with items that will decay, and another with items that will not decompose.

Show youth some finished compost. Let them feel and smell the compost. Ask: How did kitchen scraps and other compost materials become this rich, dark brown, sweet-smelling compost? (Answer: Microbes and physical processes (e.g., heat) broke down the materials into compost.)

Pick up a handful of compost, and tell youth that you are holding more microbes than there are people living on the earth. Although these microbes cannot be seen, evidence of their growth can be observed. If all of their needs are met, microbes grow and multiply very quickly, and turn vegetable scraps and yard wastes into compost. Tell youth that the Science Page contains information on what compost organisms need in order to produce compost. Emphasize that the more ideal the conditions are for microbes in a compost pile, the faster the decay process. A compost pile can take from several days to several months to finish composting. Turning the pile will help ensure that all parts of the pile have enough air and moisture, which will speed up the decay process.

Explain that brown materials are usually much drier than the food scraps and other green materials in a compost pile. So they help to balance the moisture in a compost pile as well as provide carbon-rich food for microbes. The browns are also usually coarser than the greens, so they create a porous structure that allows air into the pile, and excess water to escape. Warn youth not to include meat, oily materials, dairy products, or bones in the green layers. They may attract pests to the compost pile.

A comprehensive guide for high school students interested in composting research projects is: Trautmann, N.M. and Krasny, M.E. (1998). Composting in the Classroom Scientific Inquiry for High School Students. Kendall/ Hunt Publishing Company. Dubuque, Iowa. (ISBN: 1 577 53038 1)

A useful publication for upper elementary and middle school students is: Bonhotal, J.F. and Krasny, M.E. (1994) Composting: Wastes to Resources. Cornell University Cornell Cooperative Extension. 2nd ed. (ISBN: 0 787 24433 3)

CROSSWORD PUZZLE

Answers: Across: 2. browns; 4. compost; 6. heat; 7. three. Down: 1. bacteria; 3. water; 5. greens.

TRY THIS

Ask youth to keep a pail or other container in their kitchen for collecting food scraps. Line the container with newspaper to make it easier to empty and to clean. Ask: What items can you collect in your compost bucket? (Answer: Vegetable or fruit scraps, coffee grounds, tea bags, and crushed egg shells.) Ask: What items should not be put in the compost bucket? (Answer: meat, fat, dairy products, bones, or raw eggs.) Explain that cutting up the food scraps into smaller pieces will make them rot faster.

Discuss where you can find local sources of browns, such as straw, dried leaves, sawdust, or newspaper. Remind youth that they need to have three times as many browns as greens. Ask everyone to collect and bring in greens and browns to add to the compost pile.

Emphasize the importance of size of the compost pile. Ask: What would happen if the compost pile were smaller than one cubic meter? (Answer: It would lose heat, so the composting process would be slowed down.) Talk about the importance of moisture and air in the pile. Ask: How can we make sure that the compost organisms have enough air and moisture? (Answer: Make sure the pile stays as moist as a damp sponge. Turn it at least once a week so that all parts of the pile get enough moisture and air.)

Schedule times for youth to turn the pile once a week. Once the compost is finished, youth may wish to use it in a garden, or for potted plants.

SPOTLIGHT ON RESEARCH

The information for this Spotlight is from: Rangarajan, A., Tuttle McGrath, M., and Blomgren, T. "Evaluation of Two Commercially Available Composts for Managing Phytophthora Fruit Rot of Pumpkin." New York State IPM Program, Cornell University, Ithaca, NY. 2001. <www.hort.cornell.edu/extension/commercial/vegetables/ online/2001veg/pdfs/text/IPMfinalreportPumpkins.pdf>

Garden Mosaics is funded by the National Science Foundation Informal Science Education program, and by the College of Agriculture and Life Sciences at Cornell University.