

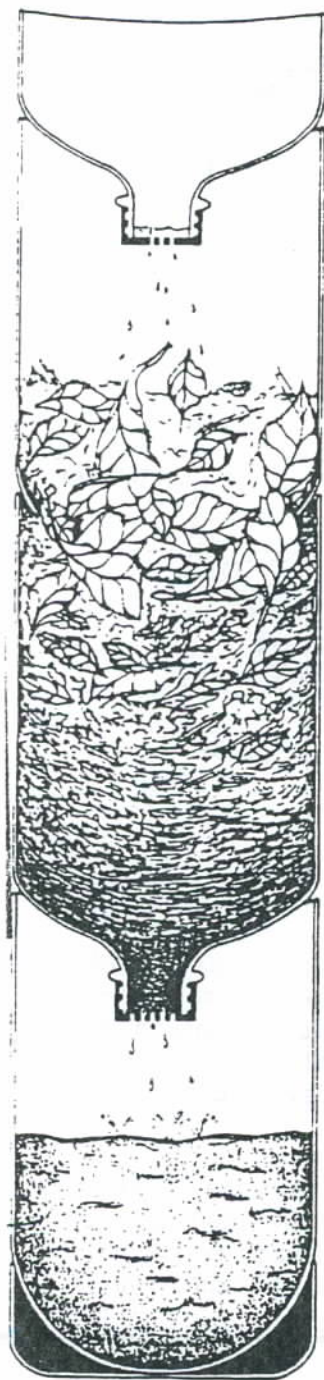


# Compost Columns

*Where do things go when they die?  
Explore the process of decomposition.*

Composting is based on the biological process of decomposition. What turns plants and animals into compost? Microscopic bacteria and fungi, which feed on dead tissue, are the chief agents.

What affects the composting process? The amount of moisture and air, temperature, light, sources of bacteria and fungi, and the nature of the decomposing material are all critical. The presence or absence of air (oxygen) is one of the most important factors in composting. The practice of composting allows air and moisture to speed the natural process of biodegradation. Making a compost column lets you see and experiment with this process, and witness nature's world of recycling.



## Materials Needed:

- Three 2-liter plastic beverage bottles
- Hot tap water, knife or razor blade, scissors, marking pen, sharp needles for poking holes, clear tape, netting or mesh fabric, rubber bands.
- Organic materials for composting, such as kitchen scraps, leaves, newspapers, animal manure, and grass clippings.

## Procedure:

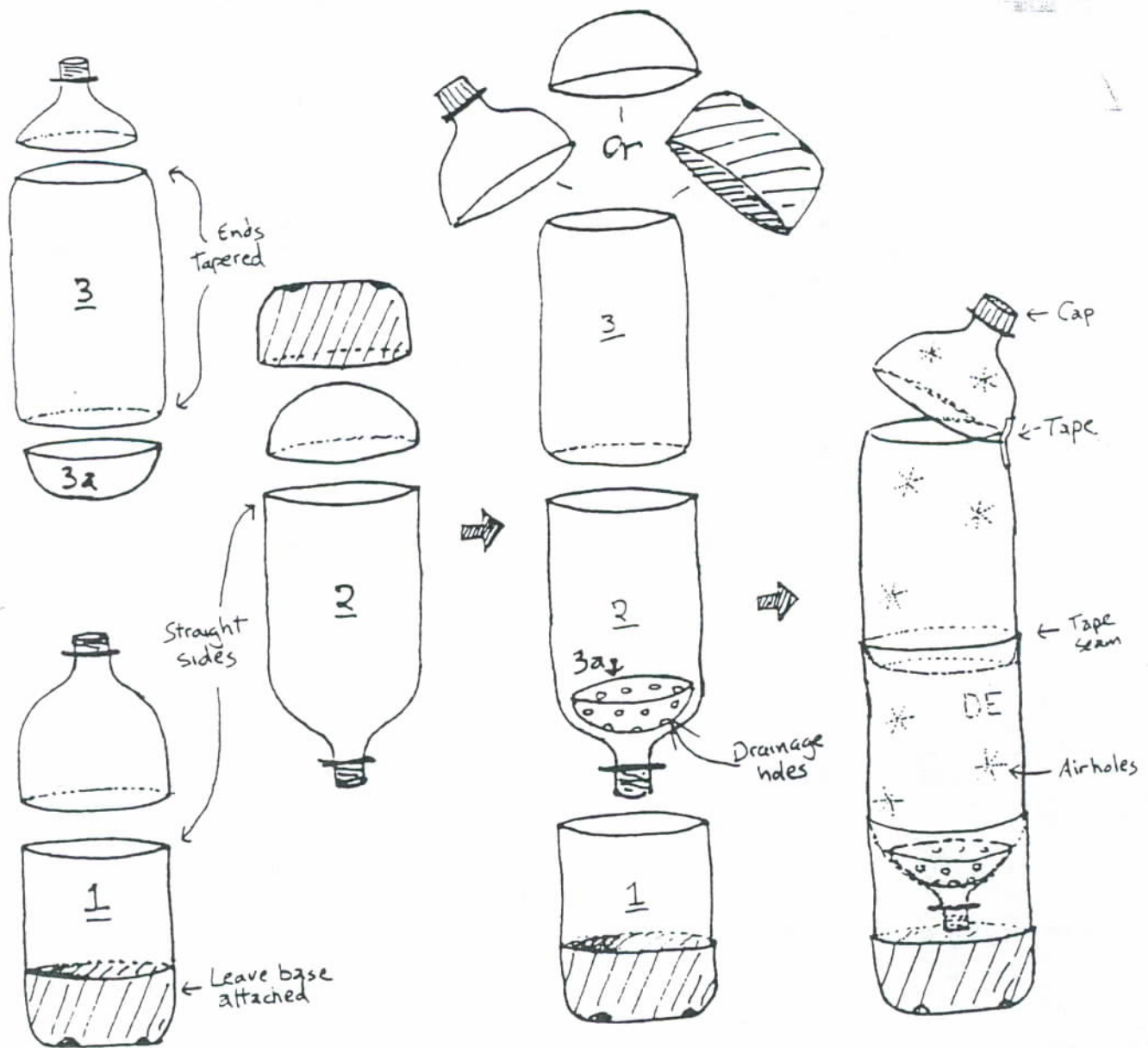
Remove the bases from two bottles, and the labels from all three, by pouring about two cups of hot tap water into the bottles. (Columns can also be made from bottles that don't have removable bases.) Replace the cap, tilt the bottle so the water softens the heat-sensitive glue, peel off the label and twist off the base. Pour out the water, draw cutting lines around the bottle, make incisions with the knife and cut with scissors and assemble as illustrated.

Most columns will require air holes for ventilation, and these can be poked into the plastic with a sharp cold needle or with a needle or paper clip heated in a candle flame. Alternatively, larger holes can be cut into the sides with the knife and covered with fine mesh fabric held in place with tape. A piece of mesh fabric over the lower end allows for drainage. Refer to the illustrations. Add ingredients for composting through the top of the column.

## Explorations:

The possibilities for compost column explorations and discoveries are endless. There is no limit to what can be put inside, or the conditions under which the column can be kept. In addition to simply observing changes, you can design experiments which explore the effects of variables on your column.

## Compost Column Construction



### Two Possible Explorations:

- **Leaf Digester.** Make two columns, and use a balance or postal scale to weigh out two equal quantities of leaves. Loosely pack one column with leaves only. Mix about a half cup of garden soil to the other batch of leaves and loosely pack the second column. Pour equal amounts of pond or rainwater into each column, and wait several hours for it to percolate through. If none comes out the bottom, add more in equal amounts until about a half cup drips into the reservoir. Schedule a rainstorm to occur in the column every few days, pouring the drippings back through the column. Which column decomposes faster and why?
- **Compost Tea.** Compost columns can be used to generate a liquid fertilizer called "compost tea". Try making several columns using different ingredients, whose drippings will differ in color and chemistry. Use this liquid to water and fertilize identical sets of seedlings to see how different brands of "tea" affect plant growth. Some drippings, such as those from a column filled with leaves from a black walnut tree, may even inhibit growth.

Compost Column Experiment

Tables \_\_\_\_\_ and \_\_\_\_\_  
Period \_\_\_\_\_ Set up date \_\_\_\_\_

1. Our purpose/question were asking is:

2. Our predicted outcome:

3. Our setup (be sure to label each column) and describe what you put into the compost column and the amount of each)

Column I

Column II

Column I	Column II

4. Summarize the results of your month long experiment with composting. Include what was unchanged, what was found to be missing, and what has appeared. Use a chart.

5. Now, consider your original question. Did your controlled experiment provide any evidence that helps you to answer that question. Explain why or why not.

6. Consider the experiments that were done by others in your class. Note at least three ideas that you learned about successful composting.

Someone from your team should be prepared to report what you have learned about composting to the class.