

B5.3 Recycling organic waste



Together with your parents, you are creating a compost pile for organic waste in your garden. Your father explains to you that over time this organic waste slowly decomposes and becomes humus, which contains a lot of minerals that can be used as fertilizer. You think about how your organic waste turns into humus.

Information: Over one trillion living organisms inhabit a piece of ground measuring 1 square meter across and 30 centimeters deep. They feed on organic waste and produce humus, a type of soil that contains a lot of minerals. Plants grow particularly well on this humus.



Figure 1: Compost pile.



How does fertile soil come about from organic waste?



Write down your ideas and guesses:

You need the following for the experiment:

- 1 compost container (without a bottom and with air holes or slits on the sides)
- 1 drinking glass
- Gloves
- 1 magnifying glass
- 1 trowel
- Various kinds of yard and kitchen waste



Figure 2: Required materials.



How to set up the experiment:

Lay out all the materials as shown in the photo.



How to conduct the experiment:

Have your teacher show you a suitable place where you can create your own compost pile. It must be set up in a partially shaded location protected from the wind. It should not be exposed to direct sunlight. In addition, it should be located a short distance away from your and your neighbors' houses because it might smell a little. It must also be open to the ground below so that living organisms can migrate upward.

1. Set up your compost container and start filling it: It is important that you alternate dry and moist materials and leave room for air in between. Each layer can be about 10 centimeters thick.
 - First layer (dry): small branches (maximum 20 centimeters long)
 - Second layer (moist): soil or finished compost (a few handfuls)
 - Third layer (dry): branches, twigs, brushwood
 - Fourth layer (moist): grass, leaves, kitchen waste (cut as small as possible)The teacher will give you a list of waste that is suitable for a compost pile.
2. Add a new layer every week. It should be created like the fourth layer.
Tip: Earthworms especially like coffee grounds and onion skins.
3. If you observe that the organic waste starts to stink or that all layers look almost unchanged for many days, this means that the decomposition has not started correctly. You can help the process by aerating the compost pile. This allows air to reach the lowest layers.
You can aerate the pile by digging in the waste with a trowel. Wear garden gloves when you do this. You can mix in compost soil during this activity to support decomposition. Be careful that you don't injure the earthworms and other small organisms!
4. Observe the compost pile for three months. Once a week, spend ten minutes looking at the compost pile. If the compost container has a window, you can also look inside. Use the trowel to take a sample, put it in the drinking glass, and look at it with the magnifying glass.

**Write down your observations:**

Keep a log of all observations, such as changes in size, shape, and appearance of the soil and the waste. Also write down when you discover living organisms.

Week, date	Appearance of the waste/new soil (size, shape, decomposition)	Discovered organisms
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		

**Evaluate your observations:**

1. Summarize your observations over the three months and write them down.

2. Indicate the kind of waste that decomposed rather quickly. What kind of waste took a particularly long time to decompose?

Fast: _____

Slow: _____

3. Describe how the overall appearance of the compost pile changed.

**Doing further research:**

Does it make a difference whether the waste is whole or chopped when you toss it on the compost pile? Find out!

1. Place the next organic waste, for example, two apple cores, on the compost pile as follows:
 - Place one whole core on top.
 - Chop one core into small pieces beforehand.
2. Now observe whether it makes a difference in the decomposition process.
3. Write down your observations. Do you have an idea of why this could be?



What is your opinion?

Your classmate Paul’s birthday is today. His mother gave him small bags of gummy bears for his classmates. He collects all the “trash” in one bag. After recess, you watch as Paul throws the whole bag into the organic waste bin.

Think about it: What would you do?
