

FACILITATOR GUIDE: The Greens and Browns of Composting

GRADE: 6th-8th

CONCEPTS & SKILLS:

From Molecule to Organisms: Structures & Processes-

- **4-LS1-1** Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.

Science as Inquiry-

S.6-8.SI.2 Plan and conduct scientific investigations.

- Students should develop general abilities such as making systematic observations, taking accurate measurements, and identifying and controlling variables.
- Students use appropriate safety procedures when conducting investigations.

MATERIALS & RESOURCES:

- Books *The Good Garden*, K.M. Milway, *Backyard Composting*, Harmonious Technologies
- 2 plastic bins (clear works best)
- Dry leaves, grass clippings, food scraps, and other organic matter if available
- Water
- Ruler or yard stick
- Permanent marker
- Paper and pencil
- Optional materials: JJ Rouse CD *Around the World*, a camera to take pictures of compost at different stages of decomposition

PRESENTATION:

Read and discuss the book *The Good Garden*. Review *Backyard Composting* book. For fun, listen to the song *Let It Rot*, by JJ Rouse. Questions to consider;

- Name the ways composting is good for Earth and humans.
- Can composting waste help in food production?
- What is the difference between brown or carbon ingredients and green or nitrogen ingredients? What other ingredients are helpful to decomposition?
- What are safe/unsafe practices in composting?
- Do you think composting is difficult or easy? Who does the work? Don't forget the organisms in the soil!

DIRECTIONS:

1. Build 2 demo sized compost bins, labeling one bin “carbon only”, and one bin “carbon & nitrogen”.
2. Mark the outside of the bin with a ruler making marks from the bottom up to about $\frac{3}{4}$ of the way to the top of the bin. These will be useful in estimating the amount of compost material in the bin.
3. In the “carbon only” bin add dried leaves and/or sawdust and/or shredded newspaper up to the $\frac{3}{4}$ full mark.
4. In the carbon & nitrogen” bin fill to the $\frac{1}{4}$ mark with any or all of the following nitrogen rich materials: green grass clippings, green leaves, kitchen scraps, and pre-composted manure. Mix in carbon ingredients until the bin is filled to the $\frac{3}{4}$ mark.
5. Using a measuring container, add water to both bins until the contents are about as wet as a sponge which has had most of the water squeezed out. Did both bins require the same amount of water? Record your observations.
6. The bin with carbon only is likely to break down more slowly, while the bin with carbon and nitrogen is likely to break down more quickly. After one week, and once each week for a month or two, observe both bins. Measure the amount of material in both bins. Tell students to record observations and measurements.
7. Add water if the ingredients get drier than a sponge (wrung out sponge).
8. After a few weeks the ingredients should begin to change. Are the ingredients in either bin breaking down more quickly?

Alternatives:

9. Change the variable from nitrogen to water. Keep one bin dry and one bin damp like a sponge. Observe, measure, and record how water makes a difference in the decomposition process.
10. Take pictures of the compost at each step in order to record the process.

TIME:

45 min.
+15 min/week for recording