



## 5 COMPOSTING

**BIG IDEA:** Composting is nature's way of recycling.

**OBJECTIVE:** Students will understand that humans can help build healthy soil by composting, and that decomposers form an important part of the garden ecosystem.

This lesson is adapted from the FoodPrints lessons, [Compost Stew](#) and [Food Chains](#). To learn more about the FoodPrints program and access the full curriculum, including instructional videos, visit [freshfarm.org/foodprints](http://freshfarm.org/foodprints).

### VOCABULARY

- **COMPOST** decayed (rotted) organic (alive or once alive) matter (stuff)
- **DECOMPOSITION** the process of rotting or decaying into smaller, simpler parts
- **DECOMPOSER** a living thing (bacteria, fungus, or insect) that feeds on and breaks down plant and animal matter into simpler parts
- **VERMICOMPOSTING** using worms to convert organic waste into compost
- **ECOSYSTEM** an ecological community of living and nonliving things interacting with their environment

### MATERIALS

- Thermometer for measuring temperature of compost bin
- Worm Bin
- Diagram of Worm (attached)
- Garden Ecosystem Hunt and Teacher Cheat-sheet (attached)

**ENGAGE:** The engage section is designed to activate students' prior knowledge and experiences, pique their interest, and build curiosity.

Welcome students to the Compost Area. Show students a few different organic materials, such as an apple, piece of bread, or dead branches. Ask students to turn and talk with a partner about what would happen if we left these items outside for a few weeks, or months.

Explain that these items, when left alone, will begin to decompose, or rot and decay. This process is helped along by decomposers that eat or absorb organic material. Because the decomposers help turn the organic material into soil again, composting is nature's way of recycling.

In addition to improving soil quality, composting also reduces the amount of garbage in landfills and helps reduce greenhouse gas emissions.

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**EXPLORE:** These hands-on and minds-on investigations offer an opportunity for students to further explore the Big Idea of the lesson.

### INVESTIGATION 1:

**THREE TIER COMPOSTING.** Ask students to look at the 3 composting boxes and share any observations about the differences between them. They will probably notice that the material in each one is in a different stage of decomposition or decay. Explain that for organic material to break down and decompose, it needs to heat up and reach a temperature between 135-160 degrees Fahrenheit. That is considered the ‘sweet spot,’ when it is warm enough to break down organic material quickly, prevent fly larvae, and destroy weed seeds, but not so warm that it kills the microorganisms that are necessary for decomposition.

Students can take turns measuring the temperature of the compost bin and determining if it is at the right temperature.

### INVESTIGATION 2:

**EXPLORING THE GARDEN ECOSYSTEM.** Explain that the garden is its own ecosystem where producers, consumers, and decomposers all play an important role. The attached resource *Garden Ecosystem Hunt – Teacher Cheat Sheet* has definitions of each as well as examples of what you might find in a garden bed or the soil.

Invite students to search for examples of producers, consumers, and decomposers. Ask students to carefully search throughout the garden, including under rocks or raised beds, on all sides of leaves and stems, and in the soil or compost. Students can use the attached *Garden Ecosystem Hunt* to record their responses.

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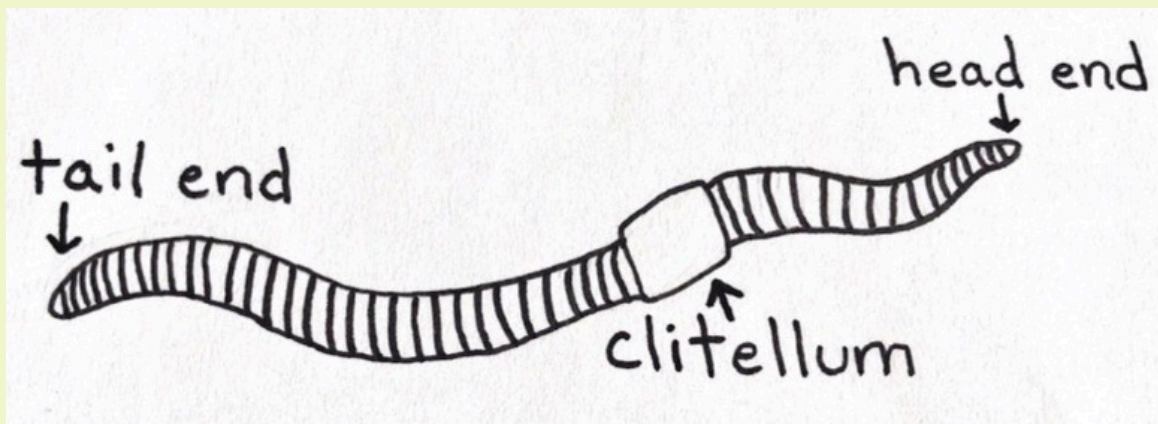


### INVESTIGATION 3:

**VERMICOMPOSTING AND WORM OBSERVATION.** Show students the worm bin and explain that these decomposers have some characteristics that make them very helpful for composting.

- Worms eat rotten food! They eat bacteria on decaying plants, food and even cardboard and paper. Everything that worms eat passes through their bodies and is turned into rich fertile soil.
- Worms dig tunnels! The tunnels they dig break up the soil so that water can reach the roots more easily, which helps plants grow.

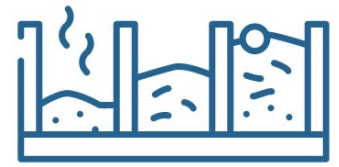
Allow students to take turns digging through the worm bin to carefully observe what the worms are doing. Assist students who may want to pick the worms up: they need to be very gentle and hold them with cupped hands. Remind them they can use only one gentle finger to touch the worms and gently return them to the soil when they are done. Use the diagram below and have students try to identify its different body parts. If you see the clitellum, that means you have an adult worm!



**EVALUATE AND CLOSE:** *Before moving on to the next station, please take a few moments to have students reflect on what they have learned.*

- Why is composting important? (reduces waste in landfills, improves the health of plants and soil)
- What role do decomposers play? (eat or absorb organic material)
- How can we successfully make compost? (discuss green and brown ingredients)

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Name: \_\_\_\_\_

Date: \_\_\_\_\_

### GARDEN ECOSYSTEM HUNT

Use this chart to record the different producers, consumers, and decomposers you find at the farm. There are examples of each that you may find.

Producer	Consumer	Decomposer
<p>kale, spinach, lettuce, arugula, carrots, peas, radishes, collard greens, chard, parsley, broccoli, rosemary, lavender, oregano, grass, trees of all kinds (oak, holly, dogwood, maple, serviceberry, cherry, etc)</p>	<p>(most likely to be found in larval stage in the soil), ants, bees, some beetles, squirrels, birds (robin, sparrow, starling, catbird, dove, bluejay)</p> <p>Unlikely to see these, but possible to see evidence of them: rabbits, opossum, raccoons, mice, deer</p>	<p>mushrooms, bacteria, fungi, mold, worm, millipede, flies, roly poly/pillbug, slug, some beetles</p>

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## GARDEN ECOSYSTEM HUNT – TEACHER CHEAT SHEET

Use this chart to record the different producers, consumers, and decomposers you find at the farm. There are examples of each that you may find.

<p>Producers <i>all plants are producers because they make their own energy</i></p>	<p>kale, spinach, lettuce, arugula, carrots, peas, radishes, collard greens, chard, parsley, broccoli, rosemary, lavender, oregano, grass, trees of all kinds (oak, holly, dogwood, maple, serviceberry, cherry, etc)</p>
<p>Consumers <i>organisms that get their energy by eating other plants or animals</i></p>	<p>(most likely to be found in larval stage in the soil), ants, bees, some beetles, squirrels, birds (robin, sparrow, starling, catbird, dove, bluejay). Unlikely to see these, but possible to see evidence of them: rabbits, opossum, raccoons, mice, deer</p>
<p>Decomposers <i>organisms that get their energy by eating other plants or animals (humans, animals, insects)</i></p>	<p>mushrooms, bacteria, fungi, mold, worm, millipede, flies, roly poly/pillbug, slug, some beetles</p>

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