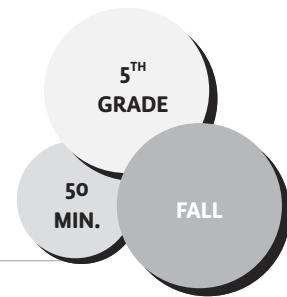


Putting the Garden to Bed

THEME: GROWING AND ACCESSING HEALTHY FOOD



ESSENTIAL QUESTION

How can we prepare the garden for winter?

LEARNING OBJECTIVES

- ✓ Students will be able to explain why we allow the garden to rest at certain times of the year.
- ✓ Students will be able to prepare the garden for winter.

CONCEPTS

cold-weather crops cover crops
seasonality warm-weather crops winterizing

Engaging the Classroom Teacher

- Prior to the lesson, discuss whether the teacher feels comfortable leading one of the rotations, and plan accordingly.
- During Action Step 2, suggest that the teacher circulate through the garden to support students observing seasonal changes.
- During Action Step 4, as you work with rotations of students sowing cover crop, suggest the classroom teacher aid rotations of students in harvesting and removing summer crops.

LESSON DESCRIPTION

In this lesson, students explore the garden for signs of the changing season and learn techniques for putting the garden to bed. They remove warm-season crops, plant cover-crop seeds, and explore the differences between cold- and warm-weather seeds. This lesson can be taught with the lesson Cycle of a Nutrient to help emphasize the positive effects of cover cropping or the lesson Break it Down to emphasize decomposition.

MATERIALS

- Seasonal Changes: Observations Worksheet for each student (p. 544)
- Cover-crop seed appropriate for your region
- Enough trowels or hand cultivators for each student at your Plant Cover Crops station
- 1 bucket for trowels or cultivators
- Cold-hardy seeds appropriate for your region (e.g., seed garlic, fava beans, or greens)
- 2–3 clippers
- 8–12 cold- and warm-weather seed packets for seed matching activity (see Preparation below)
- 8–12 small clear bags or baby food jars to store seeds for matching activity
- Wheelbarrow or a couple 5-gallon buckets for carrying debris to the compost pile

PREPARATION

- › Photocopy Seasonal Changes: Observations Worksheet for each student

- › Identify cover crop and/or cold-hardy seeds appropriate for planting in the fall in your climate. Depending on your climate, good cover crop options might include clover, fava beans, peas, or vetch. These are often available at low prices in bulk bins at garden centers.
- › Clear and prepare one garden bed in which students in the first station rotation will be able to plant cover crops. Then make sure that students in the second rotation can plant cover crop into a bed cleared during the first rotation and so on.
- › Identify garden bed(s) with summer annual plants for students to harvest from and clear.
- › Gather burlap bags, straw, or tarp for beds that won't be cover cropped or planted in right away.
- › Prepare seed matching activity. This is a good way to use up old seeds that are no longer viable. Empty each seed packet into its own container, such as a small jar. If possible, laminate various seed packets, or put them into sheet protector sleeves. Be sure to have a variety of cold- and warm-weather crops.

ACTION STEPS

1. Discussion: Gather students in a circle and ask, *Why do we go to sleep at night?* Field responses from students. Explain, *The garden is similar to us. It gets depleted if it remains actively growing all year. We can put it to rest for the winter a few different ways. Just as we put on a blanket at night, we can put a living blanket over our garden by using what we call a cover crop. Ask, How do you think the cover crop or blanket of plants helps the soil in the garden over the winter? (5 min.)*

2. Explore the Fall Garden: Say, *We're going to observe the ways the garden is already going to bed on its own.* Have students go out and explore the garden, looking for how different plants are responding to the winter. If time allows, give them a few minutes to record observations on the Seasonal Changes: Observations Worksheet. Then ask, *What are the signs that the season is changing and that our plants are responding to that change?* Invite students to share, and add in any of the following if it doesn't come up: *as the days get shorter and the temperature drops, some plants drop leaves, and others wither, die, and, ultimately, decompose. In the summer, warm-season crops have used up a lot of the nutrients, and winter is a good time to put nutrients back into the soil. (10 min.)*

3. Explain Rotations: Go over each rotation with students, explaining the activity and expectations at each station. Demonstrate how you'll indicate when it's time to rotate to the next station, and then divide students into groups. **(5 min.)**

4. Rotations: The following are possible rotations you could have students move through for this lesson, depending on your region, the status of your garden, your group dynamics, and how much additional adult support you have. See adaptations for more ideas. **(25 min. total, about 8 min. per station)**

a. Harvesting and Removing Summer

Crops: Give students an example of a ripe crop that they can harvest. Have students harvest all that remains on the plant before pulling out the plant. Remind students to use two hands, and pull on the main stem as close to the soil as possible to effectively

pull out the plant. Remind students to also shake or tap off the soil clinging to the root system to keep as much soil as possible in the bed. Discard old plants in the compost.

b. Planting Cover Crops: Gather students around the garden bed. Explain that cover crops are good for the garden because they help draw nutrients, such as nitrogen, from the atmosphere and pull it down into the soil. Then show students how to sow cover crops, explaining, *You'll be using the method of broadcasting the seed, which is a technique of scattering seeds across a large soil surface. You'll then rake the soil to incorporate the seeds.* Pass out a small handful of seeds to each student, and have them sprinkle the seeds across the bed, being mindful of where others are scattering their seeds to achieve even coverage.



Then have a student distribute trowels or cultivators and demonstrate for students how to cover the seeds and rake the soil smooth. Finally, have students return their tools to the bucket, and gently pat the surface where they planted to ensure contact with the soil. Remind students not to use too much force because soil packed down too much doesn't hold water as well or give worms and other organisms all the air they need to thrive.

c. Seed-Matching Activity: Have students match jars of seeds to their respective seed packets. Then have them read the seed packet information to determine whether they could be planted during fall. Have them split the matched seeds into a warm-weather pile and cold-weather pile or in whatever way makes sense for your region. If time allows, invite students to draw a dream garden map for the spring featuring warm-season crops.

REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

Social and emotional learning

- Ask yourself: Was I safe and helpful in the garden today?

Check for understanding

- How long do you think it will be until we see the seeds we planted germinate (or sprout) from the ground?
- What plants did you identify in our garden that will survive the winter?
- Based on our seed-matching activity, are there any other cool-season crops we could still plant in our climate?
- What are the natural signs of the garden putting itself to bed that we observed?
- How did the work we did today benefit or help our garden soil?

ADAPTATIONS

Establishing a Cloche Bed: Explain to students that sometimes in the winter months we give our plants a real blanket made of fabric to insulate them from winter temperatures. Set up

a cloche bed together by bending wire (such as steel pencil rod or clothesline wire purchased at a hardware store) into arches over your plants, then draping row cover cloth over the wire and attaching the cloth to the wire with binder clips or clothespins.

Singing: If you think your fifth graders will go for it, challenge groups of students to come up with a garden lullaby. Ask, *What song could we sing to the garden to help it know it's time to rest?*

Compost Variation: If your group doesn't have a compost pile, you can establish one using the FoodCorps Lesson Break it Down or through the method trench composting. Have students dig a 12-inch deep trench in an area of the garden where you won't be planting over the next year. Have students put their chopped green and brown materials into the trench, bury it with soil, and rake it smooth.

Food Preservation Extension: Have students make a preserve from the last harvest of warm-weather crops. For example, students could make a green tomato chutney using the green tomatoes from tomato plants they pull out and coriander from bolted cilantro plants.

ACADEMIC CONNECTIONS

Next Generation Science Standards, Life Science Disciplinary Core Idea

NGSS LS2.A

Interdependent Relationships in Ecosystems

The food of almost any kind of animal can be traced back to plants. Organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat plants. Some organisms, such as fungi and bacteria, break down dead organisms (both plants or plants parts and animals) and therefore operate as "decomposers." Decomposition eventually restores (recycles) some materials back to the soil. Organisms can survive only in environments in which their particular needs are met. A healthy ecosystem is one in which multiple species of different types are each able to meet their needs in a relatively stable web of life. Newly introduced species can damage the balance of an ecosystem. (5-LS2-1)

Name: _____ Date: _____

Seasonal Changes: Observations

Directions: Explore the garden. In the table below, record evidence for how the plants are responding to seasonal changes.

Plant	Do you think it is alive or dead?	What is your evidence, or how do you know?
<i>Example: Tomatoes</i>	<i>Still alive, but dying</i>	<i>The leaves are mostly brown, but it still has some tomatoes growing on it.</i>