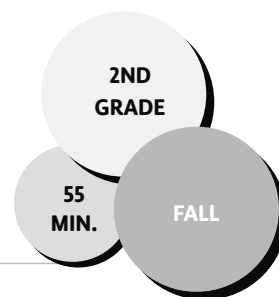


Saving Seeds

THEME: GROWING AND ACCESSING NOURISHING FOOD



ESSENTIAL QUESTION

Why is it important for people to save seeds?

LEARNING OBJECTIVES

- ✓ Students will be able to explain the benefits of saving seeds from the garden.
- ✓ Students will be able to harvest seeds for saving.

CONCEPTS

harvest	seed saving
threshing	winnowing

ENGAGING THE CLASSROOM TEACHER

- Prior to the lesson, ask the teacher whether there is a third adult who can help supervise one of the garden stations. If not, discuss dividing the class in half, rather than thirds, for Action Step 2 if that seems more manageable.
- Ask the teacher whether they have an easy way of breaking the class into three groups.
- During Action Step 2, suggest that the teacher supervise the seed-saving stations as you take the third group on the seed tour in the garden.
- During Action Step 3, suggest that the teacher help students who might need additional support make their origami packets.

LESSON DESCRIPTION

In this lesson, students collect seeds and take a tour of all the seeds in the garden before making origami seed packets and selecting the vigorous seeds they'd like to save for next season. This lesson can be taught in conjunction with lessons How Seeds Travel and Seed Tape.

MATERIALS

- Plants from which to harvest seeds
- 2–4 medium bowls for harvesting seeds
- Box fan for winnowing seeds (optional)
- Origami paper or Seed Packet Template cut into 8.5" x 8.5" squares, 2 for each student (p. 237)
- Colored pencils
- Chart paper
- Markers

PREPARATION

- Scout the garden for seeds to harvest. Make sure any seeds you want to harvest are ready (e.g., bean pods should be dry and brown). Decide which seeds you'll show small groups on their garden seed tour.
- Practice making the origami seed packet (see illustration below), so you feel comfortable teaching it to students.
- If you anticipate students may struggle following directions for the origami seed packet, photocopy the template, and cut out a square for each student. Or you might choose to cut out just a few to have on hand

for students who might need them.

- › Prepare a model origami seed packet that has seed information clearly written and perhaps is colorfully decorated.
- › Set up two stations for seed saving, each with a different plant and a different method for harvesting seeds, if possible. For example, have students threshing beans at one station and picking sunflower seeds at another. Place two bowls at each station for students to collectively put seeds in.
- › On chart paper, write key information for each seed type, such as the name and when to plant the seeds.

Seed-Saving Methods

Deadheading: Cutting dead flowers off of plants and taking dry seeds out of them; use this method with flowers such as calendula, sunflowers, and nasturtium.

Threshing: Rubbing or beating seeds to separate them from other plant material; used for separating seeds from pods or husks. You can rub seedpods between your hands, gently beat them with a rolling pin, place them in a paper bag and shake, or place them in a sack and bang them against the ground. Use this method for peas and beans.

Winnowing: Separating the seed from the other plant material by blowing on them; holding them up to a box fan; pouring them from one bucket into another, back and forth, to let the wind carry away the chaff; or holding them up to the wind. Use this method for grains such as wheat or flax. Example: For lettuce, place the flower stalk in a paper bag, and shake to separate seed from the chaff. Then take a handful of seed and chaff, and blow off the chaff.



Wet processing: Crush fruits such as tomato or tomatillo in a container, and allow seeds to sit in pulp for several days. The crushed fruit and seeds ferment, which helps the preservation process. Rinse seeds in fresh water, and then lay out on cookie sheets to dry in the sun. Use this method for pulpy fruits.

ACTION STEPS

1. Engage: Gather students in a circle, showing them your sunflower and sunflower seeds (or whatever plant and seed you're using) and ask, *Which came first, the sunflower or the sunflower seeds?* Have students think-pair-share with their neighbor and then have a couple pairs share with the class. Say, *Did you know that when we grow food we get seeds for free? Instead of buying new seeds every year, gardeners and farmers can save seeds from their plants to plant the next season.* Explain that today they'll be resourceful just like farmers, and save the seeds that are in their school garden right now. **(5 min.)**

2. Stations: Briefly explain each station to students, modeling how to harvest the two different seeds they'll work with. Tell students how they'll know it's time to switch, and split them into three groups, showing them at which station they'll start. Have students rotate through each station for five minutes each. **(25 min. total)**

a. Seed-Saving Method #1: Have students work independently, harvesting seeds from one plant and placing them in bowls at this station.

b. Seed-Saving Method #2: Have students work independently, harvesting seeds from a different plant, ideally using a different method than at the first station and placing them in bowls at this station.

c. Seed Tour: Guide students on a tour of all the plants going to seed in the garden. Try to show them a variety of food plants, including a bean, fleshy fruit, flower, and plant we eat for the leaves. For example, you might show them a bolted cilantro plant, nasturtium seeds, bolted kale or chard plant, and peas. You might also show them a sliced tomato or pumpkin to demonstrate seeds that are on the inside of fruit. Encourage students to pick and taste any edible seeds on your tour.

3. Making Origami Seed Packets: Gather students back in a circle, and show them your model seed packet, saying, *Now that we've harvested all our seeds, we're going to make origami seed packets so we can take home seeds to save for next season.* Pass out origami paper to each student or the seed packet template with folding lines you've already prepared. Explain that you're going to show them how to make their seed packets step by step. Say, *Once you've finished the step we're on, hold it up so I can see that you're ready to move on. If you need help, ask a neighbor who has finished that step.* Pause after each step to show students your process and check for understanding, while encouraging students to help each other. **(10 min.)**

4. Selecting Vigorous Seeds: Send a couple students to bring over the bowls from the seed-saving stations. Show students two beans, for example, very different in size, and ask, *Which of these do you think I should save to plant next year?* Then ask them to explain their thinking. Say, *For thousands of years people have been saving the seeds from the biggest, nicest, most healthy looking plants so that when they plant they have a good chance of getting other big, nice plants! When you're picking seeds to put into your seed packet, pick the ones you think will grow best in the future.* Based on how many seeds students have processed, give students a maximum amount they can take to use up all your seeds, for example three beans and five sunflower seeds. **(5 min.)**

5. Decorating and Labeling Packets: Show students the chart paper where you've written the key information for each seed. Perhaps do a choral reading where you and the whole class read aloud the words you've written. Pass out colored pencils and extra origami papers to students so that they can make two packets, one for each type of seed. As they work, circulate through the room, helping students who need support with writing. If there's time, or if some students finish early, they can draw what the plant needs (sun, soil, water, and air) on their packets too. **(5 min.)**

REFLECTION

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

Social and emotional learning

- Ask yourself: Did I share, take turns, and help others learn in my group today?

Check for understanding

- *What seeds did you see today that you'd never seen before?*
- *What are the benefits of saving seeds from your garden?*
- *Where will you store your seed packets?*
- *Where might you plant your seeds when it's time?*

ADAPTATIONS

Ensuring Seeds Are Planted: If you're concerned that your students won't necessarily hold onto their seeds until spring and then remember to plant them, you can save seeds for crops that they can plant right away at home after this activity. For example, in some areas, fava beans can be harvested and planted in the fall. Alternatively, you can collect and store the seed packets, and then distribute them in the spring for planting at home or planting in the school garden.

Tomato Seed Extension: If you have more time with students and/or extra adult support, you might want to harvest seeds contained in wet fleshy fruit, such as tomatoes or tomatillos using the wet processing method.

Corn Braiding Demonstration: If you grew three or more ears of corn, demonstrate to students how you braid the ears of corn and hang to dry and store seeds.

Planting: If you have seeds you've saved from another season (that would be appropriate for planting in the fall), you can tell students the story of where those seeds came from, and plant the seeds in small groups.

Literacy: Read *A Seed Is Sleepy* by Dianna Hutts Aston to learn more about seeds' life cycles and methods of dispersal.

ACADEMIC CONNECTIONS

Next Generation Science Standards, Life Science Disciplinary Core Idea

NGSS LS2.A

Interdependent Relationships in Ecosystems

Plants depend on water and light to grow.

(2-LS2-1) Plants depend on animals for pollination or to move their seeds around. (2-LS2-2) 3rd Grade NGSS

NGSS LS3.A LS3.A

Inheritance of Traits

Many characteristics of organisms are inherited from their parents. (3-LS3-1)

Other characteristics result from individuals' interactions with the environment, which can range from diet to learning. Many characteristics involve both inheritance and environment. (3-LS3-2)

NGSS LS3.B LS3.B

Variation of Traits

Different organisms vary in how they look and function because they have different inherited information. (3-LS3-1)

The environment also affects the traits that an organism develops. (3-LS3-2)

Seed Packet Template

