

Finding, Gathering, Saving Seeds



Standard

SS4H1 The student will describe how early Native American cultures developed in North America.

- a. Locate where Native Americans settled with emphasis on the Arctic (Inuit), Northwest (Kwakiutl), Plateau (Nez Perce), Southwest (Hopi), Plains (Pawnee), and Southeast (Seminole).
- b. Describe how Native Americans used their environment to obtain food, clothing, and shelter.

Overview

For most of human history, people needed to save and replant seeds in order to survive. Seeds from favorite plants were saved from year to year and generation to generation. When people immigrated to new parts of the world, they brought with them seeds from plants with qualities they valued: the tastiest tomatoes, longest beans, or squash that withstood cold temperatures, for instance.

As fall weather spells changes in many schoolyards, consider encouraging your students to become savvy seed savers by identifying and gathering their own gems from the garden or wild. Why bother? Saving seeds can be economical (you might generate hundreds from just one plant) and inspire students to explore, firsthand, plants' life cycles and clever adaptations for housing and dispersing seeds. Your young growers can cultivate connections with others by packaging their unique seeds for gifts or sale, or swap seeds and experiences with students in other growing classrooms. Math, economics, language arts, and more can come to life in a student-run seed business.

Your young stewards might also delve into some of the historical and ecological reasons people today save seeds. With the growth of commercial seed companies during the last century, new varieties were created, but many old ones vanished. These lost strains had qualities that people savored *and* contained a wealth of potentially valuable genetic information. Students might want

to learn about, and perhaps join the growing movement of gardeners and farmers committed to preserving biodiversity and living history by growing and saving "heirloom" seeds.

Materials

- flat surfaces (e.g., trays or screens) for drying seeds
- envelopes and glass jars for storage
- hand lenses (optional)
- markers and/or labels
- small paper bags (for gathering small seeds)

Saving Seeds - Reviewing the Basics (Seed Production 101)



Although you can easily save and replant many types of garden seeds *without* a lot of background knowledge, knowing some botany basics can make it a more fruitful and fascinating experience. It *is* important to know whether a plant is **hybrid** or **open-pollinated**. Open-pollinated plants either transfer pollen internally, from male to female flowers (called self-pollinating) or have pollen transferred by wind or insects. A hybrid is produced when seed companies cross two specific lines (a tomato with a thick skin and another with large fruits, for instance) to create a new variety. (Seed catalogs and packets will tell you if seed is hybrid.)

You cannot count on seeds from hybrid plants to produce offspring with the parents' characteristics. Some seeds of hybrids, in fact, will be sterile. So don't plan to save seeds from hybrid plants unless your students are doing so as part of an experiment.

Seeds of self-pollinating plants, on the other hand, will produce offspring much like the parents. Plants pollinated by wind (such as corn and spinach) and those pollinated by insects (such as squash and cucumbers) may produce a next generation that resembles a parent, or they may cross with other varieties to turn up something entirely unique. (Have you ever seen a squumpkin in your compost pile? See *Messing with Mystery Squash* in the Curriculum Connections for details on creating one.) The easiest way for school seed savers to avoid cross-pollination is to plant just one variety of any crop.

Another botanical basic that affects what seeds you save is a plant's life cycle. Seeds of annual vegetables, flowers, and herbs, which complete their life cycles, from seed to seed, in just one year, are the easiest ones for school gardeners to save. Garden biennials, such as carrots and cabbage, are edible the first year and set seed the next year after overwintering. If you're interested in tackling the more complicated process of saving seeds of biennials, you'll find lots of support from websites and print materials in the Resources section. You'll also find information on saving seeds of perennials (plants that last many years), many of which are easy to collect, but more challenging to germinate!

The Seed Saving Chart, below, gives details on easy-to-save seeds of garden vegetables and annual flowers.

Cultivating Keen Observers



Long before plants produce seeds, their flowers reveal secrets about what's to come. If you have a chance early in the season, consider inviting students to explore garden flowers or wild ones with a hand lens and, if appropriate, dissect them. Can your young detectives predict where seeds might develop? Whether your students are gathering seeds from annual garden vegetables, flowers, and herbs; perennial garden flowers; or nearby wildflowers and native plants, have them keep their eyes peeled for signs of seed development. What evidence do their observations reveal?

Your eagle-eyed pupils should also begin to think like gardeners and farmers did historically, and like plant scientists, by considering which plant characteristics they most value. Does one marigold plant seem to have more brilliant flowers? Tie a ribbon on it while it's still in bloom, to mark it for seed saving. Since healthy plants are most likely to produce a healthy new generation, they'll also want to identify garden plants that seem robust and free of pests and diseases.

Gathering Seeds



Most garden seeds either mature dry in pods (beans) or capsules (columbine; see photo, right), flowers (lettuce), or fleshy fruits (tomatoes, squash, cucumbers).

The ideal time for gathering seeds varies from crop to crop. Melon seeds, for instance, are mature when the fruits are ready to eat, but squash and cukes should be left on the plant for weeks after you'd normally eat them. Generally, let vegetable garden seeds dry on the plant as long as possible.

If annual and perennial flowers and herbs (including wild ones) intrigue your students, they may need to look even more carefully for signs that seeds are ripe. Withering and drooping flowers indicate that their job of attracting pollinators is done and that seeds are beginning to form. Flower stalks that have dried and turned brown or seedpods that have turned from green to dark color are good indicators that seeds are mature. If students hear a rattle or if seeds fall when they tap lightly on flower stalks, it's probably time to harvest.



Try to harvest seeds on a sunny day, once the dew has evaporated, and remove all pulp and fiber from their surfaces. Certain seeds (such as lettuce, dill, and many flowers) will scatter when the seed head is dry or lose seeds gradually as they ripen. You can shake their stalks every few days over a paper bag to collect the ripe seed before it's lost. Sunflower, bean, and pepper seeds, on the other hand, are fun to harvest by hand. (The chart, below, and books and websites in the Resources section, offer details on harvesting and storing many different types of seeds.)

Drying and Storing Seeds



Have students consider what might be ideal seed storage conditions by recalling what they need to germinate. If moisture helps seeds sprout, for instance, how should they be stored? Before storing seeds, you'll need to make sure that they are completely dry by spreading them out on a flat surface (e.g., a screen or tray) in a dry, airy place. Seeds that are borne in fleshy fruits, such as tomatoes, should be rinsed *or* sit in water for several days and left to ferment before being spread out to dry (see chart, below, for details).

Seeds that are borne on capsules or flowers may need to be separated from the chaff (seed covering and other debris) before storage. Have students do this by tossing seeds lightly on a screen or tray and blowing or letting a breeze remove the lighter debris.

Once seeds are dry, put them in envelopes and then in small glass jars (such as baby food containers) with tight lids, and label them. Some people prefer using plastic bags or just glass jars, which work fine if the seeds are absolutely dry. Store seeds where it's cool, dark, and dry. A refrigerator, freezer, or similar location is fine. (Your young scientists may want to test how storing seeds under different conditions affects germination.)

If your seeds are stored properly, they should last at least two to three years, if not longer, depending on the plant types. (Onion and corn seeds only remain viable for a year.) Once you've tried some basic seed saving, students' questions should provide fertile ground for further research and investigations. See the Curriculum Connections for some ideas.

Seed Saving: Easy Annual Vegetables and Flowers

If your class wants to save garden seeds, we recommend starting with the following. For more detail on these and other plants, see materials in the Resources section.

Plant	When to gather seed	Processing
beans and peas (self-pollinating)	Leave in pods on plant until they rattle.	Remove seeds from pods and spread them out to dry.
pepper (self- or insect-pollinated)	Gather from a mature pepper (if possible, one that is fully red).	Scrape out seeds and spread them out to dry. They're ready to store when they break rather than bend.
tomato (self-pollinating)	Harvest when fruits are fully ripe. Seeds have a gelatinous coating to prevent them from sprouting inside the fruit. Squeeze seeds into a bowl when tomatoes are fully ripe.	Ferment mixture by adding water and letting it stand at room temperature for 3 to 4 days, stirring a few times a day to prevent mold. The good seeds will sink to the bottom and can be spread out to dry.
eggplant (self- or insect-pollinated)	Leave fruit on vine until it's hard, dull, and off-colored.	Cut the fruit in half and pull flesh away from seed area. Wash and rinse seeds before spreading them out to dry. If seeds are hard to remove, grate or blend the bottom part of the fruit (with the ripest seeds), put the pulp in a bowl of water, and squeeze the gratings with your fingers. Good seeds will sink to the bottom.
cukes (insect-pollinated)	Seed is ready once fruits have turned golden/orange and are getting mushy.	Cut fruit in half, scrape seeds into a bowl, and remove their slimy coating by rubbing them in a sieve with water. Rinse before spreading out to dry. (Some recommend using the same treatment as listed for tomatoes.)

summer squash (insect-pollinated)	Seed is ready once fruits are hard (cannot dent with a fingernail). This may be after frost.	Cut open and scrape seeds into a bowl; wash and rinse them before spreading them out to dry.
watermelon (insect-pollinated)	Harvest seeds from ripe fruit.	Before drying, rinse seeds in a strainer using a drop of dish soap to remove sugar.
lettuce (self-pollinating)	Gather seeds once the plant sends up a stalk and half of the flowers have turned white with fluff. (If you wait too long, the seeds may fly away.)	Rub out and separate seeds from seed heads. Shake the seeds up and down on a tray or screen and gently blow away the lighter chaff.
annual flowers (calendula, cleome, cosmos, impatiens, marigold, morning glory, sunflower, sweet pea, zinnia)	Gather seeds once these flowers have wilted and seed capsules or pods appear dry.	Separate chaff by hand or by shaking on screen, as above.

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