The Seed Library

A Seed-Lending Program at the Round Valley Public Library

Saving Seed from Your Garden, What You Need to Know

As a seed saver, first your priority should be to maintain varietal purity. Every time you grow out a variety you are creating an opportunity for genetic change to occur. In order to minimize this opportunity for change you need to consider three main factors: *plants, pollinators, and environment.*

Know whether your parent plant is an open-pollinated variety or a hybrid. Save seed from open-pollinated varieties and take steps to prevent unintentional hybridization (cross-pollination) as you grow your crops.

- An *open-pollinated* (OP) variety breeds true from seed.
- An *heirloom* is an OP variety with a history of being preserved by an individual or a family.
- A *hybrid* is created by crossing two different varieties of the same species. Hybrids are not stabilized; plants grown from their seed will not resemble the parent plant. (They do not breed true.)

Know your plant's genus and species. Check your seed packet or look it up online or in a book. Plants sharing the same genus and species can cross-pollinate (hybridize) and create unexpected (and usually unwelcome) results.

- In the squash family, acorn, delicata, spaghetti, patty pan, yellow summer, and zucchini are all *Cucurbita pepo* and will cross-pollinate. If you grow more than one variety of *C. pepo* and do not isolate them from each other, you can't reliably predict what will grow out from seed you save.
- Common names can be misleading, so learn your plant's scientific name. Armenian cucumber is not a cucumber; it is a melon and will cross with some other common melons.
- A crop type can include several different species. For example, there are several major squash species: *maxima, moschata, argyrosperma,* and *pepo.* You can grow one variety of each and not worry about crossing.
- The inverse is true: one species can include several crop types: broccoli, Brussels sprouts, cabbage, cauliflower, collards, kohlrabi, and some kales are all the same species *(Brassica oleracea),* and will cross.
- Vegetables may have "weedy relatives" with which they can cross-pollinate with poor results. Carrot can cross with Queen Anne's Lace. Chicory can cross with wild chicory. Parsnip can cross with cow parsnip.

Know how your plant pollinates. Is it self-pollinating or outcrossing? How does the pollen get from the anther (the male part of the flower) to the stigma (the female part of the flower)? Generally the more outcrossing a plant is, the higher population you need to maintain for genetic diversity and the greater the isolation distance you will need to prevent hybridization.

- *Selfers* are plants that are capable of fertilization through self-pollination. Selfers have perfect flowers (flowers that have both male and female parts). Beans, peas, lettuce, and tomatoes are selfers. Because the chance of cross-pollination is greatly reduced, these crops are good for beginning seed savers. But there are exceptions: some cherry and some potato leaf varieties of tomato have an exerted stigma (a stigma that sticks out of the flower) and are more likely to cross than modern varieties of tomato.
- *Monoecious outcrossers* have separate female flowers and male flowers on the same plant. An example is plants in the Cucurbitaceae family: squash, melons, and cucumbers. (In Cucurbitaceae, the female flower has a bulge at the base and sometimes the male flower looks a little more yellow because of the pollen.)
- *Dioecious outcrossers* have female plants and male plants. Female plants have female flowers and male plants have male flowers. You need at least two plants for fertilization to occur. Spinach is dioecious.

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- *Self-incompatible outcrossers* These have flowers that can only be fertilized by pollen from another plant because they reject their own DNA. Brassicas are self-incompatible outcrossers.

Of the outcrossers, beet, chard, spinach, and corn are wind-pollinated. Other outcrossers are insect-pollinated.

Know how to prevent cross-pollination by using isolation methods *or* *by planting only one variety per species.* There are several methods of isolation you can employ so the varieties you plant don't have the opportunity to cross-pollinate with other varieties of the same species.

- *Distance* is a common method of isolation. Consult a seed-saving chart for recommended distances between different varieties of the same species, but know that distances can be affected by variables such as the numbers of pollinators, barriers, wind, etc.
- *Geography* such as stands of trees, hills, and other barriers between your garden and another's, or between varieties of the same species on your own land can often help to minimize or prevent cross-pollination.
- *Timing* your planting so that pollen shed from one variety does not overlap with the flowering of another variety in the same species is a method of isolation.
- *Barriers* such as fine net tents can be constructed to isolate some crops. If your crop is partially self-pollinating, such as peppers, you would not need to introduce insects.
- *Hand-pollinating and bagging* are ways to prevent cross-pollination. (There are many videos on YouTube that demonstrate these techniques.) These are common ways to "isolate" both corn and squash.

Of course, planting only one variety per species or allowing only one variety per species of a biennial crop to go to seed is an excellent way to prevent cross-pollination if you don't have other gardens or farms nearby.

Know your environment.

- *Do you live in a windy area?* Beets, chard, spinach, and corn are wind-pollinated. Open, windy locations will require 1-2 miles isolation between varieties in wind-pollinated crops.
- *Do you have many insects visiting your garden?* More insects mean more opportunities for cross-pollination in insect-pollinated plants.
- *Know your pollen sources.* What are your neighbors growing? It can be challenging to save seed in a community garden.

Know your plant's population needs to prevent inbreeding depression. When you are saving seed you want to harvest seed that represents the genetics of the whole population you've planted, so you'll want to save seed from a number of healthy plants. Consult a seed saving chart to learn how many plants you need. Generally, the more self-pollinating the plant is (beans, peas, tomatoes, lettuce), the smaller the population can be. The more outcrossing the plant is, the larger the population needs to be.

Know when to harvest your seeds.

- An *annual* crop requires one growing season to produce seed and complete its life cycle. Beans, corn, squash, tomatoes, and peppers are examples of annuals.
- A *biennial* crop requires two seasons to produce seed and complete its life cycle. Many plants we grow as annuals for food take two years to go to seed. Chard, many root vegetables, and many brassicas are biennial and must vernalize (go through a cold season) before they produce seed. You will need to grow them longer for seed than you do for food. (These plants will often take up *much* more room in your garden when they go to seed.)
- *Market maturity* is when you would harvest a crop for food.
- *Seed maturity* is when you would harvest a plant for its seed.

You don't always get to eat your plant and save its seed, too. Tomatoes are harvested for food and seed at the same time. Eggplants need to be left on the plant until large and brown to ensure the seeds are fully developed. The information about when to harvest seed from your crops can be found online or in a book on seed saving.

For more information, you can borrow books on seed saving and plant breeding from your library. Your seed library has free seed saving charts that have genus and species names for common garden crops, population size requirements, and isolation distances. Check our membership binder or ask at the circulation desk.

Seed Savers Exchange has many seed-saving webinars. It's a fantastic resource. Check it out. http://www.seedsavers.org. We particularly recommend their *Planning your Garden for Seed Saving* webinar (2012), from which we summarized much of the information above.