Easy Seed Saving from the Summer Garden

UCANR Master Gardeners Santa Clara County
Candace Simpson

Key Ideas:

- *Saving seeds from open-pollinated vegetables and herbs is an easy and economical way to perpetuate favorite varieties.*
- *Seeds from hybrid varieties will not produce plants that have the same characteristics as their parents; these seeds should not be saved.*
- *Seeds from plants that can be easily cross-pollinated by insects or wind may give unexpected results.*
- *Seeds must be allowed to mature on the plant before collection and cleaned and dried before being stored in a cool/cold and dry environment.*

1. Pollination considerations

- Open pollinated vs hybrid varieties: seed packets will be labeled.
  - Hybrid (F1): commercially bred under controlled pollination conditions. Seeds from a hybrid variety will not produce a plant identical to the parent and should not be saved.
  - Open pollinated (OP): Seeds from an open pollinated variety will produce a plant like the parent, provided the plant was not cross-pollinated by another variety growing nearby.
  - Heirloom – OP seeds with a history, often a variety that has been grown for years by a family or in a particular place.
- How is the plant pollinated?
  - Seeds from a self-pollinated plant will produce a plant like the parent. These are the easiest plants from which to save seeds.
  - Seeds from a wind-pollinated or insect-pollinated plant will produce a plant with characteristics of both itself and the plant that is the source of the pollen. To produce seed that will give you the same characteristics as your original plant, you must ensure that only your variety is present near your plant, or you must prevent the flowers of your plant from receiving pollen from other varieties. See the books listed in the references section of this handout for these advanced seed-saving techniques.

2. What are seeds?

"A seed is a baby plant, in a box, with its lunch." (from The Triumph of Seeds, by Thor Hanson)

The seed contains an ***embryonic plant*** in a ***dormant state*** of development along with ***food reserves*** to sustain it through ***germination***.

- Germination: activating the dormant embryo. For most common vegetables and herbs, germination requires moisture and warmth.
- Storing seeds
  - Most seeds (under good home gardener conditions—cool and dry) will last at least 2-3 years, some even 5-10 years.
  - Poor storage, mainly exposure to moisture and warmth, reduces viability of seeds.

3. How to collect, clean, and store seeds

- Collect from the healthiest fruits on the healthiest plants that have the characteristics you want. Examples: lettuce that bolts last, tomatoes that produce earliest, beans that are most productive.
- Collect when the flowers or fruits containing the seeds are fully mature. This may be far past the stage at which the vegetable is usually picked to be eaten (market maturity). Allowing vegetables to reach this stage of maturity can slow down the plant's production. For this reason, you may want to allow this to happen only late in the season; or you might grow some plants just for seedsaving.
- Separate the seeds from the plant or the fruit of the plant. At this point, there is a dry method and a wet and/or fermentation method to finish cleaning the seeds.
    - Dry method: thresh the seeds to break them out of their hulls and winnow to separate them from any fine bits of dry plant material. Some methods for threshing:
        - Rub the seeds off the plant and out of their hulls.
        - Pick out the seeds, if they are large and easy to separate
        - Put the seeds in a sack and beat or flail them, or walk lightly on them to break the hulls. Do not crush or crack the seeds!

      To winnow the seeds: carefully toss the seeds in the air in the presence of a light breeze, your own breath, or a hair dryer skillfully used to blow the lighter plant debris away from the heavier seeds.
    - Wet method: this method will be discussed under specific vegetables later in this handout.
- Dry thoroughly inside the house, on a glass, ceramic, or metal surface. Do not dry seeds on paper towel or cloth, as they will be very difficult to remove from these materials. Coffee filters can also be used, as seeds do not stick to them.
- If insect infestation is a possibility (beans and peas, especially), put the seeds into the freezer for a few days after they are thoroughly dried.
- Store your clean, dry seeds at a low temperature (refrigerator is best) in a tightly sealed container. Add a desiccant (silica gel packet, powdered milk in a porous paper container) to the container to absorb moisture.

4. Saving seeds from some common vegetables and herbs

- **Annual vegetables and herbs**
    - Peppers: usually self-pollinated, can be cross-pollinated by insects. Allow several peppers to ripen fully (turn red) on the plant. Cut open and scrape out seeds, remove any membrane, spread on a plate. Dry and store.
    - Beans and peas: self-pollinated before flowers open. (Runner beans are cross- pollinated by bees more easily than other beans or peas.)
        - Allow pods to fully mature and dry on the plant until the pods and the seeds inside them are hard. Pull the whole plant or just cut off the pods. Note: some bean and pea pods will "shatter" when they are fully dry on the plant; a light touch can cause them to split open and release the seeds. Harvest dry pods carefully to avoid this.
        - Shell out the seeds by hand, or thresh them out by putting in a bag and beating it with a heavy stick, walking on the dry pods, etc. Winnow the seeds to remove chaff.
        - Spread seeds in a single layer on a tray, discard any that are visibly damaged, and dry for several weeks. When they are fully dry, put them into a ziplock plastic bag and put them in the freezer for 3-4 days to kill any insect eggs that may be inside the seeds. Remove from freezer and store.
    - Lettuce: self-pollinated, though some cross-pollination by wind may occur.
        - Allow plants to remain in the garden until they have bolted and produced tall stalks with many tiny flowers.

- After the flowers have dried and turned to small white fluffy heads, pull or shake off the attached seeds. You can also cut the entire top of the plant and thresh out the seeds by putting it in a paper bag and beating it. Winnow to remove chaff.
- Dry and store.

- Tomatoes: self-pollinated, though some cross-pollination by insects may occur.
  - Pick the best tomatoes from your best plants when fully ripe.
  - Cut several fruits in half along their equator, and squeeze out the pulp and seeds into a glass jar. Allow to stand for several days (1-5 days) to ferment, swirling the contents once or twice a day. The mixture will develop a mold layer and a disagreeable odor, and the viable seeds will sink to the bottom of the jar. When the mold layer covers the surface of the liquid, add more water to the jar and swirl it. When the seeds settle, pour off as much of the liquid and pulp as you can, without losing the seeds. (Seeds that float are most likely not viable.) Add more fresh water to the seeds, swirl, and decant repeatedly until only clean seeds remain in the jar.
  - Dump the clean seeds into a strainer. Set the strainer on a pad of paper toweling to absorb more of the water from the seeds. Then dump the drained seeds onto a glass, ceramic or metal plate to dry. Spread them out as much as possible, so they will dry more quickly. Each day, break up any remaining clumps to ensure even drying. Store when completely dry.
- Eggplant: self-pollinated, though some cross-pollination by insects may occur.
  - Allow a few eggplants to remain on the plant until they are fully mature: their original color will turn yellowish or brownish, and the skin will lose its shine. This will be well after they were ready to be eaten.
  - Cut open the eggplant: you should see hard, brownish seeds imbedded in the flesh. Coarsely chop the part that has the most seeds. Put into a blender, add water and pulse on lowest speed to break up the flesh and release the seeds.
  - Transfer the water, flesh and seeds into another container. Add more water and decant repeatedly until only the viable seeds are remaining in the container (they will sink). Drain well and spread out to dry. Store when completely dry.
- Cucumbers: pollinated by insects, will cross only with other cucumbers.
  - Pick the cucumber when it is fat and yellow, far beyond the edible stage.
  - Scrape the seeds and pulp into a glass jar. Let the mixture ferment for a few days.
  - Add water and decant repeatedly until the seeds are completely clean.
  - Dry and store.
- Squash and pumpkins: pollinated by insects, will cross with other nearby squash plants of the same species. There are three species commonly grown in home gardens. To reduce the chance of crossing, be sure you are raising just one of each species (and hope that the neighbors are not raising different varieties!) Here are examples:
    - Curcurbita pepo: acorn squash, zucchini and most summer squash, spaghetti squash, gourds, field pumpkins
    - C. moschata: butternut, Tromboncino
    - C. maxima: buttercup, Kabocha, banana, Cinderella pumpkin, Hubbard, Atlantic Giant pumpkin
  - Because these vegetables are easily cross-pollinated and so commonly grown, saving seed that will be true to type is more difficult. Techniques to prevent cross-pollination should be used. See references.
  - Allow the squash to fully mature on the vine. For winter squash, you can collect the seed when you are ready to cook the squash. For summer squash, allow the squash to mature on the plant to the hard-shell stage, about eight weeks beyond when it is ready for eating. It is

recommended that you store the mature squash for about 3 weeks after harvest before opening to collect the seeds.
        - Cut open, scrape out the seeds, and wash them in water to remove pulp. Seeds that float in the water are not viable and can be discarded.
        - Dry the viable seeds on newspaper for about two weeks, then store.
    - Okra: self-pollinating, but easily cross-pollinated by insects
        - Allow a few pods to fully mature on the plant until they become hard and dry.
        - Break open the pods to release the seeds; or store the whole pod. Allow to dry at room temperature for an additional two weeks before storing.

- **Biennial Vegetables**
    - Biennial vegetables require a period of chill to begin flowering. If they are planted in the spring, summer, or fall of the year, they will not flower and go to seed until the following spring. In California's mild winters, these plants can be left in the ground all winter and allowed to flower and produce seed the following spring.
    - Biennials include:
        - Most of the broccoli family, including broccoli, cauliflower, kale, collards, cabbage, kohlrabi, Brussels sprouts, all of which are the same species. Insect pollinated, cross-pollinate easily within species; however, an individual plant cannot pollinate itself.
        - Most of the carrot family, including carrots, celery, celery root, parsnips, and parsley. Dill and coriander are related, but are annuals. Insect pollinated, cross-pollinate very easily.
        - Beets and chard; spinach is related, but is an annual. Pollinated by wind, cross-pollinate very easily, even with plants very far away.
    - Because these vegetables are so easily cross-pollinated and so commonly grown, saving seed from them is more difficult. Techniques to prevent cross-pollination must be used.
    - Seed from all the above biennial vegetables can be harvested by the dry method.

Summary

- Be sure the plant is an open-pollinated variety (not a hybrid).
- Be sure you haven't planted different species/varieties that can cross with each other.
- Allow the plant part that contains the seed (flower, fruit, etc.) to fully mature before collecting seeds. Remember that this may be far past eating stage (market maturity)!
- Collect and clean the seeds.
- Dry thoroughly in a protected place (away from insect pests and extreme temperatures).
- Label and store in a cool, dry place.

References and Resources

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