

# How to Save Seeds

Saving seeds from plants is a long tradition. It can save gardeners money because they will no longer need to buy seed packets or transplants. It will increase your self-sufficiency and help preserve genetic diversity. Gardeners who save seeds are fully engaged in the plant's life cycle, which can be a great teaching tool for others. And saving seeds and sharing them with others helps build community.

## Seed Saving Terms

**Pollination:** The transfer of pollen from the male part, the anther, to the female part, the stigma, of a flower. Pollination doesn't always guarantee fruit.

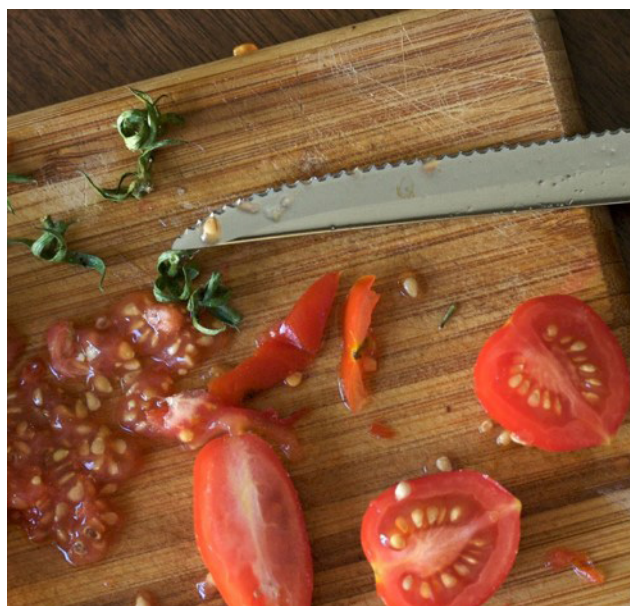
**Fertilization:** Union of the male and female cells. Fertilization is what leads to seed and fruit formation.

**Monoecious:** Plants that have separate male and female flowers on the same plant. Examples: squash and corn.

**Dioecious:** Plants that have separate male and female flowers on different plants. Examples: holly and asparagus.

**Self-pollinated plant:** Plants that receive pollen from the same flower or plant. These plants often have flowers with both male and female parts, perfect flowers where pollen transfer occurs within the same flower. Sometimes these plants have flower structures that prevent the introduction of pollen from other plants. Self-pollination can also happen with monoecious plants that have separate male and female flowers on the same plant. Over time, self-pollination leads to less genetic diversity.

**Cross-pollinated plant:** Plants that receive pollen from different flowers or plants. These plants often have separate male and female flowers or plants. Their characteristics make it unlikely they will self-pollinate. For example, they may have self-incompatible flowers meaning fertilization cannot occur or incompatible timing of flower opening or maturation.



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## Open pollinated, heirloom, and hybrid plants

**Open-pollinated plants:** Open-pollinated plants usually produce seeds that are similar to the parent, also referred to as true-to-type. These plants have more genetic diversity and are pollinated by insects, birds, or wind. These plants are good for seed saving.

**Heirloom plants:** An heirloom plant is special and usually passed down through generations because of a valuable characteristic, such as taste, or color. Heirlooms usually have a long history and are a special kind of open-pollinated plant. These plants are good for seed saving.

**Hybrid plants:** A hybrid plant is usually produced by humans and is a specific cross between parents. Sometimes this can happen in nature. These seeds and plants are commercially available and usually labeled as hybrid or F1. There is less genetic diversity with hybrids and seeds from these plants usually do not look like the parent plant. These are usually bad for seed saving and you will need to buy new seeds every year.

Open-pollinated	Heirloom	Hybrid
<p>Cross-pollinated plants that are not hybrid</p> <p>Produces seeds that grow true-to-type if isolated</p> <p>Can be heirlooms</p> <p>Great for seed saving</p>	<p>Special kind of open-pollinated plant</p> <p>Passed down through generations</p> <p>Valuable characteristics like hardiness, color, flavor, adaptability, etc.</p> <p>Great for seed saving</p>	<p>Made by crossing specific parent plants</p> <p>Does not produce seeds that are true-to-type</p> <p>Seeds often sterile</p> <p>May have patents</p> <p>Bad for seed saving</p>

## What plant seeds should be saved?

When you are selecting plants to save seeds from, choose open-pollinated varieties which have the most stable traits.

### Easy plants to save seeds from

These annual, self-pollinating crops don't require isolation and you only need a few plants to get good seed: Peas, beans, lettuce, tomatoes.

## Isolation

There is a common misconception that plants in the same family can cross pollinate, such as cucumbers, squash, or watermelon which are all in the Cucurbitaceae family. This is false. Different species won't cross pollinate.

But different varieties of the same species can cross pollinate, such as between summer squash and pumpkins. These plants are different varieties of the same species and need to be isolated from each other if you are saving seeds.

### Why do you isolate varieties?

Gardeners isolate plants because they want to save seeds and prevent unwanted cross pollination. The fruits from plants that have not been isolated will be the same, but the seeds grown from that plant would be different. Isolating varieties keeps them true to type.

## How do you isolate varieties?

There are three main ways to isolate varieties: time, containment, and distance.

**Time:** Stagger the planting times of varieties so they do not flower at the same time.

**Containment:** A physical barrier can isolate plants. Use a paper bag, floating row covers, or nylon bags to cover wind-pollinated flowers. These bags also work well for insect-pollinated plants. Barriers can be done on individual flowers or a whole plant. Hand pollination ensures the flower is pollinated by the correct plant. Use a cotton swabbed stick or a small paint brush to gently brush against the flower's stamen to pick up some pollen. Then, gently brush the female stigma to transfer the pollen. You can also take the male stamen and directly and gently rub it onto the female stigma.

**Distance:** There are a few general rules for distance isolation, but each variety has specific needs. Refer to the below chart from Seed Savers Exchange for recommended isolation distances for some commonly grown produce species. More species guidelines are available at [www.seedsavers.org](http://www.seedsavers.org).

In general, self-pollinators, such as tomatoes need to be a few rows apart. Primarily self-pollinator plants such as oats should be 5 to 10 feet apart. Insect pollinated plants such as beans, barley, or broccoli should be 200 yards apart. Wind-pollinated plants such as beets, chard, spinach and corn should be a mile apart. If that separation distance isn't possible, consider another isolation method.

Crops	Species	Life Cycle	Primary Pollination Method	Recommended Isolation Distance for Seed Saving
Asparagus	<i>Asparagus officinalis</i>	perennial	wind	800 feet–1/2 mile (244–805 m)
Bean (Common)	<i>Phaseolus vulgaris</i>	annual	self or insect	10–20 feet (3–6 m)
Beet	<i>Beta vulgaris</i>	biennial	wind	800 feet–1 mile (244 m–1.6 km)
Broccoli	<i>Brassica oleracea</i>	biennial	insect	800 feet–1/2 mile (244–805 m)
Cabbage	<i>Brassica oleracea</i>	biennial	insect	800 feet–1/2 mile (244–805 m)
Carrot	<i>Daucus carota</i>	biennial	insect	800 feet–1/2 mile (244–805 m)
Cauliflower	<i>Brassica oleracea</i>	biennial	insect	800 feet–1/2 mile (244–805 m)
Cilantro	<i>Coriandrum sativum</i>	annual	insect	800 feet–1/2 mile (244–805 m)
Corn (Maize)	<i>Zea mays</i>	annual	wind	800 feet–1/2 mile (244–805 m)
Cucumber	<i>Cucumis sativus</i>	annual	insect	800 feet–1/2 mile (244–805 m)
Kale	<i>Brassica oleracea</i>	biennial	insect	800 feet–1/2 mile (244–805 m)
Kohlrabi	<i>Brassica oleracea</i>	annual/biennial	insect	800 feet–1/2 mile (244–805 m)
Lettuce	<i>Lactuca sativa</i>	annual	self	10–20 feet (3–6 m)
Lima Bean	<i>Phaseolus lunatus</i>	annual	self or insect	160–500 feet (49–152 m)
Melon	<i>Cucumis melo</i>	annual	insect	800 feet–1/2 mile (244–805 m)
Okra	<i>Abelmoschus esculentus</i>	annual	self or insect	500–1,600 feet
Onion (Common, Multiplier)	<i>Allium cepa</i>	biennial	insect	800 feet–1/2 mile
Pea	<i>Pisum sativum</i>	annual	self	10–20 feet (3–6 m)
Pepper	<i>Capsicum</i> spp.	annual	self or insect	300–1,600 feet (91–488 m)
Pumpkin	<i>Cucurbita</i> spp.	annual	insect	800 feet–1/2 mile (244–805 m)
Radish	<i>Raphanus sativus</i>	annual	insect	800 feet–1/2 mile (244–805 m)
Spinach	<i>Spinacia oleracea</i>	annual	wind	800 feet–1 mile (244 m–1.6 km)
Squash (Summer, Winter)	<i>Cucurbita</i> spp.	annual	insect	800 feet–1/2 mile (244–805 m)
Sunflower	<i>Helianthus annuus</i>	annual	insect	800 feet–1/2 mile (244–805 m)
Tomatillo	<i>Physalis philadelphica</i>	annual	insect	800 feet–1/2 mile (244–805 m)
Tomato	<i>Solanum lycopersicum</i>	annual	self or insect	10–50 feet (3–15 m)
Watermelon	<i>Citrullus lanatus</i>	annual	insect	800 feet–1/2 mile (244–805 m)

Source: Seed Savers Exchange



<https://www.flickr.com/photos/chiotsrun/albums/72157622087056945/with/3880199640/>

## Harvesting seeds

Don't forget to grow enough plants if you are going to be harvesting some for food.

### Dry Harvesting

- Plants: Beans, peas, onion, carrot, corn, flowers, herbs.
- Seed type: Mature, dry seeds.
- Harvest: Cut off seed heads just before they are fully dry to prevent seed loss for small, light, airy seeds.
- Process: Dry further on a screen in a single layer in a cool, well-ventilated location. You can also dry seed heads in paper bags to prevent loss or cover seed heads directly on plant with nylon bag to catch seeds.

### Wet Harvesting

- Plants: Fleshy fruits with gel casing around seeds.
- Harvest: Scoop seeds out or crush fruit to release seeds.
- Process: Put seeds in a jar with a small amount of water to ferment for two to four days, stir daily. Fermentation helps to break down gel coating on seeds. Viable seeds will sink. Pulp and bad seed float. Pour off the top layer and water. Spread the seed on paper towel or fine screen to dry before storage.

## Storing seeds

Keep seeds cool and dry using paper envelopes. A paper bag in a glass jar, which is pest proof, works for long term storage. Label the container with the plant name, variety, and date.

## Additional Resources

Seed Saving Guide, [go.illinois.edu/SeedSaverGuide](http://go.illinois.edu/SeedSaverGuide)

## References

- How to Save Seeds, Seed Savers Exchange, [www.seedsavers.org/how-to-save-seeds](http://www.seedsavers.org/how-to-save-seeds)
- Isolation Distances, Seed Savers Exchange, [www.seedsavers.org/isolation-distances](http://www.seedsavers.org/isolation-distances)
- Isolation Methods, Seed Savers Exchange, [www.seedsavers.org/isolation-methods](http://www.seedsavers.org/isolation-methods)

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