

Cross-Pollination

<http://howtosaveseeds.com/seedsavingdetails.php>

Amaranth

Amaranthus spp.

Amaranth is self-pollinating, but will also cross-pollinate (possibly even between different species). Further, wild amaranths are common in most areas worldwide. Individual heads can be bagged to allow growing several varieties in proximity or to ensure that wild plants don't cross the plants you're growing. From ½ mile (green amaranths) to two miles (grain amaranths) are needed for reliable distance isolation.

Grain amaranths may need support to keep the plants from falling over as they mature because of their large, heavy seed heads. Collect the seed heads as they dry on the plants and store in closed paper bags to finish drying (many of the seeds will shed naturally). Don't let the seed heads get wet after they dry. Chaff easily blows away after seed heads are crumbled—watch for thorns or prickles in some plants!

If germination is slow, lightly stir the soil's surface... amaranth seeds need some sunlight after a period of darkness to germinate. This trait adapts them to disturbed or overturned soil, hence one of their common names, "pigweed," so-called because they would germinate in hordes in an area after pigs had passed and turned the soil, exposing their seeds to the light so they could germinate.

Cut seed heads when they are becoming dry and hang them upside-down in large paper bags or over tarps to collect the tiny seeds. The dried heads can easily be crumbled in the hands and the chaff gently blown away if you're in a hurry.

Amaranth seeds can last for many years if properly stored, and can sprout in the garden even after several years in the soil.

Beans

Phaseolus spp.

Beans are self-pollinated, and different bean varieties do not commonly cross-pollinate each other. Similarly colored varieties should be separated by enough distance to keep the vines from intertwining, to make them easy to distinguish at harvest. Allow pods to dry on the vines before picking and shelling, then finish drying the beans in a dry spot.

If you're eating your beans green, allow just one or two pods per plant to remain and mature for seed... too many pods maturing on an individual plant will cause it to stop setting more beans and concentrate on maturing the ones it has.

Pick beans for seed after the pods are ripe and have dried on the plants. Don't allow dried pods to get rained on as the beans may quickly mildew or sprout in their pods. When very dry many pods will split

on their own to drop their seeds; the rest can be easily crumbled in the hands and the finer chaff blown away after removing the big pieces. Finish drying the beans in a dry spot indoors or under cover.

Bean seeds, properly dried and stored, will keep for 4 years. See also [Bean Family](#).

Beets

Beta vulgaris

Beets and Swiss chard will cross-pollinate, as they are from the same species. Beets/chard must be separated by wind-proof caging, bagging or up to 2 to 5 miles of distance to ensure purity as their wind-blown pollen is exceedingly small and light.

It's easy to leave the base and center of chard plants to over-winter, flower and produce seeds while still eating plenty of leaves. However, to save seed from beets you'll have to plant 20 to 30 plants to leave in the ground to over-winter if you want to get seeds (use a deep straw mulch to help in colder zones). You can harvest tasty beet greens for the first part of the season, and you can crowd the plants a bit. You don't have to pamper them with lots of room, water and fertilizers to get plenty of seeds in the spring—just make sure they're big enough to get through the winter and re-sprout.

Allow beet seeds to fully mature and become dry on the plants before harvesting. After final drying the seeds can be easily rubbed off the stems. Beet seeds will last for up to 5 years if properly stored. See also [Beet Family](#).

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Beet Family

Chenopodiaceae

Wind-pollinated members of the Beet Family have *very* light pollen and need up to 2 to 5 miles for safe distance isolation. Chard and beets are in the same species (*Betula vulgaris*) and must be isolated from each other or they will cross. Different Beet Family species will not cross-pollinate, so that one beet or chard, one quinoa (*Chenopodium quinoa*), one red (*Chenopodium giganteum*) and one white (*C. alba*) lamb's quarters, one orach (*Atriplex hortensis*) and one spinach (*Spinacia oleracea*) can all be grown together without danger of crossing.

You can bag or cage varieties of the same species for isolation, but techniques vary depending on whether the species will self-pollinate or not. Quinoa and lamb's quarters are self-pollinating, so large paper bags can simply be fastened over individual seed heads for protection from cross-pollination. Since quinoa and lamb's quarters produce many small seed heads up and down their stems, mark the protected seed heads so that you can tell them from unprotected ones at harvest time.

Beets, chard, orach and spinach will not pollinate themselves. These plants need to be caged or bagged in groups so that they can pollinate each other. At least 10 or more plants should be included in each cage or bag for adequate cross-pollination, and to help insure that there are twice as many female as

male plants.

Bags or cages need to be windproof to prevent intermingling of the very light pollens. Shake the plants together within their bags or cages regularly, to help the pollen mix move around inside the cage/bag for good pollination.

The Beet Family includes the following species:

- *Beta vulgaris*: beets, chard.
- *Chenopodium album*: lamb's quarters.
- *Chenopodium ambrosioides*: epazote.
- *Chenopodium giganteum*: magenta-centered lamb's quarters.
- *Chenopodium quinoa*: quinoa.
- *Spinacia oleracea*: spinach.

Chard

Betula vulgaris

Swiss chard and beets are wind-pollinated and in the same species. All varieties of beets and Swiss chard will cross each other. Different varieties must be caged, bagged or separated by up to 5 miles for safe distance isolation.

Let seeds mature and dry on the stalk before harvesting, the complete drying before gently rubbing the seeds off their stalks. Each 'seed' is botanically a berry, and contains several actual seeds (breaking them apart would damage many of the seeds). This is why chard and beets often come up several plants to a spot despite the most carefully-frugal sowing efforts.

Chard seeds will last for up to 5 years if properly stored. See also [Beet Family](#).

Fennel

Foeniculum vulgare

Fennel will cross with other Fennel varieties and should be separated by ½ mile for safe distance isolation. Allow umbels to dry completely on plants before harvesting seeds.

Properly stored, fennel seeds will keep for 3 or more years. See also [Carrot Family](#).

Kale

Brassica oleracea

Most kales are *Brassica oleracea*, and will cross with other members of this species such as cabbage, collards, broccoli and cauliflower. Siberian Kale, however, is *Brassica napus* and will cross with rutabagas and rape, but will not cross with the members of *B. oleracea*. See also [Cabbage Family](#).

Let seed pods mature and dry on the plants before harvesting, or the seeds will not be fully mature. Harvest quickly after drying, though, as the pods often shatter and drop their seeds soon after they dry. Kale seeds can last up to 4 years if properly stored.

Lettuce

Lactuca sativa

Lettuce is self-pollinating, but plants can cross under some circumstances. 25 feet of separation is generally sufficient to prevent crossing, however.

While each flower opens only during the morning of one day, the flowering period is long and there are almost always flowers blooming on the plants. This means that a flowering plant will have flowers and seeds in all stages of maturity.

Gather dried seed heads (they are easy to recognize) every couple or three days as they ripen and dry, or wait until most seed heads have dried and hang the plant upside down over a tarp or in a paper bag (harvest dry seeds if rains threaten).

Lettuce seeds can remain viable for 3 years if properly stored.

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Melon, Honeydew and Musk

Cucumis melo

Melons will cross other members of C. melo and should be separated by ½ mile for reliable distance isolation. Melons produce wet seeds. Allow melons to ripen on vines until skins are hard, then store for an additional 3 weeks before removing and cleaning their seeds. See [Cleaning Wet Seeds](#).

Melon seeds can be kept for up to 5 years if properly stored. See also [Squash Family](#).

Onion

Allium cepa

Insect-pollinated Onion Family plants need up to 1 to 3 miles for safe isolation. Closely planted groups of plants can be caged or bagged and then hand-pollinated.

To hand-pollinate, remove covers and use a fine, light paintbrush to mimic the action of visiting insects, thoroughly mixing pollen between several flowers. Make sure to hand-pollinate the flowers during a time (such as early morning or late evening) when insects are not present, and replace covers quickly and securely.

Allow seeds to ripen and dry on the plants, then harvest quickly to avoid losing seeds. Onion seeds are short-lived and should only be stored for one or two years before planting.

Peppers

Capsicum spp.

Self- or insect-pollinated, pepper varieties of the same species will cross-pollinate. There is no crossing between varieties of different species, however. You can safely grow one hot or sweet pepper (*C. annuum*) and one Tabasco pepper (*C. frutescens*) without danger of their crossing.

Peppers within the same species can be safely isolated by 500 feet of separation, or they can be caged since the plants are not overly large. Allow peppers to ripen and dry *fully* on the plants before harvesting the pods. Wash your hands thoroughly with soapy water after harvesting hot pepper seeds, since the residues will burn eyes and lips for some time after contact!

Pepper seeds will keep for 2 or 3 years if properly stored.

Tomatoes

Lycopersicon lycopersicum

Almost all modern tomatoes can be safely grown without isolation and will not cross—'currant' tomatoes (such as Cherry Tomatoes), and 'potato-leafed' tomatoes (such as Brandywine) are possible exceptions and may cross other currant or potato-leaf varieties. Grow as many standard tomatoes as desired, but grow only one currant tomato or one potato-leaf tomato at a time to ensure purity (or cage them, or separate varieties by 500 feet). Currant and potato-leaf tomatoes will not usually cross with common tomato varieties.

It's best to not plant all a valuable variety's seeds in one season until you are sure it doesn't cross with any other varieties you grow.

Allow tomatoes to ripen thoroughly on their vines to *at least* the eating stage before harvesting them to collect their seeds. Upon harvesting, tomato seeds are best fermented in order to remove a germination-inhibiting gel which covers the seeds, and to kill diseases. In nature, fermentation of fallen ripe fruits removes this gel, and this process is imitated when preparing tomato seeds. See [Fermenting Seeds](#) and follow the directions.

If fermenting tomato seeds seems too much trouble, they will still germinate if the slippery gel surrounding the seeds is carefully rubbed off while you're cleaning them. Seeds treated this way will germinate, but they will not have had the protection of the fermentation process killing disease organisms. If you noticed any problems with your plants (leaves spotting or dying, inexplicable wilting, etc.), the extra trouble of fermentation will be well worth the effort.

Dry your tomato seeds on a piece of glass or a shiny plate—the wet seeds will stick to paper and be difficult to remove without damaging them.

Tomato seeds will store safely for 4 or more years after being properly dried and stored.