



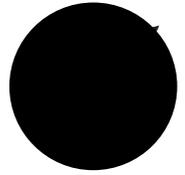
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*"Save the Seed to Plant
the Food of Tomorrow"*

How to Save Seeds

Saving seeds is due for a revival. Seed saving is rewarding in so many ways. It's very easy. If you find yourself smitten by it, there are ways you can get more expert about it. However, even a little seed saving is an empowering and powerful thing to do.

INDEX

How to Save Seeds.....	3
Plant Types and Specifics.....	4
Self- pollinating Annuals.....	5
Lettuce	5
Tomatoes.....	6
Beans.....	7
Grains	9
Peppers	9
Cross-pollinated Annuals	10
Corn.....	10
Cucumbers	10
Squash.....	11
Spinach.....	11
Amaranth and Quinoa.....	11
Cross-pollinated Biennials	13
Beets	13
Swiss Chard	13
Carrots.....	14
Leeks	14
Onions.....	14
Parsnips.....	15
Perennials.....	15
Chives	15
Asparagus.....	15
Rhubarb.....	16
Clonal Reproduction.....	17
Potatoes	17
Sunchoke (Jerusalem Artichoke)	17
Garlic	17
Flowers and Herbs.....	18
General Harvest Notes	19
General Storage Notes.....	20
Selection Criteria.....	21
The Question of Purity	22
Aesthetic Dimensions of Seed Saving.....	23
A GARDENER’S MESSAGE.....	24

How to Save Seeds

Saving seeds is due for a revival. Seed saving is rewarding in so many ways. It's very easy. If you find yourself smitten by it, there are ways you can get more expert about it. However, even a little seed saving is an empowering and powerful thing to do.

Basics

What you basically do when you save seeds is this: you go to the seeds when they are ready and get them; you make sure they're really dry, and then you store them.

It's as simple as that but ...

Getting good seeds at the right time involves knowing the usual life cycle of a plant and whether a seed will stay true.

You can gather them in different ways such as plucking, rubbing, shaking or grabbing. Ways of harvesting are quite quickly obvious but not always so.

Making sure seeds are dry enough means having a good drying space for them. Storing seeds well involves having appropriate labels and containers for them.

Plant Types and Specifics

Plants are annual, biennial or perennial.

Annual plants (such as lettuce and tomatoes) flower and mature seed in the same year.

Biennial plants (such as carrots and beets) are normally harvested as food in their first summer or fall but do not flower or produce seed until the next year. In mild coastal or southern areas, biennials will survive the winter under a cover of hay or leaves. In most of continental North America, biennials must be dug up and carefully stored elsewhere during the winter to be replanted in the spring. Most biennials become tall and bushy when going to seed, taking up more space than they did the previous year. They can be thinned or transplanted to twice the usual spacing.

Perennials live and bear seed year after year. Plants are also classified as either self-pollinated or cross-pollinated although sometimes they can be both.

Self-pollinated Plants: Pollen is not transferred from one flower to another, either on the same plant or between plants. The process occurs within each flower. The flowers have both male and female plant parts and pollination occurs successfully within the single bloom. The seeds of these plants almost always retain the quality of the parent seed, or stay “true.” Because they rarely cross with another variety of the same species, isolating them is unnecessary unless you want absolute purity in a strain.

Cross-pollinated plants: The pollen from one flower fertilizes another flower, either on the same or another plant. Either wind or insects carry the pollen. It is important to know the other varieties of the same species with which a plant has the potential to exchange pollen. For example, if your cabbage and your broccoli flower at the same time, the seed will produce few plants that look like either of them. Allowing only one variety of each potentially cross-pollinating vegetable to flower out eliminates the need to separate plants from each other. As well, barriers can be erected or planted, plantings can be staggered or crops can be covered with garden fabric.

Following are the seed stories for most potential seed crops in your garden. They are the self-pollinating annuals, the cross-pollinated annuals, the cross-pollinated biennials and the perennials.

Self- pollinating Annuals

These include **lettuces, beans, grains, tomatoes** and **peppers**. It is easy to save a diversity of them and they are very significant crops to save.

Lettuce

Lettuces are unusual in the manner that they complete their cycle and go to seed.

They don't dry down but instead they grow up. They put up a flowering stalk that can reach waist high and as they do so the leaves become shrunken versions of their former selves. The candelabra-like appearance of many cultivars is so attractive that their aesthetic appeal could be taken into consideration when planning your garden.

A single lettuce can produce hundreds of small yellow flowers atop its stalk. The flowers become bunches of feathery little seed sites, each flower creating eight to fifteen seeds. The seeds are a miniature version of dandelion seeds, having a tiny parachute perfect for riding the breezes. They are little wedges about an eighth of an inch long and are either white or dark, depending on variety. Someone wanting to have enough seed for the coming year could simply pluck two or three fuzzy seedheads to easily get a couple of dozen seeds.

The seeds ripen over several weeks and when they start to appear there are many flowers still blooming. If you want a lot, it's best to wait until a third of the seeds are ready and collect them when conditions are as dry as possible.

The plants can be tipped into whatever container you're employing and shaken to release the seeds. You can also rub the seedheads between the thumb and forefingers of one hand while holding the bucket or bag under them with the other. I've found the plastic pails that are usually available from stores that sell ice cream cones to be perfect for gathering lots of different seeds: seedheads can be easily bent into them and shaken against the sides.

After harvest, lettuce seeds are best dried for another day or two. Spread them out on plates, pans, trays or bucket lids in a warm, airy place. The freshly gathered seed usually comes with a little fluff and flower parts. The fluff quickly dries in the presence of heat and any little bugs you may have picked with the seeds will usually disappear in a few hours.

The seed can be rubbed between the fingers to release the fluff. Most of the fluff can be easily blown away if you're careful not to blow too hard. Sifting it through an appropriate screen can also clean the seed. For the amateur seed saver, it is not crucial for the seeds to be totally clean, just totally dry.

It's wise to have identifying labels accompanying the seeds at each step and to put sticky labels on their containers. Lettuce seeds take up little space. It's easy to find small glass or plastic containers for them. Film canisters and plastic bags also work well.

Lettuce seed is usually collected in September and October. If you want to be a saver of lettuce seed, it's best to find those cultivars that produce the kind of lettuce you like but

also produce seed before the plants are frozen or rained out. In short season growing areas, it might be necessary to start lettuces early indoors.

Lettuces rarely cross but it's best to not allow undomesticated lettuce varieties, such as Wild or Prickly Lettuce, to flower nearby. If you start saving lettuces you'll be amazed by the wonderful shapes, textures and colors of the leaves plus all the diverse ways the flowering stalks shoot up.

Lettuce seeds keep a high viability for at least four years.

Tomatoes

Tomatoes are the most popular food to grow so it's probably appropriate that saving their seeds involves a special little project.

The accepted tomato seed saving method involves letting ripe tomatoes ferment for a few days to prevent bacterial and viral diseases from persisting through the seed. (Don't save seed from any tomato that was obviously diseased.) Fermentation also breaks down the gel that covers tomato seed.

Tomato seed saving can be a juicy ritual. Pick the tomatoes when they are really ripe.

In the bottom of a pail or bucket, mush the tomatoes and squish from the pulp as many seeds as possible. (One soon finds out that cultivars vary considerably in their pulpiness.)

After you've done the mushing and squeezing, get the garden hose and add a little more water so that all seeds and pulp are in the bath. Water seeds *off* your hands into the pail as well.

Then put a lid on and keep your bucket identified.

Three days later you'll observe a moldy, fermented brew. (You're not supposed to let the fermenting process go on much longer.)

Begin by hosing back into the liquid whatever seeds are still attached to the tomato meat. As you do this, discard much of the pulp over the side to be later composted. The pulp floats but the seeds don't. After the tomato pieces have been rinsed, pause for a few seconds as the last of the seeds sink to the bottom.

Then gently pour the liquid out of the bucket and watch all the remaining bits of skin and flesh float over the edge. Ta Da! There are all the tomato seeds on the bottom! It can take a couple of tippings to get the liquid to come completely clear.

The next thing is to pour the clear water and the seeds onto a fine mesh screen that collects the seeds. It's a skill to do this in one go. Usually a few seeds will be left in the pail and it will be necessary to add some more water and do another pour.

The seeds tend to clump up on the screen. A light spraying with the hose gets them evenly spread for faster drying.

The seeds dry remarkably fast. On a sunny day, if you put them on the screens in the morning, you can be storing them away in the late afternoon.

It helps to come in the middle of the day when the seeds are already mostly dry and scrape them gently off the screen with their plastic marker or something similar so as to aerate them a bit more. It also is a good idea to rub them between the fingers so as to separate seeds that are stuck together.

Whew. All the above is not necessarily the way to save tomato seed. If you don't want to go the fermentation route, you could scoop a few seeds out of your homegrown tomato and put them on a plate to dry.

The seeds turn a very light color when dry. They look and feel dry. Tomato seeds, like lettuce seeds, can be stored in small containers. They too remain viable for four or five years.

I've rarely come across tomato crosses but I know other gardeners who have seen plenty. For purity's sake, you should separate tomato varieties by at least ten feet.

Beans

These include regular pinto and chili beans, fresh green and yellow snap beans, peas, chickpeas, soybeans and lentils. Depending on variety, these dry down from July to October. It's best to grow cultivars that will dependably mature dry beans year after year in your garden.

In the process of drying down, all these legumes lose their leaves until only the pods are left. Most get to the point where the beans rattle in the pods if you shake them.

Some beans pods twist open and spurt their seeds on hot days, so it's important to do daily checks when harvest is close. If your thumbnail can't make a dent in the seed, the beans are ready.

Pick the pods by hand, gathering them in appropriate containers and take them to your drying space. Spread them onto screens or trays. Although they could be threshed immediately, giving them another drying day or two is good in case some seeds are not quite done. They dry better in the pod.

Opening the pods one by one can be a very exciting as well as mesmerizing activity.

There are lots of ways to get large amounts of beans out of their pods. I find the simplest, most efficient method is to thresh them in my wooden threshing box.

Depodding them in the threshing box is a quick and fun affair. It's mostly a stepping process with the occasional shuffle to make sure you get all of them. Bean seeds could also be threshed with your feet on any hard surface using a tarp or a burlap bag. If you're stomping the beans to thresh them and not doing it by hand, it's crucial that the beans be very dry.

There are various ways of cleaning the beans at this point. You could simply pick out the beans. You could separate pod parts from seeds easily and efficiently with the right screens. You could also put beans and debris in a bucket of water; viable beans will sink and everything else will float. With this last method, the beans would need to dry out on screens again. Because I clean

large volumes of seeds, I use an air compressor and squirt the chaff away using a blow nozzle attachment.

In most cases, it's probably unnecessary to give the beans additional drying time after threshing and cleaning, but it's a good precautionary measure. Having the seeds on the screens facilitates the removal of broken, munched, chipped or otherwise suspect beans. It's easy to spot beans that aren't quite finished drying: they are slightly larger and their colors aren't as deep.

It's wise to keep identifying sticks or markers with each variety at each step. When they are put away, they should get a label and date on their container.

If beans are adequately dry, freezing temperatures will not endanger their viability.

On the other hand, freezing temperatures kill any insects that have managed to hitchhike rides with the seeds.

Having your own dry beans on hand means special meals are around the corner.

You're unlikely to find beans in a store that have the eating quality of your homegrown ones. As seed, beans will easily stay viable for four or five years but as food, they are best eaten by next year's harvest.

You can occasionally get surprise seeds with regular dry beans and it's hard to know whether a cross has occurred or a genetic throwback. Such beans can be most interesting to grow out because sometimes they will continue to produce more unexpected colors and patterns. You can lessen the already remote chances of such offerings by alternating bean rows by maturity dates or with other crops. Personally, I'd rather have the occasional bean surprise to possibly grow out again.

The maintenance of seed purity is a most interesting topic for seed savers and will be discussed at the end of this chapter.

There are three kinds of beans that, because of their more open flowers, can be pollinated by insects as well as by themselves: runner beans, fava beans and lima beans.

To maintain purity in these bean families, it is best to grow only one variety of each (which most people would ordinarily do anyway) or to separate them as much as possible.

Runner and fava beans appreciate a cooler growing season than regular beans and the seeds ripen unevenly over many weeks. Soybeans need three months of warm weather to dry down in late September. In North America there's hardly any awareness of significant variety differences in soybeans, favas and runner beans. These seeds have enormous potential as whole food crops.

Grains

Grains are self-pollinating annuals that are rarely grown out by gardeners let alone seed savers. They are one of the easiest crops to grow. Eaten as whole foods they have great potential to provide us with more healthy diets. The way things now stand, our commercial varieties are bred to be used in food products not as food. Many important varieties will be lost if we don't become their custodians.

Grains such as barley, wheat, oats, rye, triticale, spelt, emmer and kamut can be planted in the fall or spring depending on the severity of your winter. They usually ripen in the summer and their seed heads make wonderful music as they dance in the wind.

Gathering grain seed is a matter of cutting or pinching off the tops. As with beans, grains are ready when you can't make a dent in them with your fingernail.

Some grains have hair-like awns sticking out of the seeds that may stick to you if you brush against them. These awns, in different colors and lengths depending on the cultivar, add a lot of grace and beauty to the grain display. They need to be rubbed loose from the grains, preferably after the grains have dried another day or two on trays. I recommend using gloves because the awns are quite bristly.

Hulls contain the grains themselves. In some varieties these hulls are easily removed by rubbing and in others the hulls are practically impossible to remove without threshing machinery. If you're saving the grain for seed and not for eating, it's no matter if the hulls stay on.

If stored in dry, cool conditions, grains stay viable for many years.

Peppers

Peppers are treated as self-pollinating annuals although they are perennials in warm climates. Most peppers ripen a rich red. A few fruit will supply seed for hundreds of plants. Remove the seed mass, rub it to separate the seed and allow it to air dry.

Alternately, wash the seed with water in an appropriate container; the debris will float and the seeds can be dried again by spreading them out in the sun or in a warm place indoors.

Although peppers are self-pollinating, cross-pollination does sometimes occur. If you grow a sweet pepper and a hot pepper beside each other, you might occasionally be surprised to find your sweet pepper has some heat. Separate different pepper varieties as much as you can or grow only one variety for seed.

Pepper seeds remain viable for at least four years.

The above self-pollinating annuals are an excellent place to start seed saving.

Lettuces, tomatoes, beans, grains and peppers can be used in lots of meals!

Cross-pollinated annuals are only a little more complicated and here comes the scoop on them, unless you want to wait until you're actually growing them for seed.

Cross-pollinated Annuals

For cross-pollinated plants, it is important to maintain variety vigor by saving seed from at least several individual plants of the same variety, even if you only need a few seeds. Saving seed from only one or two plants, known as inbreeding, reduces genetic contributions and results in reduced health and yield in succeeding generations. (Exceptions to this rule are squashes and pumpkins, which do not noticeably lose vigor even if inbred for several generations.)

Broccoli is normally cross-pollinated by bees, so it is best to grow only one variety or isolate two or more varieties considerably. For annual broccoli, an early spring sowing is recommended.

Broccoli, as a member of the Brassica family, will cross with cabbage, Brussels sprouts, cauliflower, collards, kale and kohlrabi, so watch not to let it flower at the same time as any of these. (This is unlikely to happen unless you are also saving seed of one or more of them.)

Like other Brassicas, broccoli seed is borne in narrow pods. Harvest the pods when they are dry and brittle. Threshing can be done by hand. The right screen makes cleaning the seed a snap. The chaff can also be blown away with a fan or hair dryer.

Corn

Corn is cross-pollinated by the wind so isolation is essential. Any one corn (sweet, ornamental, dent, flint, flour or pop corn) will cross very easily with any other and a neighbor's corn should be at least a quarter mile away. Late and early varieties can be planted beside each other if the first variety sheds its pollen before the silks appear on the second. Harvest the cobs when they are dry and give them additional drying under cover. Husks of six to eight ears can be tied together and hung in an airy place. When seeds are sufficiently dry, it is usually easy to hold an ear in one hand and twist *off* the kernels in another. The kernels can also be left on the cobs to be displayed through the winter. Storage life is only a year or two.

Because corn is such an inbreeder, most sources recommend growing many plants to ensure genetic diversity.

Cucumbers

Cucumbers are pollinated mainly by bees. They cross with one another but don't cross with other vine crops. Let the fruits ripen past the edible stage, when they will become golden, yellow or white. It doesn't matter if the vines are killed by frost. Slice the fruits in half lengthwise and scoop the pulp and seeds into a non-metallic container. Leave the mixture in a warm place and stir it a few times daily. Fermentation will reduce the jelly-like pulp around each seed to a thin liquid and will be complete in three or four days. The best seeds will sink to the bottom of the container and the lighter, inferior ones will rise to the

top. Pour off the floating seeds, wash those remaining by stirring them in a few changes of water or washing them in a sieve, and then spread them on wax paper or screens. Dry them outdoors in sunny weather or in a warm airy room, stirring periodically to encourage uniform drying, until they feel rough but not slippery to the touch.

Squash and Pumpkins

Squash and pumpkins are also pollinated by bees. The four different species of squash and pumpkins won't cross species or cross with cucumbers and melons. *Cucurbita pepo* includes all common summer squashes, all acorn types, the orange pumpkin types, *Delicata*, *Lady Godiva* and *Spaghetti*. *Cucurbita maxima* includes *Buttercup*, *Hubbard*, *Delicious*, *Banana* and *Hokkaido*. *Cucurbita moschata* includes *Butternut* and *Cheese* types. *Cucurbita mixta* includes the *Cushaw* squashes. All will cross with their own species members.

Fastening paper bags over the female flowers, then dabbing pollen from male flowers onto the female, and closing the bag again until the chance of cross pollination is over, ensures genetic integrity. For starters, grow a representative of one or more species each growing season.

Summer squash must be left on the vine about eight weeks past its normal harvesting date until the skin becomes as hard as that of winter squash. All squash and pumpkin seed will gain vigor if allowed to ripen longer in the fruit. Removing and storing them can wait for a month or two. They may be left past the first fall frost.

Cut the fruit of the mature pumpkin or squash in half. Remove the seeds and moist material around them with a large spoon, place it all in a large bowl, add some water and work the mixture through the fingers. The seeds will separate gradually. Wash them again and spread them out on wax paper or screens to dry for a week or more, moving them about daily so they don't remain in small wet piles. Cull out any flat seeds: only the plump ones are viable.

If kept in a sealed jar, check them after a few weeks to see if there is any sign of moisture. If so, take them out for additional drying.

Spinach

Spinach has very fine pollen that can be carried a mile or more by the wind. Remove plants that bolt to seed without producing good spinach. Spinach seed normally ripens unevenly in the latter part of summer. Strip mature seeds from the stalks with your hands.

Amaranth and Quinoa

Amaranth and quinoa are cross-pollinated annuals that are often mistakenly called grains. They will cross with their wild relatives, so it is important to weed out red rooted pigweed and lamb's-quarters if you want to maintain pure seed. Amaranth cultivars will cross with

each other as will quinoa cultivars, so grow only one kind of each or separate cultivars by as much distance as you can. Certain varieties, such as purple-leaved amaranth, are easier to select for than others. Lamb's-quarters has a greater branching habit than quinoa and smaller flowerheads. Amaranth is one of very few seeds to harvest while plants are still flowering. It is more practical and efficient to get amaranth seeds before the plants die down.

Amaranth keeps going until hit by the first hard frost. Seed will often ripen many weeks before that, usually after about three months. The best way to determine if seed is harvestable is to briskly shake or rub the flower heads between your hands and see if seeds fall readily. An easy way to gather ripe amaranth is, during dry weather, to bend the plants over a bucket and rub the seedheads between your hands. On a larger scale, you can carefully stack bunches of cut flowerheads, then rub them through screening into a large container or wheelbarrow. Cutting and hanging plants to dry indoors does not work very well with amaranth: the plants become extremely bristly and reluctant to release seeds.

Harvesting fresh seed from still flowering plants means seeds still have drying to do. It's most important to further dry your crop to ensure it won't mold in storage. I usually leave amaranth seeds on trays for two or three hot days, stirring occasionally until they are as dry as possible. Store seed in tight containers in a cool dry place.

Quinoa, a plant similar to amaranth in many ways, is harvested like most other crops. It is ready to pick when the leaves have fallen, leaving just the dried seedheads. Seeds can be easily stripped upwards off the stalk with a gloved hand.

Quinoa is adapted to conditions of such low moisture that, if rained on, the mature seed can germinate. It's best to harvest quinoa just a little early if it is almost ready and extended rainfall is forecast.

Amaranth and quinoa have a very high quality nutritional profile but the machinery of industrial agriculture does not efficiently harvest them. They have enormous potential for small-scale sustainable agriculture.

Cross-pollinated Biennials

Cross-pollinated biennials produce their edible crop the first season and their flowers and seeds the second season. As they need winter to complete their cycle, they can be left in the ground or brought indoors, depending on location and preference.

Plant seed of **biennial root crops** early enough that the plants will be mature at the end of the growing season. When digging up plants for storage, choose healthy plants that show characteristics desirable to the variety. Don't save seed from plants that bolt to seed the first season.

It is beneficial to prepare roots for storage by curing. This is a process, which dries and toughens the skin but still leaves the root firm and plump. Curing enables the root to resist molding and heals small breaks in the skin, which would otherwise invite decay. Harvest the roots on a dry day, when the soil isn't too wet. Gently shake or rub off any excess earth. Cut the tops off about an inch above the crown and then lay them to dry, either in the sun for a few hours or indoors for a day or so. Turn them once so that all parts are exposed to air.

Beets

Beets are cross-pollinated by the wind. The pollen is very light and can be carried long distances so it is best to raise seed of only one variety each year. If you bring your beets indoors, pull them in the fall before heavy frosts. Cut their tops an inch above the crown. Handle beets carefully as damaged ones may rot. Three beets are adequate for most needs.

Your storage system should provide even moisture to prevent the beets from shriveling. A storage temperature of 4 to 10°C favours subsequent seed stalk production more than a temperature closer to freezing. A good storage method is to layer beets in a box between dampened sand or fresh sawdust.

We always leave our beets in the ground over winter and protect them from frost with a thick layer of mulch.

In the second year, beets should be thinned or replanted to about two feet apart, the crowns even with the soil surface. In summer, when plants are completely dry, brown mature seeds are easily stripped by hand from the branches.

As with just about any seed crop, you'll be amazed by how many seeds are produced by one plant. Beet seeds are actually seed balls, each containing up to six seeds.

Swiss Chard

Swiss chard produces seed stalks similar to beets. Beets and Swiss chard will cross with each other, so avoid saving seeds from both crops in the same season. (That doesn't prevent you from growing both for food.) Swiss chard is extremely hardy and, for seed saving purposes, there is usually no need to dig up and store the plants.

Carrots

Carrots are cross-pollinated by a variety of insects. They will cross readily with Queen Anne's Lace, so it's important to keep this wild plant clipped so as not to flower when carrot does. Carrots and parsnips do not cross.

Carrots can be harvested in the fall before the ground freezes, leafy tops cut to one inch, and stored at high humidity and near-freezing temperatures. Some people cut off only the crown or top inch of the plant for replanting. They can be kept in boxes of damp sand or sawdust. In the spring, replant carrots a foot apart. In mild areas carrots can be left in the ground under thick mulch. In cold areas they will often survive outside under heavy snow cover.

Carrots grow up to six feet high the second year. Each has a large head with a series of branches beneath it. The flower heads are given the name "umbel" to describe flower clusters in which stalks nearly equal in length spring from a common center. Seed umbels mature unevenly; it's best to harvest when secondary heads have ripe brown seed and third-order heads are starting to turn brown. This is usually around September of the second year. Heads can be removed as they mature or entire stalks can be cut and cured for a few weeks. Rub off seeds when completely dry and use a screen to remove the chaff.

Leeks

Leeks are pollinated by honey bees. They may cross with onions. Generally they overwinter easily. Early tall-stemmed summer types should be hilled up with soil or mulched heavily. Rogue out and eat the less desirable plants in the fall. The second year individual plants will send up single stalks four-feet to five-feet high capped by beautiful, huge umbels composed of hundreds of flowers. In the fall, when you see the seeds inside their capsules, pick the heads and further dry them well. Brisk rubbing will extract the seeds.

Onions

Onions are also pollinated by honey bees and do cross with each other. Harvest them as normal in fall and rogue out double onions and those with thick necks. Larger bulbs will produce more seed. Prepare your onions for storage by curing them as you do for your eating onions. Check that the neck area, where the tops join the bulb, is shriveled and well dried. The best storage conditions are dry, airy and cool. Be careful not to bruise or injure the bulbs and replant them as early in spring as possible. In mild areas and especially with sweet onions that don't store well, it is better to leave the plants in the soil over winter. Cover the bulb, leaving its top barely exposed.

Large flower heads above three-foot to four-foot stalks develop over several weeks in summer. Start harvesting when the fruits open to expose the black seed. Cut off the umbels as they become ready and dry them in trays, bags, on screen or canvas, in sun or under cover,

stirring them occasionally. Seed should dry to the point where it is easily rubbed from the heads. Drying will often take over two weeks. Seed life is only a year or two.

Parsnips

Parsnips are hardy cross-pollinated biennials that are usually planted in the spring in cold climates and in mid-summer in mild areas. As with carrots, you can choose to replant only the crowns. The mature seed is dry and light brown by the next summer and shatters, or falls off the plant readily, so harvest should not be delayed.

The other main cross-pollinating biennials are **Brassicas**. **Brussels sprouts, cabbage, collards, cauliflower, kale** and **kohlrabi** are all members of the cabbage family that, like broccoli, are pollinated mainly by bees and cross-pollinate readily. They require isolation from other family members and from other varieties of themselves for true seed. Unlike (most) broccoli, they must be overwintered outside or taken into storage conditions of high humidity and near-freezing temperatures.

When replanted in spring, plants should be set two to three feet apart. For cabbages, it is common practice to make cross cuts about an inch deep into the top center of each head to facilitate emergence of the seed stalk. Staking keeps cabbages, which grow to five feet the second year, from falling over. In cold climates, cauliflower is the most difficult of the cabbage family to raise for seed because most varieties do not overwinter well either by indoor storage or by thick mulching outdoors.

Pods of all the brassicas burst open as they become dry and brittle. Harvesting them a little early and curing them further in paper bags or on trays after harvest is a good way to avoid losing any seed. Storage life of brassica seed is about five years.

Perennials

For seed saving purposes, there aren't many perennial vegetables but it's worth mentioning chives, asparagus and rhubarb.

Chives

Chives are pollinated by bees. They don't cross with onions or leeks.

Cut off the seed heads when the seeds blacken. Allow to further dry for a few weeks, then rub off the seeds with your hands.

Asparagus

Asparagus is usually grown from the roots or crowns but can also be grown from seed. The seed is ready to harvest in the fall, when the asparagus berries turn red and the ferny top leaves flop over.

Cut asparagus tops off and hang to dry. Soak the berries in water for an hour, until you can

remove the pulp easily from the seed. Spread the seed on a tray and keep in a warm, dry, airy place until thoroughly dry.

Rhubarb

Rhubarb is usually grown from root sections of established plants. Not many varieties produce seedheads. The large seed disks of those that do can be gathered and dried in the usual ways.

Clonal Reproduction

With plants that reproduce clonally, seeds are not involved. Nevertheless, gardeners and farmers have the choice of maintaining these for future plantings.

Potatoes, Sunchokes (aka Jerusalem Artichokes) and Garlic

These are saved through their tubers or bulbs. The genetic makeup of a cultivated variety of any of these stays the same although they can demonstrate quite different adaptations to soil and locale. Most people know there are lots of different kinds of potatoes but few realize there are dozens of distinct sunroot and garlic cultivars that vary in taste, appearance and productivity.

Potatoes

Potato plants sometimes produce seeds but they normally are of no use to the seed saver since they will not produce true. (It's fun to experiment, though.) Choose only healthy plants and undamaged tubers for reproduction because it is particularly easy for diseases to be passed on from one generation to the next. A few hours of drying outside toughens the skins for storage. How well potatoes keep doesn't seem to be affected by washing or not washing them. Burying them in dry sand is an excellent storage method. They should be kept in the dark.

Sunchokes (Jerusalem Artichokes)

Sunroot tubers start forming with the onset of cold weather in September or October and keep growing after the visible plant has blackened and died. Sunroots are most delicious after the first frosts hit them and remain so until sprouting begins in spring. They are tricky to store because their thin skin causes them to shrivel easily. It is best to simply leave them in the ground until you want to use them, either for food or "seed". It is advisable to start digging inwards at over a foot beyond the stalk to avoid mutilating the tubers, which grow on lateral shoots. Sunroots are notorious for being able to sprout new growth from even the tiniest pieces of themselves.

Garlic

We are often asked if our "seed" garlic can be eaten as well as planted. Of course, food stock and seed stock are more or less the same thing although we do save our biggest bulbs for planting, both for our customers and for ourselves.

Except for eating purposes, garlic is out of the ground for only three or four months a year: it is usually harvested in late July and replanted in October. Not much can go wrong in those few months between harvest and replanting if you dry bulbs well after digging them. There is one thing to note, however. It used to be common practice to dry ("cure") garlic on the ground in the sun. Nowadays, because of the change in the ozone layer, garlic left exposed to

the sun can literally cook and become translucent. So it's best to hang garlic to cure in an airy but shaded place. Garlic keeps better in bulbs than separated into cloves, so wait until shortly before planting to take the bulbs apart.

Flowers and Herbs

Flowers and herbs go to seed in numerous different ways. It's sometimes fascinating to figure out exactly where the seeds are as well as the most efficient way of harvesting them. Usually seeds are easily shaken or stripped by hand into a bucket. At times you have to get there before the birds or the wind. Most garden flowers are cross-pollinated by insects. If you wish to preserve the purity of a certain strain for seed saving, grow only one variety at a time, stagger plantings considerably or set up appropriate insect barriers.

General Harvest Notes

Seeds of most plants dry right down in field or garden. If maturity is looking dubious because of the weather or if birds are significantly munching on the seeds, you can dig up entire plants and bring them indoors to complete their drying. As long as the crop is close to maturity, the seeds will continue to ripen.

It is a good rule of thumb to let harvested seed dry for at least a few more days after being removed from the plant. The larger the seed, the longer the drying period required. Most seeds will dry adequately for home storage if spread on wax paper, newspapers, trays, plates or screens in an airy place for a few days to a week. They should be turned and spread several times during that period.

An equally good drying method is to let the seed heads or stalks dry in open paper bags for one or two weeks. The drying process can be hastened by spreading the seed in a sun-exposed room, in a non-humid greenhouse or in the sun outside if they are covered or brought in at night. Lacking sun and/ or greenhouse, you can speed up drying with gentle heat so long as the temperature never rises above 100°F (38°).

General Storage Notes

Seed should always be stored under cool, dry conditions. Temperatures well below freezing will not harm seeds if they have been adequately dried. Sealing most seeds from air, except in the case of beans and peas, which like some air circulation, prolongs viability.

Most sound vegetable seeds, if stored properly, will remain viable for many years, with the exception of short-lived onion, leek, corn and parsnip seed.

Put each kind of seed into its own envelope with the cultivar name and the date of storage. You can also put envelopes or just the seeds in airtight tins, glass jars or plastic containers that can be closed to make them moisture proof.

Storing seed containers in the freezer will increase longevity.

Selection Criteria

People without sophisticated training have been successfully saving seeds for the past ten thousand years. It is ironic that it is people with so-called scientific backgrounds who are creating the possible annihilation of seeds as we've known them.

The most sought-after trait for corporate researchers these days is the ability of plants to withstand applications of poisons produced by their corporate bosses.

On the other hand, many gardeners simply want to preserve their longtime favorite vegetables. Some growers also want to improve their crops. Nearly everyone has a different concept of what is ideal. Depending on needs and preferences, criteria for selection may include any of the following: flavor, size, disease-, drought- and/ or insect-resistance, lateness or earliness to bolt, trueness to type, color, shape, thickness of flesh, hardness or storability. It's a matter of tuning in what's important to you.

Clearly, the needs and preferences of a backyard urban gardener would be totally different than those of a thousand-acre farmer. For example, someone growing food in a city would most likely prefer pole beans or climbing peas to bush beans or peas because they make maximum use of vertical space. Climbing beans and peas are crops that are not researched by governments or corporations yet they could be grown in potentially millions of city plots.

Industrial agriculture prefers crops that ripen all at once, such as hybrid broccoli, whereas heritage broccolis that ripen unevenly are more appropriate for family and community gardens. Many seeds that are not efficiently harvested by gigantic combines, such as favas, amaranth and quinoa, can be very efficiently harvested by hand.

The yield of most heritage, open-pollinated, saveable seeds is considerably less than it used to be because companies simply don't spend time with less lucrative non hybrids. This could be changed in a few years if amateur seed savers started selecting seed from their most productive plants.

At Salt Spring Seeds, we often select for taste, especially with beans, garlic and tomatoes. We cook three or four pots of bean varieties and compare their flavors without salt or other seasoning. For garlic and tomatoes, we usually organize raw taste tests with groups that visit us; we are usually surprised by how much consensus there is.

The Question of Purity

To read the few significant seed saving books available on the market might leave you with the feeling that it is crucial to maintain genetic purity. Such responsibility need be taken on only if you are officially preserving a named variety.

Purity is simply another quality for which you can select. Having a pure variety doesn't mean that you have a variety with better overall quality. Some of the things you can do to keep seed true have already been mentioned. You can separate varieties by distance, barriers or time, or you can grow one variety of a crop. Something else you can do is keep seed from previous years in case impurities do show up.

On the other hand, if you grow certain varieties side by side, and crossing does occur, your new bean, lettuce or tomato will likely taste just as good as either parent. It might also have some useful characteristics neither parent had. (Some crosses however, such as those between squash varieties, invariably do produce inferior offspring.)

Traditionally, agricultural societies have maintained a broad genetic base (sometimes called "land races") for each of their crops, ensuring survival of some plants in the event of disease, pests, or freak weather conditions. With extreme and unpredictable changes in the natural and social worlds, identical plants are now more vulnerable

than ever. Most vulnerable of all are the monoculture crops on the vast acreages planted by corporate agriculture.

Smaller scale farmers and gardeners, on the other hand are more in touch with their plants and have much greater flexibility to embrace changes as they occur. If nature is now throwing out more crosses and genetic sports than ever, we should receive the message and seize the exciting opportunity to grow out such plants. Not only are we already blessed with all the plants we need to feed the planet, there are many more that are continually being offered for our nourishment and enjoyment.

Aesthetic Dimensions of Seed Saving

Seed saving not only lightens our living on the land by grounding us in the reality of what completes the circle of growing, it also enhances and beautifies the garden in configurations of maturing plants that have yet to be explored in gardening books and catalogues.

Some common vegetables, such as onions, leeks, lettuces, endives, kales and chicories become very different when they flower and then go to seed. Leaves change shape, stalks shoot skyward, flowers contrast with foliage, seedheads explode into reality; plants become hardly recognizable as the vegetables you were eating. As you get to know the colors, shapes and sizes to expect, you can choose varieties for specific effects and you can incorporate your seed plants into overall garden design.

There are also the unplanned combinations that appear from plants saved for seed! Seeds often escape the seed saver's attempts to collect them all. Volunteer plants of favorite vegetables and flowers may pop up in new places. Sometimes these volunteers appear even earlier than greenhouse sowings and usually they are more vigorous and better adapted than pampered transplants. Often they locate themselves in spots that delight the eye and warm the heart. Ever more beautiful gardens can come from learning to anticipate and play with such gratuitous offerings.

A GARDENER'S MESSAGE

An ancient Chinese proverb says: "One who plants a garden, plants joy". There is a special spirit within the gardening and farming communities. We are all happy and willing to share our wisdom, experiences, ideas, tools, seeds and plants, and some even make the time to help others with their gardens. We share a passion for tending the soil and nurturing plants and we know the rewards it can bring us. Indeed, what would our world of people be without our farmers, gardeners and landscapers? They collectively ward off famine by providing food for both people and animals; create beautiful urban and rural landscapes around homes, businesses, schools and communities along with memorial and dedication gardens. What would those grand palace and monastery grounds look like without those incredible landscapes surrounding them and how many weddings have been performed in lovely garden settings? Gardeners can create habitats for animals, birds, reptiles and insects and they can restore damaged places back in to a healthy state. Gardeners and farmers can speak one of the few universal languages among the peoples of the world and they help to erase the religious, cultural and economic lines that can divide us.

Science is starting to catch up with the ancient teachings of our ancestors throughout the world: that the earth - known in ancient Latin as Gaia - is a giant living and breathing organism. We now know more than ever, that we must treat this home of ours with care and respect and that we must stop soiling our own nest. Chief Seattle said: "This we know. The earth does not belong to us; we belong to the earth. All things are connected like the blood which unites one family. What befalls the earth befalls the children of the earth. We did not weave the web of life, we are merely a strand in it. Whatever we do to the web, we do to ourselves".

Many things are threatening the well-being of our precious earth and all the living creatures that dwell on or within it. The constant stream of bad and scary news can be incredibly disheartening, discouraging and even hopeless. But if there was one thing I "got" taking the Organic Master Gardeners course at the Gaia College, it was learning that nature has a powerful toolbox and we tenders of the land can make a huge difference by utilizing the excellent knowledge that's available to us - both old and new. Collectively, the gardeners, landscapers, farmers and agriculturists the world over can help to restore our planet back to a healthy and vibrant state by studying nature's principles; adopting and practicing the best organic methods available; stopping the use of poisonous chemicals and fertilizers, which destroy the health of our soil and water and ultimately weakening the plants and other precious life forms; learning to manage the water and topsoil in the best and most efficient way possible; stopping those practices that create erosion and soil degradation and increase the level of soil fertility by using an abundance and variety of organic matter as fertilizer and mulch.

In our own communities, we can increase the size of our food gardens and support our local food growers; buy only organic seeds and plants raised from organic seeds and attend Seedy Saturdays to learn more about your local farmers and seed suppliers; start using healthy, organic mulches for fertilizer and water preservation; plant more shade trees and create more habitat for our birds and pollinators; write to our government representatives on all levels to create laws that will protect natural spaces and to ban toxic cosmetic pesticides; increase your composting capacity; get rid of all products that have a "cide" at the end of the word and use the internet and other resources to help solve your garden issues starting with the question: what is the best organic method for/ to ...?; And finally, encourage and help others to start their own gardens, even if it's tomato pots on the balcony and always share your knowledge and enthusiasm with others.

We can make a difference in this beautiful world of ours that we call home - one garden and farm at a time.