

# Seed Saving Instructions



# Seed Saving Instructions

## Basic



### Leguminosae

#### Beans, Peas, Legumes

Legume flowers are perfect, self-pollinating blossoms, meaning that pollination takes place before the flower opens. For this reason, it is uncommon for legumes to cross pollinate naturally. However, if the seed is precious or rare you may want to take extra precaution to grow only one variety from each species to assure that there is no accidental cross pollination. Peas are (*P. sativum*) and common beans are (*P. Vulgaris*) but there are many other species of legumes. **Runner beans (*P. coccineus*) need insects for good pollination. Unlike other beans, they will cross quite easily with other runner beans. To prevent cross pollination, plant only one variety in any year.** Legumes only cross pollinate within their species.

Always save seed from healthy plants that bear heavily. Pods should be allowed to dry on the vine. If possible, plants should be totally dry—stems, leaves, and pods. This will increase the germination rate. If pods are totally dry but plants are still growing, seeds will be viable but some seed may not be fully mature so germination rates may be slightly lower. As the plant matures cull out any plants that do not look true to the parent plant. Plant size, leaf shape, flower color, pod appearance, shape and color of the seeds, should all look like the original parent plants.

To save seed from beans and peas, the dried pods need to be very dry, and brittle. Split pods along the seam to release the seeds. This method may seem somewhat slow, but when done this way, the seed will not need to be winnowed. All legumes are susceptible to bean weevils which can destroy stored seeds in a very short time. Weevils lay eggs inside the pods; when seed is dry and in storage, the weevils hatch and eat the seed. Storing seed in a jar with a tight fitting lid and freezing for 7-10 days will kill the weevils. Seed must be totally dry to prevent damage from the freezing process. To check for dryness place a few seeds on a hard surface and hit with a hammer, if seeds shatter they are ready to be frozen; if seeds mash they need more drying time. Most legume seeds will maintain germination rates of 50% or higher for 4-5 years when stored in a cool, dark, dry place. If seed is stored in a glass jar with a tight fitting lid in a freezer it will remain viable for 10 years. The standard for commercially sold seed is 70% germination rate for most legumes.



### Compositae

#### Lettuce

Lettuce is an annual that sends up a seed stalk when the days grow long and warm weather arrives. Plants that bolt early may result in immature seed. Seed should only be saved from plants that are true to the parent type. Plants that are different in color, size, shape, or leaf style should not be allowed to go to seed. There are six types of lettuce; crisphead, butterhead, cos, leaf, stem, and Latin. All belong to *Lactuca sativa*. All lettuce are inbreeding plants with perfect blossoms. There is less than a 5% chance of naturally occurring cross pollination. If it is necessary to assure absolute purity, an isolation distance of 50 feet is recommended. Lettuce seeds ripen irregularly and are ready to harvest 12-24 days after flowering. To harvest, vigorously shake the seed head into a bag every day during that period. The loose seed will fall into the bottom of the bag. An alternate method is to wait until about 10 days after flower and then cut the whole plant. Place the seed head upside down into a bag. When the seed head is totally dry, vigorously shake while seed head is still in the bag. This will result in fairly clean seed that will need little or no winnowing. More seed can be obtained by rubbing the seed head between your palms. However, approximately half of the volume will be chaff. The seed and chaff are about the same size and weight, so much seed is lost in the winnowing process. To winnow, use a fine mesh strainer just large enough to let the seed pass through, then remove the chaff. Next use a fine mesh that is too small for the seed to pass through and gently rub with your fingers the seed will remain above the mesh and the fine chaff fall through. This is a time consuming process. Lettuce seed will remain viable for 3 years when stored in a cool, dry, dark place. The standard for commercially sold seed is 80% germination rate.



## Solanaceae

### Tomatoes, Peppers, Eggplant

The Solanaceae family includes 90 genera and 2000 species of plants that includes tomatoes, peppers, tomatillos and eggplant. Most originated in Central and South America. Solanaceae are self-pollinating and are not particularly attractive to bees but many other insects are attracted to the blooms which results in occasional cross pollination. There is disagreement among plant breeders and seed savers as to how often this occurs, but is generally thought to be less than 5% for tomatoes and up to 30% for eggplant and up to 80% for peppers. Seed must be harvested from very mature fruits; basically those that look like they are headed for the compost pile.



#### Tomatoes (*Lycopersicon lycopersicon*)

All tomatoes are inbreeding and have perfect, self-pollinating blooms, meaning pollination takes place before the blossom opens. Some agitation of the plant, usually by wind, will increase pollination rates. There is much disagreement among plant breeders and seed savers as to how often tomatoes naturally cross pollinate but it seems to happen in up to 5% of blossoms. If the seed is precious or rare you should grow only one variety or may isolate each variety by 50 feet. To maintain a strong gene pool, seed should be saved from a **minimum** of 6 plants, more is better.

To save seed, wash very ripe and fully mature fruits then cut horizontally and squeeze seeds and surrounding gel into a bowl. Each seed is encased in a gel that contains hormones to inhibit seed germination while still inside the fruit. To aid in separating the seed from the pulp add one cup of water for each cup of pulp. Set the bowl aside for 2-4 days out of direct sunlight. Do not leave seeds in water longer as they will start to germinate. Stir once a day. The seeds should start to drop to the bottom of the bowl and the pulp will float to the top. As the pulp ferments it may begin to smell bad and you may see mold on the pulp. This is normal. Seeds that continue to float are immature and will not germinate, so should not be saved. After the seeds have separated from the pulp, carefully pour off the pulp and most of the water leaving the seeds in the bottom of the container. Add water and rinse again and repeat until the water is clear of pulp. Pour seeds into a sieve and rinse well. Dry bottom of sieve and pour seeds into a glass or plastic bowl or plate. Seed will stick to paper plates or paper towels. Put seed in a dry, warm place (not hot) out of direct sunlight. To aid in even drying and prevent clumping stir the seed twice a day until completely dry, about 1-2 weeks. Fully dry seed will break when folded. If seeds bend, additional drying time is needed. Seed stored in a cool, dry, dark place will remain viable for 5-10 years. Even when stored for 25 years germination rates often remain above 50%. The standard for commercially sold seed is 75% germination rate.



#### Pepper (*Capsicum annuum*)

There are four species of peppers but most sweet peppers and hot peppers belong to *C. annuum*. Most peppers are green when immature and gradually change colors at maturity. Some agitation of the blossoms may increase pollination and fruit set. Although the blossoms are not particularly attractive to bees, many pepper varieties cross pollinate up to 80% of the time. The hot gene is dominant in peppers. If you are growing more than one variety of pepper an isolation distance of 500 feet is recommended. Plants can be grown in pots or dug at the end of the season and brought indoors where they will often continue to set fruit. To maintain genetic variation seed should be saved from a **minimum** of 6 plants, more is better.

Harvest pepper seeds when fruit is fully ripe, and overly mature. Fruits should look like they are ready for the compost pile. Cut through the shoulder of the fruit and gently scrape the seeds from the fruit. Put seed in a small container with water. Mature seed will drop to the bottom and immature seed and pulp will float to the top. Pour off water and pulp, leaving mature seed. Pour into sieve and rinse well. Dry bottom of sieve and pour seed into a glass or plastic bowl or plate. Seed will stick to paper plates or paper towels. Put seed in a dry, warm place (not hot) out of direct sunlight. To aid in even drying and prevent clumping stir the seed twice a day until completely dry, about 1-2 weeks. Fully dry seed will break when folded. If seeds bend, additional drying time is needed. Small peppers can be processed in a blender with water to separate the seed from the fruit. Then continue to process the same as for large peppers. Seed stored in a cool, dry, dark place will have 50% germination rates for 3 years. The standard for commercially sold seed is 55% germination rate.



## Solanaceae

### Tomatoes, Peppers, Eggplant



#### **Eggplant** (*Solanum melongena*)

Eggplant originated in India from very bitter small fruited spiny plants. Centuries of human selection have resulted in large fruits that often lack the bitterness of the original plants. Eggplant are annuals in northern climates because they will not tolerate frost. Plants can be grown in pots or dug at the end of the season and brought indoors where they will often continue to set fruit. Eggplant fruits can be green, white, yellow, tan, orange, red, pink, purple, or striped.

Eggplant are inbreeding with perfect flowers and are usually self-pollinating. Eggplant are not particularly attractive to bees but some cross pollination does occur up to 30% of the time. To prevent accidental cross pollination an isolation distance of 50 feet is recommended. To maintain genetic variation seed should be saved from a **minimum** of 6 plants, more is better.

To save seed, let fruits grow very far past edible stage, fully ripe but not moldy. All eggplant will change color, become dull, and have a hard shell. Mature seeds will be near the blossom end of the fruit. Seed should only be saved from the bottom 1/3 of the fruit. Seeds closer to the stem will be immature. To separate seed from the flesh use a box grater. Add the grated flesh and seed to a bowl of water and begin squeezing the pulp to release the seed. Mature seed will sink to the bottom and immature seed and pulp will rise to the top. Pour off water and pulp. Add water and repeat until all pulp is gone and water is clear. Pour seed into a sieve and rinse well. Dry bottom of sieve and pour seed into a glass or plastic bowl or plate. Seed will stick to paper plates or paper towels. Put seed in a dry, warm place (not hot) out of direct sunlight. To aid in even drying and prevent clumping stir the seed twice a day until completely dry, about 1-2 weeks. Seed will maintain 50% germination for 7 years when stored in a cool, dry, dark location. The standard for commercially sold seed is 60% germination rate.

## Seed Saving Instructions

### Intermediate



## Cucurbitaceae

### Cucumbers, Melons, Squash

Cucurbitas can be found in every country and culture on the earth. They are some of the first plants used by humans. Most cucurbitas are heat loving annuals and are not frost tolerant. All cucurbitas rely on insects for pollination. Each plant produces both male and female flowers that are very attractive to insects. Plants must have both male and female flowers in bloom at the same time for good pollination rates and high fruit set. Adding flowering plants near cucurbitas will increase visits by pollinators. There are many species of cucurbitas and all plants will readily cross pollinate within their own species. A minimum isolation distance of ½ mile is required to prevent unwanted crosses of cucurbitas within the same species. Cross pollination outside their species is unusual but does happen very rarely. There are many methods to assure that cross-pollination does not occur; but all are labor intensive. However, you can plant one variety from each species without concern about accidental cross pollination. Be sure to check with nearby neighbors so your cucurbitas do not cross with theirs. To assure genetic variation save seed from as many different plants of the same species as possible.

To save seed: The following is a guideline about species of cucurbitas. You may plant one variety from each species without worry of cross pollinating.

**To avoid cross pollination, you must identify the species of each squash, melon, and cucumber.**



## Cucurbitaceae

### Cucumbers, Melons, Squash

#### Cucumbers (*Cucumis sativus*)

Cucumbers should be very large, well past the edible stage. The skin should be hard and change color. Save seed from half the cucumber near the blossom end. Seed near the stem are often immature. Gently scrape seed out of fruit, with as little pulp as possible, into a bowl of water. Set aside in a warm location out of direct sunlight to ferment for 12-24 hours. Stir twice a day. When fermentation is complete most seeds will drop to the bottom while the pulp, seed cases, and immature hollow seeds will float. (The float-sink method doesn't always work with cucumbers. If all the seeds float, you can sprout a few seed to check for viability.) Pour off water and pulp. Add water and repeat until all pulp is gone and water is clear. Pour seed into a sieve and rinse well. Dry bottom of sieve and pour seed into a glass or plastic bowl or plate. Seed will stick to paper plates or paper towels. Put seed in a dry, warm place (not hot) out of direct sunlight. To aid in even drying and prevent clumping stir the seed twice a day until completely dry, about 1-2 weeks. Seed will remain viable for 10 years when stored in a cool, dark, dry location. The standard for commercially sold seed is 80% germination rate.

#### Melons & Cucumber-Melons (*Cucumis melo*)

Many melons are frustrating to grow because they require insect pollination but only 10-20% of female flowers will set fruit. Planting with blooming flowers will encourage more visits by insects and may increase fruit set. Hand pollination doesn't usually increase yields. Seeds are mature when fruits are over ripe. (**Cucumber-Melons such as Armenian cucumbers are *c. melo* and cross pollinate with all other *c. melo* varieties.**) Only save seed from the bottom half of the fruit near the blossom end. Scoop seeds into a bowl of water and let sit for 12-24 hours. Pour off water, pulp, and floating immature seeds. Add water and repeat until water is clear. Pour seed into a sieve and rinse well. Dry bottom of sieve and pour seed into a glass or plastic bowl or plate. Seed will stick to paper plates or paper towels. Put seed in a dry, warm place (not hot) out of direct sunlight. To aid in even drying and prevent clumping stir the seed twice a day until completely dry, about 1-2 weeks. Seed will remain viable for 5 years when stored in a cool, dark, dry location. The standard for commercially sold seed is 70% germination rate.

#### Watermelons (*Citrullus lanatus*)

Watermelons are insect pollinated. They often set 2 flushes of blooms. Up to 90% of the first blooms will drop off the vine without setting fruit. The second flush of blooms set fruit about 50% of the time. Planting with blooming flowers will encourage more visits by insects and may increase fruit set. Seeds are mature when fruits are over ripe. Scoop seeds into a bowl of water and work between your fingers to release from the pulp. Pour off water, pulp, and floating immature seeds. Add water and repeat until water is clear. Pour seed into a sieve. Use a small amount of dish soap to wash seed then rinse well. Dry bottom of sieve and pour seed into a glass or plastic bowl or plate. Seed will stick to paper plates or paper towels. Put seed in a dry, warm place (not hot) out of direct sunlight. To aid in even drying and prevent clumping stir the seed twice a day until completely dry, about 1-2 weeks. Depending on variety, seed will remain viable for 6 years when stored in a cool, dark, dry location. The standard for commercially sold seed is 70% germination rate.

#### Banana, Hubbard, Buttercup, Turban Squash, Pumpkins (*Cucurbita maxima*)

#### Cushaw Squash (*Cucurbita mixta*, new Latin designation: *Cucurbita argyrosperma*)

#### Butternut and Cheese Squash (*Cucurbita mochata*)

#### Mini Pumpkins, Zucchini, and Acorn Squash (*Cucurbita pepo*)

All squash (which includes summer and winter squash, zucchini, and pumpkins) are insect pollinated. Planting with blooming flowers will encourage more visits by insects and may increase fruit set. All winter squash must be fully ripe and then allowed to sit at room temperature for 1-2 additional months before saving seed. All zucchini and summer squash must be as mature and ripe and winter squashes, then allowed to sit at room temperature for 3-4 additional weeks. For long shaped squashes, like zucchini and banana squash, save only the half of the seeds that are closest to the blossom end. Seeds near the stem may be immature. In the squash cavity, work seeds between your fingers to release from the pulp. Mature seeds release from pulp easier than immature seeds. Scrape seeds into a bowl. Add water, pulp will rise. Pour off water and pulp. Add water and repeat until water is clear. There is no easy way to tell which seed are immature as most seeds will sink including the immature ones. (Mature seed are plump; immature seeds look flat.) Pour seed into a sieve and rinse well. Dry bottom of sieve and pour seed into a glass or plastic bowl or plate. Seed will stick to paper plates or paper towels. Put seed in a dry, warm place (not hot) out of direct sunlight. To aid in even drying and prevent clumping stir the seed twice a day until completely dry, about 1-2 weeks. Depending on variety, seed will remain viable for 6 years when stored in a cool, dark, dry location. The standard for commercially sold seed varies by variety but is between 60-80% germination rates.