



## **Planting Vegetable Seeds**

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A majority of vegetables grown in home gardens are started from seed planted directly in the soil, rather than from transplants. The following are some guidelines for buying and planting these seeds, along with advice about saving vegetable seeds that you gather yourself, storing them, and testing for viability.

### **BE SAFE – BUY FRESH SEED**

It is advisable to buy fresh, disease-free seed each season from a reputable company. The frustrations and delays caused by non-viable seed can be avoided by investing in high-quality seed that will give you good results. Old or “bargain” seeds are not a bargain at all.

Ordering seed from catalogs offers many advantages. Seed catalogs begin arriving in midwinter, which gives you plenty of time to decide upon what to grow and how much seed you will need to order. By ordering early, you will receive the seed in plenty of time for planting, and you will avoid the chance that a choice variety may be sold out. You also have the advantage of selecting new or superior varieties that may not be available on seed racks at a garden center or supermarket.

Selecting varieties to grow can be frustrating, whether you are a new or experienced gardener. According to the typical catalog, nearly every variety offered is described as being absolutely the best. Obviously, they are not all of equal superior quality, and here in the Midwest where the season is relatively short, some varieties will definitely grow and produce better than others. Certain varieties also have built-in disease resistance, while others do not.

As you go through the seed catalogs, you will come across such designations as “F<sub>1</sub> Hybrid” or “All-America Selections award winner,” terms whose meanings may not be entirely clear to you.

*F<sub>1</sub> Hybrid.* An F<sub>1</sub> hybrid results from a cross between two differing but true-breeding parental lines, producing plants displaying desirable characteristics derived from both parents. F<sub>1</sub> hybrid plants are usually stronger, healthier, and more productive than ordinary open-pollinated non-hybrid varieties. They are also often earlier blooming, less susceptible to disease, very uniform, and more tolerant of pollution and adverse weather conditions. Because of research and production costs for F<sub>1</sub> hybrids, this seed is more expensive than standard non-hybrids. However, hybrids give the best results in the garden and are almost always well worth the extra expense.

*All-America Selections (AAS)*. This is a non-profit organization, sponsored by the American seed trade that evaluates and promotes superior new seed-produced varieties of both vegetables and flowers. Each year, plant breeders from around the world submit seed of newly developed varieties for trial in test gardens throughout the United States and southern Canada. The entries are judged against the very best varieties currently on the market. The award winners are designated as such in words or with the AAS logo on seed-rack packets or in the seed catalog descriptions.

## SEED-SOWING, AND THINNING THE SEEDLINGS

Vegetable seeds can be planted in rows, or hills, or it can be broadcast. Straight rows make cultivation, insect control, and harvesting easier. Rows can be marked off using a non-stretchable line or string pulled tightly between two stakes. Use the handle of a hoe or rake to make shallow furrows along the line for small seeds. For larger seed, open a deeper furrow with the corner of a hoe blade.

When sowing small seed, cut or tear off a corner of the seed packet and scatter the seed down the furrow while gently tapping with your index finger. The tapping causes the seed to roll out of the envelope at a uniform rate. Distribute the seed evenly rather than thinly in the row, using as a guide the amount of seed per foot of row recommended on the seed packet. Some thinning may be needed later when the seedlings are up. Larger seeds, like those of beans and corn, can be planted at the proper spacing more easily. "Hill" planting is often used for sweet corn, squash, melons, and cucumbers. With these, place 4 to 5 seeds per grouping and later thin to 2 or 3 plants.

Broadcast planting involves sowing seeds in a 3- to 4-inch band, rather than in a single row. This method is often used for lettuce, carrots, radishes, and beets. The main advantage of this method is the necessity for hand-weeding later on.

*Depth to Cover Seed.* A good rule of thumb is to cover the seed to a depth equal to 4 times the diameter of its largest dimension. After the seed is placed in the furrow, use a hoe or the back of your hand to gently cover seeds with soil. Then tamp the soil down lightly.

A soil that crusts over after a rain may prevent seedlings from emerging. Therefore, when seeding in a heavy, tight soil or when sowing very small-seeded vegetables such as carrots, parsley, or parsnip, cover the seeds with fine sand or vermiculite instead of soil.

*Moisture.* Constant moisture is very important for successful germination. To keep the soil moist until the seed germinates, a board or newspapers can be placed over the row. However, remove immediately once the seedlings begin to come through the surface of the soil.

When watering, a light and gentle sprinkling down the row will avoid splashing away the soil or other material that covers the seeds. Avoid flooding or constant saturation of the soil.

If the soil remains soggy-wet for any length of time, the seed may rot, or germination may be hampered due to a lack of oxygen.

*Temperature.* In addition to proper soil moisture, temperature can greatly affect seed germination. While some seeds (such as those of lettuce and onion) will germinate in rather cold soil, other kinds (such as beans and corn) will rot under those conditions. Similarly, excessively high soil temperatures during hot weather may be damaging to emerging seedlings and result in poor stands. Following are lists of vegetables and their soil temperature requirements for optimum seed germination.

Need Cool Soil (50°-65 °F)

|         |        |         |
|---------|--------|---------|
| Celery  | Onion  | Spinach |
| Lettuce | Peas   | Turnip  |
|         | Radish |         |

Tolerate Cool Soil (50 ° -85 ° F)

|                  |          |          |
|------------------|----------|----------|
| Beet             | Carrot   | Kohlrabi |
| Broccoli         | Chard    | Mustard  |
| Brussels sprouts | Collards | Parsley  |
| Cabbage          | Endive   | Parsnip  |
| Cauliflower      | Kale     | Rutabaga |

Need Warm Soil (65 ° -85 ° F)

|          |           |            |
|----------|-----------|------------|
| Beans    | Muskmelon | Squash     |
| Corn     | Okra      | Tomato     |
| Cucumber | Peanut    | Watermelon |
|          | Pepper    |            |

*Thinning.* Plants growing too closely together compete for moisture, nutrients, and sunlight. When seeds are sown too thickly, some thinning out of the seedlings may be necessary to remove the excess. Thin the plants while young, removing the weaker ones and spacing the remaining seedlings at the recommended distance.

## SAVING SEED FROM YOUR GARDEN

The average home gardener is almost always better off buying fresh seed each season from a reliable source. However, saving seed can be a way of experimenting or preserving a particular variety.

*Problems in Saving Seed.* There are several difficulties involved in saving seed from vegetables from your own garden. Among these are seed-borne diseases, immature seed, and unsatisfactory results from seed saved from hybrid and cross-pollinated plants.

Certain diseases can be transmitted in seed. A disease that infects a crop by the end of the growing season may do little damage to that crop. However, if the seed is saved and planted the following year, the disease may severely injure or even kill the young plants. Examples of seed-borne diseases are black rot and blackleg of cabbage. Black rot causes a blackening of the veins, followed by stunting and decay of the head. It is caused by a bacterium that is often transmitted in the seed. Blackleg is a seed-borne fungus that kills the entire stems of the plants. This results in wilting and eventual death of the plant.

Treating the seeds of cabbage, broccoli, cauliflower, collard, kohlrabi, Chinese cabbage, and Brussels sprouts with hot water can prevent both of the above diseases. Prior to planting, immerse the seed in 122.°F water for 30 minutes. Precise control of the water temperature and timing is important; otherwise, many of the seeds will be killed.

Immature seeds such as those in cucumber at the eating stage will not germinate. Therefore, if you plan to save the seed, you must allow the fruit to fully mature. Because seed-set reduces the vigor of the plant and discourages further fruit production, you should wait until near the end of the season to save any fruit for seed.

Seed from F<sub>1</sub> hybrid plants should never be kept, except for experimentation, because the resulting plants will be of poorer quality, less uniform, and often lacking the desirable characteristics of the parent plants. The fruits may also be quite different from those produced by the original from F<sub>1</sub> hybrid plants. Saving and planting the seed from F<sub>1</sub> hybrid gourds might be fun to do, but you'll probably be disappointed with the plants produced from the seeds gathered from F<sub>1</sub> tomatoes and other hybrid vegetables. Likewise, the seed saved from plants that readily cross pollinate, such as cucumbers, melons, squash, and sweet corn will probably produce plants quite different from what you expect and often of inferior quality.

## EASY-TO-SAVE SEEDS

*Beans and Peas.* Allow the seedpods to mature and dry on the plant, but remove them before they shatter. Complete the drying process by spreading the pods out in a single layer in a well-ventilated, dry location. When the pods are hard and dry, they will crack open easily and the seeds can then be removed for storage. Beans and peas do not have to be refrigerated if the storage area is dry. Humid air will cause them to rot or mold.

*Melons, Winter Squash, and Pumpkins.* When these vegetables are harvested for consumption, the seeds are already mature. Cut open the best-appearing, disease-free fruits, remove the seeds and wash them off in water. Then spread the seeds out in a well-ventilated spot until dry. Store as described below under Seed Storage.

*Cucumbers and Summer Squash.* These fruits contain immature seed when harvested for eating. If planning to save seed, allow the fruits to fully mature on the vine, well past the eating stage.

*Peppers and Eggplant.* Also allow these to mature on the plant. Green bell peppers and edible eggplant fruits will contain only immature seeds. Once mature, the seeds are relatively easy to remove.

*Tomatoes.* Ripe tomatoes contain mature seeds suitable for planting. Collect several of the best fruits you can find from disease-free plants. Scoop out the seed masses and add a little water to make a soup-like mixture. Then allow this mixture to ferment for 2 to 3 days at room temperature. Stir several times during the fermentation process to separate out the seeds from the pulp. At the end of the 2- or 3-day period, the seeds should fall to the bottom of the container and the pulp can be poured off easily. Rinse the seeds thoroughly, then dry them in a well-ventilated location. Store as described below.

## SEED STORAGE

Once you have collected the seed and allowed it to air-dry thoroughly, you can store it in a cool, dry place until needed for planting the following season. Also, store leftover seed that you purchased in this same way.

To keep seeds dry, place them in paper envelopes or small paper bags and store them in a glass jar with a lid that seals tightly. A desiccant or drying agent should be put in the bottom of the jar to absorb moisture. Calcium sulfate (gypsum), calcium chloride, and silica gel are all good drying agents. Magnesium sulfate or borax, both available in pharmacies, are also satisfactory. If these desiccant materials are not readily available, powdered dry non-fat milk can be used instead. Use a freshly opened box. Place 2 or 3 heaping tablespoonsful on paper toweling or on several pieces of facial tissue, then fold together and bind with a rubber band to make a small packet that does not allow the material to leak out. Place in a wide-mouth glass container, such as a 1-quart pickle jar. Then put in the seed envelopes, close the lid tightly, and store the jar in the refrigerator.

## LONGEVITY OF SEEDS

Some vegetable seeds retain their viability longer than others do. They can be divided into 3 general groups: (1) comparatively short-lived, and usually not good after 1 year; (2) moderately long-lived, often good for 2 to 3 year; and (3) long-lived, often retaining good viability for more than 3 years. Listed below are some of the more commonly grown vegetables and the average length of time their seeds can be stored with resultant satisfactory germination. Dry, cool storage is presumed.

### Average Length of Time to Store Seeds in Years

|                  |   |
|------------------|---|
| Beans            | 3 |
| Beets            | 4 |
| Brussels sprouts | 3 |
| Cabbage          | 3 |

|             |   |
|-------------|---|
| Carrot      | 3 |
| Cauliflower | 3 |
| Corn        | 2 |
| Cucumber    | 4 |
| Eggplant    | 4 |
| Lettuce     | 3 |
| Muskmelon   | 4 |
| Okra        | 2 |
| Onion       | 1 |
| Parsley     | 1 |
| Parsnip     | 1 |
| Pepper      | 3 |
| Radish      | 3 |
| Spinach     | 3 |
| Squash      | 4 |
| Turnip      | 3 |
| Watermelon  | 3 |

#### TESTING SEED FOR VIABILITY

You can test for the viability of leftover or saved seed by doing a simple germination test. Put 3 paper towels on a plate, count out 10 seeds onto them and cover with another towel. Then moisten the toweling with water, but do not add so much that the water collects on the plate. Place this “germinator” in a plastic bag to prevent the seeds from drying out and put in a warm location at a temperature of about 70 °F. Check the moisture every 2 to 3 days and add water only if needed. In 7 to 10 days, count the number of seeds that have sprouted strongly and multiply by 10. This gives you a percentage of seeds that germinated. If the figure is less than 75 percent, you should probably consider buying fresh seeds for the current year’s use.