

Vegetables

Growing Vegetables From Seed

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Growing vegetables from seed is often more demanding than growing vegetables from transplants. There are more steps in the process, as well as more critical tasks to perform. Yet most vegetables are commonly planted in the garden as seed; thus, it is important that the essential operations be understood and followed.

Site Selection

Select a site near the house. If the garden area is easily accessible from the house, you will be more likely to work in it. Areas near the house are also easier to protect. If you are planning to water or irrigate, close proximity to water is also essential.

Adequate sunlight is another important feature of the suitable site. Most vegetable crops grown from seed require a minimum of six hours of daily sunlight. Optimum production will usually require 12 hours of sunlight daily.

A level site is also preferable. However, a slight slope can be an advantage in removing excess water. A well-drained, medium-textured soil is also desirable. However, in many areas of Tennessee and surrounding states, these soils do not exist. Therefore, select the best soil available that is in a suitable location.

Site Preparation

The first priority is to have a soil analysis performed, preferably in the fall. A soil test is the only accurate way of knowing the pH and nutritional level of your soil. Information on soil testing can be obtained from The University of Tennessee Extension factsheet **SP291-C**. Apply lime and fertilizer in accordance with the recommendations of your soil test.

Work the seedbed to a depth of 6 inches or more. Freshly worked soil should have a uniform granular texture that is neither clods nor dust. This requires that the seedbed have the proper moisture content when worked, as described in **SP 291-C**. Work-

ing the soil when it is too wet results in clods. Working the soil too dry results in dust.

Selecting Seed

Be sure to begin with high-quality seed. Old seed may or may not germinate. Even if they do germinate, there is no guarantee that the plants will be healthy and vigorous. Plants that lack vigor are weak and often unproductive. Seed purchased at extremely low prices are a bargain only if they grow and produce good yields of high-quality produce.

Seed of hybrid varieties is often more expensive than is seed of open-pollinated varieties. However, the difference in quality and yield more than offset the difference in price. Hybrid varieties often combine increased productivity with increased uniformity and improved horticultural characteristics. Many hybrid varieties also have increased disease resistance when compared to open-pollinated varieties.

Some seed are treated with insecticide and/or fungicide to protect against insects and diseases. The seed treatment is usually recognizable by its color. The most common color is pink; however, blue and green treatments are now used on occasion. As a rule, treated seed are preferable to untreated seed. However, if you want to produce "organic" vegetables, you will need to purchase untreated seed.

Seed packets should be stamped with the year they are intended to be used. If the year of intended use is not recorded or is removed when opening the package, write the year on the package before storing. This will aid in keeping up with seed in the future.

Test germination of old seed as follows. Roll 20 seeds in a moist paper towel and keep it moist for seven to 10 days at or



near room temperature. This is best done by putting the towel in a sealed jar or plastic container and placing it in an area of the house with little temperature fluctuation. Open the towel and count the number of seeds that have germinated. If most have germinated, plant at the usual spacing. If $\frac{2}{3}$ to $\frac{3}{4}$ have germinated, plant the seed slightly thicker than normal. If less than $\frac{1}{2}$ of the seeds germinate, discard and purchase new seed.

Purchased seed is usually superior to homegrown seed. Since many diseases are seed-borne, or carried over in the seed, saving your own seed greatly increases the risk of a serious disease problem.

Do not save seed from hybrid varieties. It generally will not exhibit the same yield potential and quality as the parent plants.

If you wish to save seed from open-pollinated varieties, isolate plants to prevent cross-pollination. Seed of cross-pollinated plants often produce plants inferior to the parents. In addition, the leaves or fruit produced from cross-pollinated plants may not be desirable.

Seed of recommended varieties is most likely to produce heavy yields of high-quality garden vegetables. Recommended vegetable varieties for Tennessee gardens can be found in the cool-season vegetable factsheet **SP 291-O**, the warm-season vegetable factsheet **SP 291-P** and the fall garden factsheet **SP 291-G** of this series. Heirloom varieties that have been grown in the area for many years, as well as All-American Selection winners, are also likely to be well-adapted to the area. Adapted varieties are capable of producing high yields of high-quality vegetables.

Storing Seed

Some vegetable seed may be stored for several years if kept cool and dry. Reseal partially used seed packets with tape or place them inside a sealable plastic bag. Place the packets in a plastic container or glass jar with a tight-fitting lid. Homegrown seed may be placed in 35 mm film canisters, baby food jars or other small containers with tight-fitting lids. Store the seed containers in a refrigerator or freezer until the seed are to be planted.

Planting Seed

Plant seed at the proper time, depth and spacing as indicated in the previously mentioned factsheets (**SP 291-G, O and P**). If cool-season vegetables are seeded too late, they may not mature or may produce small quantities of low-quality vegetables. Due to cool soil temperatures, warm-season vegetable seed planted too early may not germinate.

Staying within acceptable planting dates, multiple plantings at 2- to 3-week intervals can be made for many vegetable crops. This will increase the yield and extend the length of the harvest season. Early cool-season vegetables can be followed with warm-season vegetables or with a fall garden.

Use stakes and a string to make straight rows. Use a hoe or other suitable tool to open a furrow to the recommended depth. If the soil is extremely dry, add water to the furrow. Carefully shake or place seed in the furrow a little thicker than the recommended spacing. Then use a rake or hoe to cover the seed with soil.

A higher percentage of seed will emerge if the soil surface is not allowed to dry or crust. It may be necessary to water the

germinating seed frequently or to cover the seed row with newspaper or a board to prevent the drying of the soil surface. Sand, compost or peat moss sprinkled over the seed will reduce crusting. If the vegetable plants are to survive, newspaper or boards must be removed when the seedlings begin to emerge.

Seedling Care

When seedlings have reached a height of 2 to 3 inches, thin them to the in-row spacing recommended in the aforementioned factsheets (**SP 291-G, O and P**). Thinning reduces competition for water, nutrients and sunlight. Proper plant spacing also increases air circulation around the plants, reducing potential disease problems. Ultimately, proper plant spacing increases the yield of high-quality vegetables. In some cases, the small plants removed when thinning may provide the first homegrown vegetables of the season.

Try to thin vegetables when the ground is soft and damp, but not muddy. Gently pull unwanted plants, while minimizing the disturbance to those that remain. If remaining plants are disturbed, firm the soil around them. Some vegetable plants can be carefully removed and transplanted to a new location during thinning. However, this does not work well with corn, beans and vine crops (cucumbers, squash, muskmelon, watermelon and pumpkins).

To help the vegetable plants recover more rapidly after thinning and transplanting, water the rows with a water-soluble fertilizer. Mix 2 teaspoons of water-soluble fertilizer in each gallon of water. One gallon of fertilizer solution should water 5 to 10 feet of row. To promote root development, use a high-phosphate starter solution on the transplanted seedlings.

Further care for the growing vegetable plants is outlined in the other factsheets in this series. However, some general principles apply to all crops.

Remove weeds at frequent intervals. Weeds compete for water, nutrients and sunlight; provide a refuge for insects; and can serve as alternate hosts to diseases.

Control insects and diseases. Both can reduce the yield and quality of the finished product.

Depending on the stage of development, vegetable crops require from 1 to 2.5 inches of water per week. There will be times every season when vegetable plants will benefit from irrigation. Remember, when you see symptoms of water stress, the damage to the yield and/or quality of your produce has already occurred.

Keep upright plants staked and tied. Proper care of upright plants will increase air circulation, reducing potential disease problems. Preventing the plants from coming in contact with the soil will also keep the harvested product cleaner.

Harvest frequently to maintain the highest-quality produce. In crops like squash, if over-mature fruit is allowed to stay on the vine, the plant will quit blooming. Therefore, remove over-mature fruit to keep the plant fruitful. Also, over-ripe fruit attracts insects.

For maximum production, the garden must have frequent attention. Walk through every day or two, performing minor tasks, as well as scouting for early signs of problems. This is probably one of the best assurances of having a high-quality garden.

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