
Seed for the Garden

Choosing and purchasing vegetable seeds is one of the most enjoyable gardening pastimes. Thumbing through colorful catalogs and dreaming of the season's harvest is one way to make winter seem a little warmer. Seed purchased from a dependable seed company provides a good start toward realizing that vision of bounty. Keep notes about the seeds you purchase — their germination qualities, plant vigor, tendencies toward insects and disease, etc. From this information, you can determine whether a seed company is meeting your needs or whether the varieties you have chosen are unsuitable for your area or gardening style. For example, if powdery mildew is a big problem on plants in your area, next year you may want to look for mildew-resistant varieties.

Saving Seed

Saving your own vegetable seed is another pleasurable activity. It offers a sense of self-sufficiency and saves money. You can maintain a variety that is not commercially available, thus helping to perpetuate a broad genetic base of plant varieties. Breeders often search for old-time varieties when attempting to improve commercial plants since the heirloom vegetables (as they are sometimes called) often have inbred disease and pest resistance or cold-hardiness. Participation in a seed-saver's exchange can be a rewarding experience. Your extra seeds may be traded for unusual types that are not available through other sources.

There are certain considerations to keep in mind when saving seed. Hybrid varieties are not likely to be the same as the parent plants; therefore, only open-pollinated varieties should be used for home seed production. Some seed dealers have responded to the increasing interest in seed-saving by clearly marking open-pollinated varieties in their catalogs. Another concern in saving seed is the possibility of carrying seed-borne diseases into next year's crop. Many commercially-grown seeds are grown in dry areas unsuitable to fungal, viral and bacterial diseases that may be present in your region. Take care to control diseases that can be carried in seed. Another weather-related factor is how long it takes seeds to dry; this can be adversely affected by frequent rain and/or high humidity. Finally, if you have ever saved squash seed during a season in which you had more than one type of squash planted, you have probably seen the strange effects of cross-pollination. Saving seeds from cross-pollinated crops is not generally recommended for the novice because of problems with selection, requirements for hand pollination and isolation, biennial habits and genetic variability.

Some common, self-pollinated, annual plants from which seed may be saved include lettuce, okra, beans and peas, herbs and tomatoes. Methods for saving these seeds are described below.

Beans, peas and okra. Allow the seed pods to turn brown on the plant. Harvest the pods and dry them for 1 to 2 weeks. Shell and store them in a paper bag in a dry, cool (below 50°F) environment.

Lettuce seed. Cut seed stalks when fluffy in appearance, just before all the seeds are completely dried. Seeds will fall off the stalk and be

lost if allowed to mature on the plant. Completely dry the harvested seed stalk. Shake the seeds off and store in a cool, dry environment in an envelope or small glass jar.

Herb seeds. Herbs vary in methods of seed production. In general, allow herb seeds to almost completely dry on the plants. Some seed heads, such as dill, shatter and drop their seeds as soon as they are dry. Watch the early-ripening seeds; if they tend to fall off, harvest the other seed heads before they reach that point, leaving several inches of stem attached. Hang several stems upside down, covered with a paper bag to catch falling seed, in a warm, dry place until the drying is complete. Remove seeds from the seed heads and store them in envelopes or small glass jars. Some herb seeds, such as dill, celery, anise, cumin and others, can be used for flavoring as soon as they dry.

Tomato seeds. Pick ripe fruit from desirable plants. Cut the fruit and squeeze the pulp into a container. Add a little water and then let this ferment for 2 to 4 days at room temperature, stirring occasionally. When the seeds settle out, pour off the pulp and spread the seeds thinly to dry thoroughly. Store in an envelope or glass jar in a cool dry place.

For all kinds of saved seeds, be sure to clearly mark the storage containers with permanent, preferably waterproof ink indicating the variety and date saved. If properly stored, seeds will remain viable for some time (Table 6.2). To test germination, sprout seeds between moist paper towels; if germination is low, either discard the seed or plant extra to yield the desirable number of plants.

that is high in clay should be conditioned with compost or perlite to prevent excess moisture or shrinkage.

You can make your own peat-lite mix if you prefer; 50 percent vermiculite or perlite and 50 percent fine sphagnum peat is an excellent mix for starting seeds. Half the normal strength of fertilizer may be added, and all the ingredients should be thoroughly mixed.

Many types of containers can be used to start seeds. Flats or other large containers may be planted in rows, and the seedlings grown until they have one or two sets of true leaves. At this point, they are transplanted into other containers until they reach the right size for transplanting outdoors. Seedlings also can be started in pots, old cans, cutoff milk cartons, margarine tubs, egg cartons or other throwaways. The pop-out trays found at garden centers are both easy to use and reusable.

Peat pots are especially suited for large seeds and herbs. Sow one or two large seeds or 10 to 12 small herb seeds directly in each peat pot. Thin large seeds to one seedling per pot, but allow all the herb seeds to grow together because they support each other and grow much better than if sown singly, and are strong enough to be divided when it's time for transplanting. Peat pots may be planted directly in the garden after removing one side. Do not allow the edges of the pot to extend above the soil since they will act as a wick and cause moisture to evaporate from this exposed surface.

Regardless of the type of container chosen, fill it three-quarters full with seed-starting mixture and sow the seeds. Cover to the specified

depth and water. If your home is dry, it may help to cover the containers with plastic wrap to maintain a constant moisture level. Although seeds and seedlings are extremely sensitive to drying out, they should not be kept soaking wet. This is conducive to damping-off, a fungal disease deadly to seedlings. Damping-off can be prevented or diminished by sprinkling milled sphagnum moss, which contains a natural fungicide, on top of the soil.

Another option is to use peat pellets or cubes which are pre-formed and require no additional soil mix. The pellets or cubes are soaked until thoroughly wet; then seeds are planted in preformed holes. The whole pellet or cube can be planted without disturbing the roots. The only disadvantage to this method is expense.

Starting Seed Outdoors

Many seeds can be directly sown into the garden. The plant production data chart in Table 6.3 lists types of seed best planted this way. Young seedlings can emerge quite easily from sandy or organic soil. Seeds can be planted more deeply if garden soil is very sandy or if it is mellow with a high organic matter content. If garden soil is heavy with a high silt or clay content, the seeds should be covered only 2 to 3 times their diameter. In such soils it may be helpful to apply a band of sand, fine compost or vermiculite 4-inches wide and ¼-inch thick above the row after the seeds are planted. This helps retain soil moisture and reduces crusting, making it easier for seedlings to push through the soil surface.

Soil temperature affects the speed of seed germination. In spring, soil is often cold and seeds of some

plants will rot before they have a chance to sprout. Optimum soil temperatures are also listed in Table 6.3.

When planting a fall garden in midsummer, soil will be warm and dry. Cover the seeds to 4 to 5 times their diameter. To promote germination, gently water each day with a sprinkler or a sprinkling can. Retain moisture with shallow mulch or by covering the row with a board until the seeds have sprouted. Shading the area may keep the soil cooler for seed germination, especially when planting cool-weather crops in summer. Seed requiring a lower germination temperature may benefit from pre-sprouting indoors or from storage in the refrigerator 2 weeks before planting. Pre-sprouting is also a useful technique for planting in cold soils; however, seed must be handled very carefully once sprouted to prevent damaging new root tissue.

Row Planting

A string stretched between stakes provides a guide for neat, straight rows (Figure 6.3). Use a hoe handle, a special furrow hoe or a grub hoe to make a furrow of the appropriate depth for the seed being planted. Sow seed thinly; it may help to mix very small seed with coarse sand to distribute the seeds more evenly. Draw soil over the seed, removing stones and large clods. Firming soil over seeds improves soil moisture uptake and hastens germination. Water the seeds to improve soil and seed contact. When the plants have reached 4 to 6 inches in height, thin according to seed packet instructions to provide adequate room for growth.

Broadcast Planting

Many crops may be sown in wide, banded rows or beds instead of long, single rows (Figure 6.3). Crops such as spinach, peas, beets, lettuce, green onions and carrots are especially suited to this type of culture. Seed should be sown evenly over the area, then raked in with a rake or three-pronged hand cultivator. Firm soil over the seeds; then thin young plants to allow room for growth.

Hill Planting

Larger vegetables, such as melons, squash, corn and cucumbers, can be planted in hills. Soil is mounded to a foot or so in diameter at the recommended spacing (Figure 6.3). Plant four to six seeds per hill, firming the soil well. Thin the seedlings to three to five plants per hill.

Transplants for the Garden

Most gardeners use transplants in the garden at one time or another to give long-season plants a chance to grow to maturity under preferred weather conditions or just to lengthen the harvest season. Cool-season crops, such as head lettuce, broccoli, celery and others, would not have a chance to reach their prime harvest stage in most areas of Texas in spring if not given those extra weeks indoors to get a head start. Tomatoes, peppers and eggplants might not produce at all if not grown from transplants.

Due to the amount of time, attention and the need for controlled growing conditions, many gardeners prefer to purchase plants for their gardens. However, for a larger selection of varieties and to control plant production from seed

to harvest, others gardeners choose to start their own. Table 6.4 lists several plant varieties according to how easily and successfully they can be transplanted.

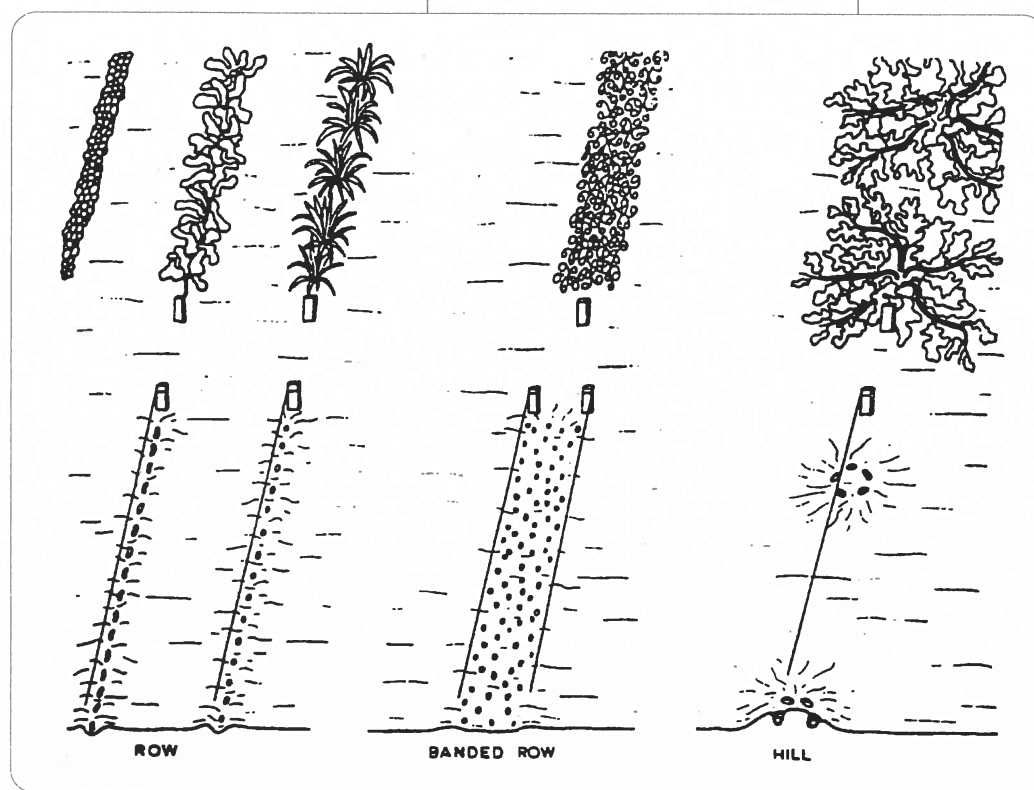
Annual Plants

Transplants of annual vegetables and flowers should have good roots and should be stocky, healthy and free from disease. They should not be too small or too mature. Be sure plants have been hardened-off so that they easily adapt to environmental change. However, they should not be so hardened-off that they are woody or yellow. Successful transplanting is achieved by interrupting plant growth as little as possible. This is the advantage of using peat pots or peat pellets which are not removed when transplanting.

Have the garden soil prepared before transplanting. All additives which require time to break down,

such as manures, limestone, rock fertilizers and green manures, should be incorporated several weeks before planting. Quick-acting (hydrated) lime and fertilizers and well-decayed compost can be added just before planting.

Transplant on a shady day in late afternoon or early evening to prevent wilting. It



◀ **Figure 6.3.**
Row, broadcast
(banded row) and
hill plantings.

During growth, vegetable crops need about an inch of water per week from rain, irrigation or both. Keep a rain gauge near the garden or check with the local weather bureau for rainfall amounts. Supplement rainfall with irrigation water as needed.

During dry periods, a single thorough, weekly watering of 1 to 2 inches of water (65 to 130 gallons per 100 square feet) is usually enough for most soils. Soils should be wetted to a depth of 5 to 6 inches each time you water and not watered again until the top few inches begin to dry. Average garden soil will store about 2 to 4 inches of water per foot of depth.

Reducing Water Demands

There are ways to reduce the amount of water you have to add. The first step toward improving moisture conditions in the garden is to add organic matter. Soil moisture may not be available to plants, particularly if the soil is a heavy clay which tends to retain water. For example, if there are 4½ inches of water per foot in a heavy clay soil, there may be as little as 1½ inches of water available for plants. A relatively high level of humus in the soil, brought about by the addition and breakdown of organic matter, can increase the water available to plants. By causing clay particles to form aggregates or large clumps of particles, humus also increases the porosity of tight clays, thus allowing moisture to drain to lower levels as a reserve instead of puddling and running off the top of the soil.

The moisture-holding capacity of sandy soils is also improved by adding organic matter. Although most water in sandy soil is available for plants, it drains so quickly that even a few days after a rain,

plants are unable to reach water. Humus in sandy soil gives the water something to cling to until it is needed by plants.

Mulching can significantly decrease supplemental water requirements. A 4- to 6-inch layer of organic mulch can reduce water needs by as much as 50 percent by smothering weeds (which take up and transpire moisture) and by reducing evaporation of moisture directly from the soil. Organic mulches hold some water themselves and increase the humidity level around a plant. Black plastic mulch also conserves moisture, but it may dramatically increase soil temperatures during summer (to the detriment of some plants and the benefit of others) if not covered by other mulch materials or foliage.

Shading and windbreaks can also help conserve moisture. Plants that wilt in very sunny areas can benefit from partial shade in the afternoon; in particular, small plants should be protected. Air movement carries moisture away from leaf surfaces, causing the plant to need more water. In windy areas, roots often cannot keep up with leaf demands, and the plant wilts. Thus, temporary or permanent windbreaks can significantly reduce supplemental water needs.

When rainfall is sparse, temperatures are high and cultural practices do not seem to be effective, supplemental water may save the garden. When properly used, irrigation can benefit the garden in many ways including the following:

- ✓ Aid in seed emergence
- ✓ Reduce soil crusting
- ✓ Improve germination and plant stand

- ✓ Reduce wilting and checking of growth in transplants
- ✓ Increase fruit size of tomato, cucumber and melon
- ✓ Prevent premature ripening of peas, beans and sweet corn
- ✓ Maintain uniform growth
- ✓ Improve the quality and yield of most crops

Irrigation Methods

The home gardener has several options for watering plants — a sprinkler can, a garden hose with a fan nozzle or spray attachment, portable lawn sprinklers, a perforated plastic soaker hose, drip or trickle irrigation or a semiautomatic drip system. If properly maintained, quality equipment will last for a number of years. There are many considerations in selecting watering equipment.

One of the best ways to water a garden is with a drip irrigation system. Drip irrigation is the controlled application of water at a very low flow over a prolonged period. It differs from conventional watering systems in that the soil is not supersaturated with water. When the rate of drip irrigation is adjusted correctly, there are no puddles of water and no runoff.

Some drip systems use small water-releasing mechanisms called emitters which drip a certain volume of water when a certain amount of water pressure is supplied. Many of these systems are prepackaged and allow little versatility or adaptation to various garden sizes and shapes.

Several systems currently available in garden centers can be easily