

Montgomery County Vegetable Gardening Guide

Home gardening continues to grow in popularity. One of every three families does some type of home gardening, according to conservative estimates, with a majority of gardens located in urban areas. Texas gardeners can produce tasty, nutritious vegetables, year-round. To be a successful gardener requires following a few basic rules and making practical decisions.

Garden Site

Although many urban gardeners have little choice, selecting a garden site is extremely important. An area exposed to full or near-full sunlight, with deep, well-drained, fertile soil is ideal. The location should be near a water outlet and free of competition from existing shrubs or trees. In areas where soil drainage is less than ideal you may want to consider constructing a raised bed or box garden. Landscape timbers, concrete blocks or treated lumber in addition to a variety of others materials, can be used to construct your raised beds. By modifying certain cultural practices and crop selections, almost any site can become a highly productive garden.

Crop Selections

As a home gardener, one of your first major decisions is deciding what vegetables to grow. **Table 1.** lists crops suitable for small and large gardens. Raise vegetables that return a good portion of nutritious food for the time and space required. Vine crops such as watermelons, cantaloupes, winter squash and cucumbers require larger amounts of space. However, locating the garden near a fence or trellis may allow for growing vine crops in less space. Plant according to family needs and resist over planting any particular vegetable, although surpluses may be preserved.

Table 1. Home Garden Vegetables			
Small Garden Vegetables		Large Garden Vegetables	
Beets	Green beans	Cantaloupes	Potatoes
Broccoli	Lettuce	Cauliflower	Pumpkins
Bush squash	Onions	Collards	Southern peas
Cabbage	Parsley	Cucumbers	Sweet corn
Carrots	Peppers	Mustard	Sweet potatoes
Eggplant	Radishes	Okra	Watermelon
English peas	Spinach		
Garlic	Tomatoes		

Proper variety selection is an important key to successful gardening. The wrong variety may not produce satisfactory yields regardless of subsequent care and attention. A Montgomery County Vegetable Variety List can be obtained from the Montgomery County Extension Center. New varieties can be fun to try, but limit experimental plantings to a small area until they have been tested to see how they perform in your garden.

If your garden is not in an area receiving full or near-full sunlight, try leafy crops such as leaf lettuce, mustard, and parsley. **Table 2** indicates vegetable crops which do well in full sunlight and those that tolerate partial shade.

Table 2. Light Requirements of Common Plants					
Require Bright Sunlight			Tolerate Partial Shade		
Beans	Eggplant	Potatoes	Beets	Collards	Parsley
Broccoli	Okra	Pumpkin	Brussels sprouts	Kale	Radish
Cantaloupes	Onions	Squash	Cabbage	Lettuce	Spinach
Cauliflower	Peas	Tomatoes	Carrots	Mustard	Turnips
Cucumbers	Peppers	Watermelons			

Garden Plan

A gardener needs a plan just as an architect does. Careful planning reduces the chance for mistakes and increases returns on your labor.

Long-term crops require a long growing period. Plant them where they won't interfere with care and harvesting of short-term crops. Plant tall-growing crops where they will not shade or interfere with growth of smaller crops. Plant vegetables such as okra, staked tomatoes, pole beans, and sweet corn on the garden's north side to avoid shading lower-growing crops such as radishes, leaf lettuce, onions, and bush beans. Group crops according to the rate of maturity. **Table 3** indicates the relative maturity rate of various vegetable crops. By grouping vegetables according to maturity rate, one crop can be planted to take the place of another as soon as it is removed. Try to plant crops totally unrelated to the previous crop. For example, follow early beans with bush squash, or bell peppers. Crop rotation helps prevent disease and insect build-up.

Table 3. Maturity Rate		
Quick (30-60 Days)		
Beets	Mustard	Summer squash
Bush Beans	Radishes	Turnips
Leaf lettuce	Spinach	Turnip greens
Moderate (60-80 Days)		
Broccoli	Green onions	Parsley
Cabbage, Chinese	Kohlrabi	Peppers
Carrots	Lima beans, bush	Tomatoes, cherry
Cucumbers	Okra	

Slow (80 Days or More)		
Brussels sprouts Bulb onions Cabbage Cantaloupes	Cauliflower Eggplant Garlic Irish potatoes	Pumpkins Sweet potatoes Tomatoes Watermelon

When to Plant

Proper planting time is important if maximum quality and production are expected. A couple of weeks delay can mean the difference between success and failure. For more information on the proper planting times for vegetables in Montgomery County refer to the Vegetable Garden Planting Guide, available from the Montgomery County Extension Center.

Soil Preparation

Many garden sites do not have deep, well-drained, fertile soil which is ideal for vegetable growing. Thus, soils must be altered to provide good drainage and aeration. If the soil is a heavy clay, the addition of organic matter and sand may be highly advantageous.

Apply 1 to 2 inches of good sandy soil and 2 to 3 inches of organic matter to the garden site and turn it under in late winter or early spring to improve the soil's physical quality. Work on the soil's physical condition over a period of time rather than trying to develop desirable soil in a season or two. Make periodic additions of organic matter such as; compost, peanut hulls, rice hulls, composted grass clippings, or some other similar material. Turn the soil to a depth of 8 to 10 inches -- the deeper the better.

When adding organic matter or sand to the garden site, take care to avoid introducing soil pests such as nematodes. The Texas Agricultural Extension Service provides a laboratory service to determine whether nematodes are present in soils. Contact your county Extension agent for additional information.

Never work wet garden soil. Soils containing a high degree of organic matter can be worked at a higher moisture content than heavy clay soils. To determine if the soil is suitable for working, squeeze together a small handful of soil. If it sticks together in a ball and does not readily crumble under slight pressure by the thumb and finger, it is too wet for working.

Seeds germinate more readily in well-prepared soil than in coarse, lumpy soil. Thorough preparation greatly reduces the work of planting and caring for the crop. It is possible, however, to overdo preparation of some soils. An ideal soil for planting is granular, not powdery fine.

Fertilization

Proper fertilization is another important key to successful vegetable gardening. The amount of fertilizer needed depends upon soil type and crops. Texas soils vary from deep sugar sands to fertile, well-drained soils, to heavy, dark clays underlaid by layers of caliche rock. Crops

grown on sandy soils usually respond to liberal amounts of potassium and nitrogen, whereas crops grown on clay soils do not.

Heavy clay soils can be fertilized considerably heavier at planting than can sandy soils. Heavy clay soils and those high in organic matter can safely absorb and store fertilizer at three to four times the rate of sandy soils. Poor thin, sandy soils, which need fertilizer the most, unfortunately cannot be fed as heavily and still maintain plant safety. The solution is to feed poor thin soils more often in lighter doses. For accurate recommendations regarding fertilizer rates, for having your soil tested.

In general, if your garden is located on deep, sandy soil, apply a complete pre-plant fertilizer such as 15-5-10 or 16-6-12 at the rate of 1 to 2 pounds per 100 square feet. If your garden consists of a soil type with a high percentage of clay, a fertilizer such as 8-8-8 at 1 to 2 pounds per 100 square feet should be suitable.

After determining the proper amount of fertilizer for a pre-plant application, apply the fertilizer a few days before planting. Spade the garden plot, spread the fertilizer by hand or with a fertilizer distributor and then work the soil one or two times to properly mix the fertilizer with the soil. After the fertilizer is well mixed with the soil, bed the garden in preparation for planting. Take care to avoid banding nitrogen material directly beneath the row. Death of the seed or severe burning of the plants could result. Apply additional nitrogen as a furrow or side dress application later in the season. For most soils, $\frac{1}{2}$ to 1 pound of 21-0-0 (ammonium sulfate) per 100 linear feet of row, applied in the furrow and watered in, is adequate. Apply at first fruit set for crops such as tomatoes, peppers, and squash. Side dress leafy crops such as cabbage and lettuce when they develop several sets of character leaves. Follow up with additional applications of fertilizer about every four to six weeks throughout the production cycle. There are a number of good organic fertilizers on the market that can be used in the vegetable garden such as cotton seed meal, fish meal, blood meal as well as a number of commercially blended products. Your strategy for fertilization will be determined by the type of soil, crops to be grown, and your overall gardening philosophy.

Planting

Plant your garden as early as possible in the spring and fall so the vegetables will grow and mature during ideal conditions.

Transplanting vegetable crops wherever possible allows earlier harvesting and extends the productive period of many vegetable crops. Where transplanting is not practical or convenient, seed directly. A general rule of thumb for planting is to cover the seed 2 to 3 times its widest measurement. This is especially true for big-seeded crops such as green beans, sweet corn, cucumbers, cantaloupes, and watermelons. For smaller-seeded crops such as carrots, lettuce, or onions, an average planting depth of $\frac{1}{4}$ inch or less is usually preferred. Plant the seeds fairly thick with the intention of thinning to an optimum stand at a later date. Avoid allowing the soil to over-dry or crust during germination, but do not over water. **Table 4** indicates the number of days from planting to expected emergence when properly planted.

Beans	5-10 days	Onion	7-10 days
Beets	7-10 days	Peas	6-10 days
Broccoli	5-10 days	Parsley	15-21 days
Cabbage	5-10 days	Pepper	9-14 days
Carrots	12-18 days	Radish	3-6 days
Cauliflower	5-10 days	Spinach	7-12 days
Corn	5-8 days	Squash	4-6 days
Cucumber	6-10 days	Tomato	6-12 days
Eggplant	6-10 days	Turnip	4-8 days
Lettuce	6-8 days	Watermelon	6-8 days
Okra	7-10 days		

Avoid transplanting too deep or too shallow, especially if plants are in containers such as peat pots. Deep planting often causes developed roots to abort, and planting too shallow exposes containers to the surface and causes root death from excessive drying. Some crops are easily transplanted bare-root, while others are best transplanted from containers, as indicated in **Table 5**. When transplanting plants such as tomatoes or peppers, use a starter solution. Starter solutions may be purchased at local nurseries. Use the lower rate on light, sandy soils. Apply 1 to 2 pints of starter solution, depending upon plant size, into each transplant hole before planting. This prevents the plants from drying out and provides adequate sources of fertility for young, growing plants.

Easily Transplanted		
Beets Broccoli Cabbage	Cauliflower Chard Lettuce	Onions Tomatoes
Require Care When Transplanting		
Celery Eggplant	Okra Peppers	Spinach
Very Difficult to Transplant (Not Recommended)		
Beans Cantaloupe Carrots	Corn Cucumbers Peas	Squash Turnips Watermelon

Watering

Apply enough water to penetrate the soil to a depth of 4 to 6 inches. For best production, most gardens require a moisture supply equivalent to 1 to 2 inches of rain per week during the growing season. Light sandy soils generally require more frequent watering than heavier dark soils. If sprinklers are used, water in the morning to allow plant foliage to dry before night. This practice helps prevent foliage diseases, since humidity and cool temperatures encourage disease development on most vegetable crops.

The use of drip irrigation to supply water is also beneficial in this regard. This system of irrigation is the most water efficient and is ideally suited for use with mulches.

Weed Control

A long-handled hoe is the best tool for control of undesirable plants in vegetable gardens. Cultivate and hoe shallowly to avoid injury to vegetable roots lying near the soil surface. Control weeds in the seedling stage to prevent them from seeding and re-inoculating the garden area. The use of mulch is also an effective means of weed control. Chemical weed control usually is undesirable and unsatisfactory because of the selective nature of weed control chemicals. The wide variety of vegetable crops normally planted in a small area prohibits use of such chemicals.

Mulching

Mulching will increase yields, conserve moisture, prevent weed growth, regulate soil temperature, and lessen losses caused by ground rot of many vegetable crops. Organic mulches can be made of straw, leaves, grass, bark, compost, sawdust, or peat moss. Organic mulches should be incorporated into the soil and will improve the soil tilth, aeration, and drainage. The amount of organic mulch to use depends upon the type, but 1 to 2 inches of organic material applied to the garden surface around growing plants is usually adequate.

When turning organic mulches under for subsequent crops, add additional nitrogen fertilizer at the rate of about 1 pound per 100 square feet to help soil organisms break down the additional organic matter.

Pest Control

Diseases and insects cause great concern among Montgomery County gardeners. Long growing seasons with relatively mild winters encourage large insect populations. Avoid spraying when possible, but use recommended and approved chemicals if the need warrants. Exercise care when deciding which chemicals to apply. Spray only those crops which are listed on the chemical's container. When used according to manufacturers directions and label, chemicals pose no threat to the home gardener. We recommend using the least toxic products available that will adequately do the job.

Disease control is really a preventive rather than an eradication procedure. Cool, damp conditions are conducive to foliage diseases. Carefully watch your garden for symptoms of diseases. Spray accordingly, using only approved fungicides. Publications on disease and insect identification and controls are available from the Montgomery County Extension Office.

Harvesting

For the greatest enjoyment of your home vegetable garden, harvest vegetables when they are at the proper stage of development. A vegetable's full flavor develops only at peak maturity, resulting in the excellent taste of vine-ripened tomatoes, tender green beans, and crisp, flavorful lettuce. For maximum flavor and nutritional content, harvest the crop the day it is to be canned, frozen, or eaten.

Common Garden Problems

Symptoms	Possible Causes	Corrective Measures
Plants stunted in growth; sickly, yellow color	Lack of soil fertility or soil pH abnormal	Use fertilizer and correct pH according to soil test. Use 2 to 3 pounds of complete fertilizer per 100 square feet in absence of soil test
	Plants growing in compacted, poorly-drained soil	Modify soil with organic matter or coarse sand.
	Insect or disease damage	Use a regular spray or dust program.
	Iron deficiency	Apply iron to soil or foliage.
Plants stunted in growth; sickly, purplish color	Low temperature	Plant at proper time. Don't use light-colored mulch too early in the season.
	Low available phosphate	Apply sufficient phosphate at planting.
Holes in leaves; leaves yellowish and dropping, or distorted in shape	Damage by insects	Use recommended insecticides at regular intervals.
Plant leaves with spots; dead, dried areas; or powdery or rusty areas	Plant disease	Use resistant varieties, remove diseased plants when they are noticed and use a regular spray program.
Plants wilt even though sufficient water is present	Soluble salts too high or root system damage	Have soil tested by county Extension agent. Use soil insecticides, fungicides, and resistant varieties.
	Poor drainage and aeration	Use organic matter or sand in soil.
	Insect or nematode damages	Use recommended varieties and soil insecticides or nematocides.
Plants tall, spindly and unproductive	Excessive shade	Relocate to sunny area. Keep down weeds.
	Excessive nitrogen	Reduce applications of nitrogen
Blossom drop (tomatoes)	Hot dry periods	Use mulch and water. Plant heat tolerant varieties.
	Minor element deficiencies	Use fertilizer containing zinc, iron, and manganese.
Failure to set fruit (vine crops)	Poor pollination	Avoid spraying when bees are present.
Leathery, dry, brown blemish on the blossom end of tomatoes, peppers, and watermelons	Blossom end rot	Maintain a uniform soil moisture supply. Avoid over-watering and excessive nitrogen.

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The Texas A&M University System, U.S. Department of Agriculture, and the County Commissioners Courts of Texas Cooperating.