



Growing Tomatoes

Tomatoes are far and away the most popular vegetable crop among the nation's home gardeners, and with good reason: not only are tomatoes are tasty, nutritious and versatile, they are relatively easy to grow and return high value for the space they occupy.

No store-bought tomato can compare with the flavor of a sun-drenched ripe tomato picked from the home garden at its peak of ripeness. And no vegetable compares with the tomato's versatility. Tomatoes can be fried or pickled green, sliced into salads, stewed, stuffed and baked, chopped into salsas, dried, simmered into ketchup, strained into juice and pureed as the basis for a wide variety of tempting sauces and toppings.

A tropical perennial of the nightshade family (*Solanaceae*) native to Central and South America, the tomato appeared in European cuisine in the 16th-century, although it did not become popular there or in this country until the 18th century because of the common belief it was poisonous.

Soil Requirements

Though tomatoes prefer a deep, loamy soil high in organic matter, they will grow and produce well in any good garden soil that's well-drained and receives full sun for most of the day. They prefer a slightly acid soil with a pH of 6.2 to 6.8 of balanced fertility. Excess nitrogen can result in plants with lush, vigorous foliage but little fruit production.

Although it's best to determine a need for lime and nutrients with a soil test, a rule of thumb for gardeners lacking test data is to apply 2½ to 3 pounds of a complete, moderate-nitrogen fertilizer (such as 5-10-10) per 100 square feet of garden area, and to spread an inch or two of finished compost or well-rotted animal manure over the planting bed. Work the fertilizer and compost and/or aged manure into the soil about 2 weeks before planting.

Planting beds raised 8-12 inches above the natural soil line will improve both poorly-drained and excessively drained soils. Mark out space for each bed then loosen the soil within the bed thoroughly. Add height by adding the topsoil dug out of the walkways between the beds; incorporate rotted manure and compost.

Frame raised beds with wood or rock, or simply leave sloping soil. Make the raised beds no more than five feet wide, for ease of cultivation and harvest from either side.

Selecting the Right Variety

Plant breeders have produced hundreds of tomato varieties to suit every climate, garden site and taste. There are tomatoes that ripen in 55 days and varieties that require three months of hot weather to produce their crop. Some varieties produce vines that will sprawl 25 feet if not maintained by pruning, while others grow like little bushes as small as 8 inches high at maturity.

Various cultivars produce fruit that range in size from small marbles to giant grapefruits. Though many tomatoes are round, others are shaped like eggs, hearts, pears, sausages or bananas. Fruit can be smooth, pleated, fluted, ribbed or lobed. And the array of colors! Tomatoes come in every shade of red, but also in white, green (when ripe), cream, yellow, orange, pink, mahogany, burgundy, purple and near-black. Many varieties produce bicolored fruits that are striped, streaked or mottled.

With so many varieties available, how do you pick the one or ones that are right for your garden?

- Select only those varieties bred to grow and produce well in our short New Hampshire growing season, with its cool springs, frequent wide temperature swings in midsummer, high humidity and variable summer moisture.
- Is the tomato variety *determinate* or *indeterminate* in growth habit? *Determinate* tomato plants grow to a certain height and then stop. They also flower and set most all their fruit within a relatively short period of time. This is an advantage if the tomatoes are being grown primarily for freezing or canning as juice or sauce. *Indeterminate* tomato varieties grow, flower, and set fruit over the entire growing season. The vines continue growing throughout the season too, so growers need to cage, stake/Strellis and prune indeterminate varieties, or else give the plants plenty of space to sprawl over mulched ground.
- Next, consider how you'll be using your tomatoes. Are you looking for big, juicy fruit for slicing? Sweet, moderate-sized fruits to slice or chop into salads and salsas? Little round fruits that tuck neatly into lunch boxes and picnic baskets? Tomatoes for canning or juicing? A variety that will ripen over several weeks or months indoors when harvested green just before the first frosts of fall? Many gardeners continue growing old-fashioned, "heirloom" varieties that have been favorites for generations because of their exceptionally fine flavor or combination of flavor and unusual appearance.
- Another characteristic to look for when choosing tomato cultivars is disease resistance and tolerance to adverse conditions. Many cultivar names are followed by one or more letters indicating resistance to verticillium wilt (V), fusarium wilt (F), alternaria (A, the early blight fungus, common throughout New Hampshire) or tobacco mosaic virus (T). Disease resistance can be an important consideration, especially for growers who have experienced these problems with tomatoes in the past. Some varieties are resistant to conditions such as cracking and green shoulders; others will perform well under adverse conditions of drought, high heat or excessive rainfall.

Most gardeners do not raise their own tomatoes from seed and may be limited to those varieties offered by local garden centers. Even so it's important to question sales staff for information, read label descriptions and talk to fellow gardeners about their which tomato varieties they prefer and why.

Whether you buy seedlings or start your own, try two or three plants of a different tomato variety each year just for fun and adventure.

Purchasing tomato seedlings

Because of their long growing season and temperature requirements, tomatoes must be started indoors six to eight weeks before being moved permanently into the garden. Throughout much of New Hamp-

shire, Memorial Day weekend is a safe time for transplanting tomatoes, though southern gardeners may often plant a week or two earlier and growers in the northern frost pockets may need to wait until mid-June.

When purchasing tomato seedlings, select husky plants with thick, straight stems and bright green leaves. The ideal transplant is less than six inches tall, as broad as it is high. Do not choose tall, lanky plants, or large, well-established plants with flowers or fruits already visible. Plants growing in cell packs or individual containers are better choices than those growing in flats, as their roots will suffer less transplant shock. Seedlings should be free of insects and visible signs of disease.

Hardening off

Whether your plants are purchased or homegrown, *harden off* tomato seedlings before transplanting into the garden. About ten days before transplanting, set plants outdoors for a few hours each day to acclimate them gradually to outdoor conditions. Start by setting plants in filtered light in a setting protected from strong breezes. Each day, prolong the period the tomato seedlings spend outdoors, exposing them gradually to direct sunlight and wind. Remember that seedlings lose water much more rapidly outdoors than inside and will need more frequent watering during the hardening off process.

Bring plants indoors at night and on days when temperatures fall below 60 degrees F. Prolonged exposure to low temperatures may cause a condition called “catfacing” on early fruit.

Transplanting

Wait until danger of frost is well past and soil temperatures have warmed to about 60 degrees F. before setting tomatoes into the garden. (Although long-season varieties will yield earlier and produce more fruit if planted in early to mid-May in plastic-covered tunnels.) Use a trowel to dig a hole about twice the size of the tomato seedling and its root ball; set the seedling into the ground at the same level as it grew in its container. If you have compost, make a half-compost, half-topsoil mixture to fill in the planting hole.

If seedlings are growing in peat pots, peel back the rim of the pot so the entire pot is buried below the soil surface, a protruding pot will wick moisture from the soil.

To reduce transplant shock and hasten establishment of seedlings, water the newly-set transplant well, adding a high-phosphorous “starter solution” to the irrigation water.

Be sure to set a protective cutworm collar an inch deep and about two inches high around each newly-set transplant. A small paper cup with the bottom removed or a cut-to-size length of stiff manila, folded into a cylinder and secured with a paper clip are two fast, inexpensive ways to fashion cutworm collars.

Spacing transplants depends on the growth habit of a given variety and how plants will be grown. Set indeterminate tomatoes being allowed to sprawl across the ground three to five feet from each neighboring plant. Space staked or trellised seedlings 24-20 inches apart in rows three feet apart; caged and indeterminate plants 30 to 36 inches apart. Set stakes or cages at planting time, rather than later when the plants’ roots are established.

Many growers plant tomatoes into black or red plastic mulch. Plastic mulches retain soil moisture, raise soil temperature during the early part of the season, and help stabilize soil temperatures throughout the

summer. Black mulch suppresses weeds, whereby red mulch transmits enough light for weeds to flourish and should only be applied over a weed-free seedbed. Mulches also protect the fruit of unstaked plants from coming into contact with damp soil and rotting.

Other growers prefer mulching tomatoes with a thick organic mulch of straw, pine needles or leaves, spread two to four inches deep around plants. If mulching materials are scarce, recycle old news by first spreading three or four sheets of newspaper down across the tomato patch, wetting the paper to keep it from blowing away, then covering with a thin later of leaves, pine needles or straw. Organic mulches offer the same moisture retaining, weed suppressing and fruit protecting advantages as plastic, and eventually decompose, adding to the soil's supply of organic matter. Wait until the soil is thoroughly warm before applying the mulch; applied earlier, organic materials will retard soil warming.

Flea beetles are a major pest of young tomato plants. Protect new transplants from this insect during their first two or three weeks of growth with spun-bonded floating row covers. Because tomato seedlings are fragile, drape the row cover over wire hoops or a simple wooden frame to hold it above the plants.

Where space is limited or conditions are not suitable for tomato culture, try growing tomatoes in containers. Although most any large container will do as long as it provides adequate drainage; a general recommendation is one tomato plant per four or five-gallon container. Grow containerized tomatoes in artificial potting mix; do not use regular garden topsoil or homemade compost. Pay special attention to water and fertilizer needs, as container-grown tomato plants have no access to the deep soil reservoir of water and nutrients. Most containerized tomato varieties require a stake, trellis or other support.

Cultural Practices

An even moisture supply throughout the time the fruit is developing is important for preventing a condition called *blossom end rot*, as well as for supplying the water needed to develop the fruit - too much water at any one time may cause ripening fruit to split.

Prune staked plants to a single or double stem, periodically tying the stem loosely to the stake with strips of cotton rags; cut-up sections of old nylon stockings serve this function well. Prune tomato plants by removing all the branches or "suckers" that grow from the leaf axils, leaving a single main stem or the main stem and one additional branch near the base.

Unsupported and caged tomatoes may be left to branch naturally. Staked and pruned tomatoes produce fewer but larger fruit than caged or unsupported plants.

Technical review, 9/00, Dr. David Kopsell, UNH Extension Vegetable Specialist

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