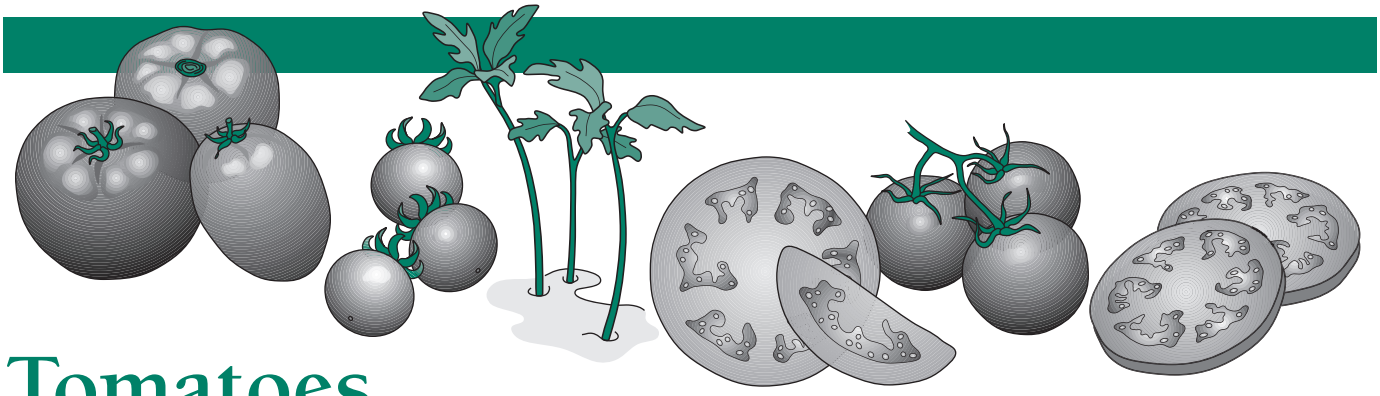

Tomatoes

Tomatoes are the most popular vegetable in the home garden. They are available in a variety of sizes, shapes, and colors—including red, yellow, orange, and pink. Sizes vary from the bite-sized cherry tomatoes to the giant beefsteak varieties. Tomatoes may be round, oblate (fruit are flattened at the top and bottom), or pear-shaped. Tomatoes are low in calories and a good source of vitamin C and antioxidants.

Determinate tomatoes are small, compact plants that grow to a certain height, then flower and set all their fruit within a short time. The harvest period for determinate tomatoes is generally short, making them good choices for canning.

Indeterminate tomatoes continue to grow, flower, and set fruit until killed by the first fall frost. Thus, the harvest from indeterminate varieties often extends over 2 or 3 months. Yields are generally heavier than determinate types, but are usually later to mature. Indeterminate tomatoes are tall, sprawling plants that often perform best when supported by stakes or a tall wire cage.

Cultivars

The following cultivars have proven themselves in Iowa State University test trials and are recommended for growing in Iowa. Fruit production generally begins in mid-July. Recommended early-fruiting varieties are 'Early Girl', 'Pik Red', and 'First Pik'.

Name	Growth habit	Fruit color	Fruit shape	Fruit size
Better Boy	Indeterminate	Red	Round	Medium
Big Beef	Indeterminate	Red	Round	Large
Celebrity	Determinate	Red	Oblate	Medium/large
Jet Star	Indeterminate	Red	Oblate	Medium/large
Jubilee	Indeterminate	Orange	Round	Medium/large
Lemon Boy	Indeterminate	Yellow	Round	Medium
Mountain Delight	Determinate	Red	Oblate	Medium
Patio	Dwarf	Red	Round	Small
Roma VF	Determinate	Red	Pear	Medium
Small Fry	Determinate	Red	Round	Cherry
Sunrise	Determinate	Red	Round	Medium/large
Super Sweet 100	Indeterminate	Red	Round	Cherry

Heirloom varieties

Heirloom tomatoes are old varieties whose seeds have been passed down from generation to generation. They are not hybrids like many modern tomato varieties. Heirloom tomatoes are open pollinated.

Heirloom tomatoes are popular for a number of reasons. Many gardeners believe the flavor of heirloom tomatoes is better than many modern hybrids that were developed primarily for commercial production and long-distance shipping. They come in all shapes and sizes, and virtually every color of the rainbow (except blue).

IOWA STATE UNIVERSITY
University Extension

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Planting

Tomatoes can be grown in many different soil types, but deep, loamy, well-drained soils are best. As with most garden vegetables, tomatoes prefer a slightly acid soil with a pH of 6.2 to 6.8. Tomatoes need at least 6 hours of direct sun daily for best yields.

Tomato plants can be started indoors or purchased at garden centers. Indoors, tomatoes should be started 5 to 6 weeks before the intended outdoor planting date. After germination, place the seedlings under artificial lighting or in a sunny window.

When purchasing tomato plants, select stocky, dark green plants that do not have fruits. Fruits stunt plant growth and reduce total yield. Harden or acclimate the plants to outdoor conditions before transplanting into the garden. Initially place the plants in a shady location out of the wind, then gradually expose them to longer periods of sunlight. After several days the tomatoes should be ready to be planted into the garden.

Transplant tomatoes into the garden after the danger of frost is past. In central Iowa, May 10 is the suggested planting date. Gardeners in southern Iowa can plant one week earlier, while those in northern areas should wait an extra week. The last practical date for planting tomatoes is about June 20.

Set plants into the soil deeply, up to their first true leaves. Pinch off the bottom leaves of tall, spindly transplants and lay them sideways in a trench. Carefully bend the stem upward so that the upper few inches of stem are above the soil surface. Roots will develop all along the buried stem.

If plants have been started in peat pots, tear off the top edge or make sure the top edge is well below the soil surface once planted. If the top edge of the peat pot is exposed to the air, it will act like a wick and draw water away from the plant. If the tomatoes are in plastic pots or cell-paks, carefully tap out the plants. Use a sharp knife to cut around plants growing in small flats.

Fertilizing

If a soil test has not been conducted, an application of 1 to 2 pounds of an all-purpose garden fertilizer, such as 10-10-10, per 100 square feet is usually adequate. Apply and work the fertilizer into the soil before planting.

After transplanting, feed the tomato plants with a starter fertilizer solution. Dissolve 1 or 2 tablespoons of a 5-10-5 or 6-10-4 fertilizer in a gallon of water, then pour one cup of the solution at the base of each plant.

Spacing

How close plants can be set depends on the growth habit of the variety and the training system used.

Indeterminate varieties that are staked can be planted 1½ to 2 feet apart within the rows. If grown in wire cages, indeterminate plants need 2 to 3 feet of space between them. Tomatoes that are allowed to sprawl over the ground should be spaced 3 to 4 feet apart. Rows should be spaced 4 to 5 feet apart.

Determinate, ground-grown tomatoes can be planted 1½ to 2 feet apart in rows that are about 4 feet apart.

Training

Several methods can be used to train tomatoes but the single stake and wire cage are preferred by most gardeners. Either method offers several advantages. When grown as trained plants, tomatoes require a relatively small amount of space, yet are capable of producing 8 to 10 pounds or more of fruit per plant. Cultivating and harvesting is easier with trained tomatoes. Tomato blight problems are generally less severe because of better air circulation. Trained tomato plants often produce better quality fruit than those allowed to sprawl on the ground.

Single Stake Method

Staking tomato plants to a single stem should produce an earlier crop. However, the fruit of staked plants are more susceptible to sunscald and blossom end rot as the removal of sucker growth reduces the leaf canopy. Total yield is lower than other training methods. If the lowest sucker is allowed to develop into a second stem, the additional foliage should reduce the occurrence of sunscald. Staking is not recommended for the shorter growing, determinate tomato varieties because yields will be drastically reduced.

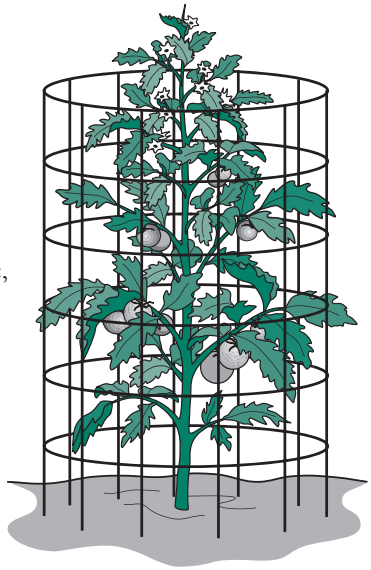
Within 2 weeks of planting, drive a single, 8-foot-long stake about 2 feet into the ground approximately 3 to 4 inches from each plant. Plant roots may be injured if the stakes are put in later. Tie the plant to the stake with strips of old nylon hose or cloth about every 12 inches up the stem.

Tie the material in a loose figure eight, with the stake in one loop and the stem in the other. When training the plant to a single stem, pinch out the sideshoots or suckers that form in the axil of the leaf and stem.

Wire Cage Method

A popular method of training tomatoes that requires less attention is the wire cage. Plants grown in wire cages don't need to be tied to the cage or pruned. As the plant grows, simply place wayward stems back within the wire cage. The yield from caged tomatoes should be larger than with other growing methods. There also should be fewer fruit problems.

A tomato cage can be constructed from concrete reinforcing wire or similar material. Manufactured cages are available at garden centers. When constructing a wire cage, the mesh must be large enough to enable you to pick the fruit. An excellent size cage is 20 to 24 inches in diameter and 4 to 5 feet tall. Remove the horizontal wire at the bottom of the cage and stick the vertical wires or "feet" into the soil. For greater stability, drive 1 or 2 stakes into the ground next to the cage and fasten the cage to the stakes.



Estimated Yield

Average yield with good management practices should be about 60 pounds per 10-foot row or 12 to 15 tons per acre.

Care during the growing season

Good management includes monitoring plants for pests and diseases and adding mulch and water as needed.

Mulch

Covering the soil surface around tomato plants with mulch encourages healthy plant growth by helping to

- conserve moisture and help maintain a consistent soil moisture level, thus reducing risk for blossom end rot;
- control weeds, thus reducing root competition for moisture and nutrients;
- moderate soil temperatures;
- reduce fruit spoilage; and
- keep fruits and leaves free of rain-spattered soil that could encourage spread of disease.

Several organic materials can be used as mulches. These include lawn clippings, tree leaves, straw, pine needles, shredded newspapers or whole sheets, ground corncobs, sawdust, and wood chips. Do not collect grass clippings from lawns that have been treated with broadleaf herbicides until they have been mowed 3 or 4 times. Depending on the material, a 2 to 4 inch thick layer is usually adequate.

Tomatoes have shown significant increases in earliness, yield, and fruit quality when grown on plastic mulch. Black and clear plastic are most often used, but several other colors are available. Some researchers have found certain colors to speed crop development and/or trap insect pests.

Water

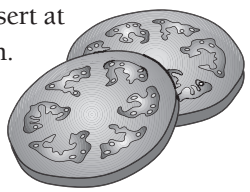
Like most vegetables, tomatoes perform best when they receive one inch of water per week. Supplemental watering is best done in the morning and delivered directly to the soil surrounding the plants. Soil type does not affect the amount of total water needed but does dictate frequency of water application. Lighter soils need more frequent water applications, but less water applied per application.

Harvest and storage

Tomatoes should be allowed to ripen fully on the plant. Fully ripe tomatoes are typically red. However, tomatoes that ripen in hot weather are often yellow-orange. The red pigments in the tomato fruits don't form when temperatures are above 90° F.

Fully ripe tomatoes may be stored in the refrigerator, but only for a few days. The flavor deteriorates when stored longer. At temperatures below 55° F, they lose their flavor in a few hours. Tomatoes will keep 5 to 6 days at room temperature.

To slice a tomato, use a knife with a serrated edge so that the tomato is not crushed. To core (remove the stem of) a tomato, use a small paring knife, insert at 45 degrees, and cut around the stem. To peel tomatoes, blanch them for 10 seconds, then cut out the stem and peel the skin down from it.



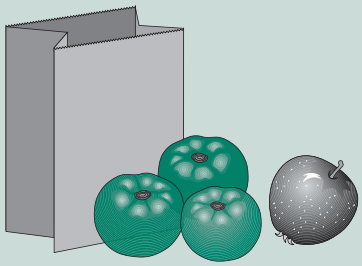
Tomatoes can be processed for later use by drying, or they can be frozen or canned whole, sliced, diced, juiced, or puréed.

How to ripen end-of-season green tomatoes

When frost is imminent, mature green tomatoes can be harvested and ripened indoors. The fruit should be solid, firm, free of defects, full-sized, and have a greenish white skin color. Remove the stems, then clean and dry the fruit.

Individually wrap each fruit in a piece of newspaper and place in single layers in boxes or shelves. Store the tomatoes in a dark, cool (55–60° F) location, such as a basement or cellar.

Inspect the tomatoes periodically during storage. Discard any soft or decaying fruit. When the tomatoes begin to color, remove the newspaper and place them at room temperature (not in sunlight—sunlight softens them without ripening and strips them of their vitamins A and C).



To ripen tomatoes more quickly, put them in a brown paper bag with or without an apple. As apples or tomatoes ripen, they give off ethylene gas. Ethylene speeds up the fruit ripening process when confined in a closed bag.

An alternate ripening method is to leave the green tomatoes on the vine, pull the entire plant, and hang it upside down in a cool, dark location. (Obviously, this method can be a bit messy.) Harvest the tomatoes from the vine as they ripen.

It also is possible to protect plants by covering with old sheets, blankets, tarps, newspaper, or paper bags.

For more information

Additional information about gardening is available from your local Iowa State University Extension office and from these Web sites:

ISU Extension Distribution Center (online store)
www.extension.iastate.edu/store

ISU Extension publications
www.extension.iastate.edu/pubs

ISU Horticulture
www.yardandgarden.extension.iastate.edu

Questions also may be directed to ISU Extension Hortline by calling 515-294-3108 during business hours (10 a.m.–12 noon, 1 p.m.–4:30 p.m. Monday–Friday).

If you want to learn more about horticulture through training and volunteer work, ask your ISU Extension office for information about the ISU Extension Master Gardener program.

Prepared by Eldon Everhart, Cindy Haynes, and Richard Jauron, extension horticulturists; Diane Nelson, extension communication specialist; and Jane Lenahan, extension graphic designer.

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