

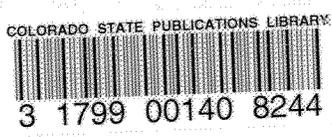
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# Tomatoes for the home garden

COLORADO STATE UNIVERSITY EXTENSION SERVICE



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## Quick Facts

- Tomatoes are the most common vegetable found in home gardens.
- Given sufficient care and the proper microclimate, they can be grown outside commercial production areas.
- Vigorous growth should be encouraged after transplanting to build a plant capable of carrying a fruit load.
- Cold nights usually are responsible for poor set and rough fruit on the first clusters.
- Season may be extended by improvising a plastic film shelter over the plants before frost.

Tomatoes are the most popular garden vegetable. They are found in home gardens even where the climate is not suitable for commercial tomato production. Fortunately, tomatoes are responsive; and, given sufficient care and the proper microclimate, fruit will be produced which will delight gardeners and reward their efforts.

**Varieties** of tomatoes are so numerous they cause confusion. For the gardener buying transplants, the condition of these transplants is perhaps more important than the variety. A good transplant should be at least as wide as it is high, have a stem the size of a pencil with a slight purpling at the base of the stem, and have dark green, thick and turgid foliage.

Assuming the transplants are all sturdy and well-hardened, the variety then becomes a matter of preference. There are red, yellow and pink tomatoes; the fruit can be globe, flat globe, cylindrical, cherry, plum or pear shaped; the plants may be dwarf, bush, or indeterminate; and the fruit may weigh from less than an ounce to more than two pounds.

Many home gardeners raise tomatoes to enjoy the garden-fresh tomato flavor they knew in their youth. These gardeners can't go very wrong with varieties like Rutgers, Marglobe and Bonny Best. Other gardeners are looking for high production of fine, smooth fruit, and they will be more satisfied with one of the hybrids, such as Better Boy or Spring Giant.

**Transplanting**—To obtain early fruit, it is necessary to transplant and this should be done as soon as the danger of frost is past. Transplanting should be done without disturbing the roots so that shock and wilting are avoided.

If the roots must be disturbed during transplanting, the operation should be delayed until afternoon so that the plants will have the night to recover before enduring a full day under the sun. Also, any flowers or fruit should be removed because they will sap the plant of needed energy and put it into deeper shock.

A pint of starter solution should be poured into each hole before setting in the plant. The spacing should be at least two feet (61.0 centimeters) apart and the plants set an inch (2.5 cm) deeper than they were in the container. If the plants are so leggy that they won't stand upright, the hole must be made deeper still. The starter solution may be made using 1/2 ounce (14.2 grams) of diammonium phosphate per gallon (3.8 liters) of water. Any soluble fertilizer containing phosphorus may be substituted because it is desirable to promote rapid growth at the outset before a fruit load develops.

If they are transplanted into an open area, plants should have some protection from the wind while getting established. A wooden shingle driven into the ground on the windward side is frequently used for this purpose. It can be removed in a week or two.

If there is a possibility of frost, the plants must be protected. Hot caps, in-the-row plastic covers, or greenhouses are best because they are translucent. When boxes or baskets are used they must be positioned each night and removed each morning.

Cutworms should be discouraged by placing a collar, such as a tin can from which the top and bottom has been removed, around each plant.

## Requirements

**Light**—Where some plants can be grown on a window sill, a tomato plant will not be productive receiving light from only one side three or four hours a day. It must have full sunlight for eight or more hours a day in order to do its best.

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**Temperature**—The most frequent cause of poor fruit set and rough tomatoes, particularly on the first cluster, is low night temperatures. A tomato plant, properly hardened, can endure night temperatures down to freezing without injury. However, pollen will not be produced in sufficient quantities at night temperatures below 50°F (10°C), and when lower temperatures prevail, fruit will set poorly or not at all.

The answer is to either raise night temperatures during flowering by covering the plants at night or spray the blossoms with a blossom-setting hormone. If there is any doubt about the presence of pollen, tap a mature blossom during the middle of the day and watch for the yellow dust. If not present, fruit set will be poor.

**Fertilizer**—Like most other crops, tomatoes perform best in a good rich garden soil. However, nitrogen fertilization over one pound per 1,000 square feet (454 grams per 92.9 sq meters) per year might be excessive. All fertilizer should be applied before planting to promote the development of sturdy plants to carry the fruit load later on. However, after the fruit has set, the emphasis should be on its maturing.

Applications of nitrogen during the season, as recommended for corn, will encourage more vine growth at the expense of fruit development. In a long season area, this may not be serious, but in Colorado it could mean no ripened fruit.

**Water**—Transplants may be hardened by withholding water. However, from the time of transplanting until late August, about an inch (2.5 cm) of water per week should be applied. This rule-of-thumb is not a substitute for daily attention to the soil moisture. During August it is time to ripen fruit and this can be hastened by withholding water. Prolonged wilting, however, should be avoided.

## Plant Culture

Cold soil inhibits plant growth early in the season when rapid plant growth is desirable. The soil along the south side of a building will receive reflected radiation which will help warm it sooner in the spring, and such a location, if available, should be considered for tomatoes.

Black plastic film can be used to help warm the soil, while preventing weed growth and maintaining good surface moisture. Reflected light from a light-colored building will benefit tomato growth and should be considered.

Tomato plants do better when they are trained upright. The most common method is to stake each plant. The stake should be large enough to support the weight of the plant and fruit during any wind likely to occur. It should be driven six inches (15.2 cm) to the north of the plant so the roots are not damaged. The plant then is tied to the stake with strips of cloth. Trellises and wire cages are other methods of supporting tomatoes.

If black plastic film is not used, a straw or sawdust mulch applied later in the season will help hold down weeds, conserve moisture and maintain an even soil temperature. However, since mulches provide insulation, they should not be applied until mid-summer when the soil has warmed up.

From a production viewpoint, pruning tomatoes has not proven beneficial. However, it is necessary to prune to a single stem if one plans to trellis or stake tomatoes. When this is done, remove the suckers as soon as possible because, if allowed to develop, too much foliage is removed and production will be decreased.

Home gardeners often get through the season without using pesticides on their tomatoes. However, even with the best growing conditions, a problem may develop which requires action. Most insect problems can be overcome by using malathion either as a 5-percent dust or two teaspoons of liquid per gallon (10 ml per 3.8 liters) of water as a spray. A dithane spray is effective against most diseases. These and all pesticides should only be used according to label directions.

Many soils are infested with soil-borne diseases, such as verticillium and fusarium, which attack tomatoes. The best defense against these organisms is to use VF (verticillium and fusarium resistant) varieties.

In addition to organism-induced diseases, tomatoes also may suffer from physiological and nutritional disorders. Blossom end rot is one such disorder caused by water stress within the fruit. It generally occurs on the early fruit and may be aggravated by a calcium deficiency, high transpiration rates and a fluctuating water table. Leaf roll is another disorder which causes concern, although, for many varieties, this is quite natural under Colorado conditions, especially late in the season. In itself, leaf roll is not harmful.

As the season draws to a close, many green tomatoes will still be on the vine. With a little effort, a temporary plastic greenhouse may be constructed over the plants to extend the season. The plastic should be supported so that it doesn't contact the foliage, and a means of ventilating it should be provided to prevent excessive buildup of heat during the day. Later, when frosts are occurring regularly, there will not be enough ground heat to prevent freezing within the shelter. At this time, the remaining fruit should be harvested, individually wrapped in newspaper, and stored in a cool place. As needed, these fruit may be unwrapped and placed in the window sill to ripen.

## References

*Growing tomatoes in the home garden*, USDA H&G Bul. No. 180, 1970.

*Commercial production of tomatoes*, USDA Farm Bul. No. 2045, 1963.