

TOMATOES IN THE HOME GARDEN

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HISTORY

Tomatoes are native to tropical America and were introduced to European gardens in the 16th century. They were originally grown as an ornamental known as the love-apple and were thought to be poisonous. In the last century, they have become one of the most popular home garden vegetables.

TOMATO VARIETIES

There are about 400 tomato varieties available commercially, with a broad range of sizes, colors, flavors and maturity dates. Remember that the date of maturity on the package reflects days after transplanting, not seeding. Nurseries and mail order catalogs provide a wide selection of seeds.

Look for the letters **V, F, N** on the seed packet or plant label as those letters mean the plant is resistant to *Verticillium* wilt, *Fusarium* wilt, and/or Nematodes. **TMV** means that the plants are resistant to Tobacco Mosaic Virus. No plant is immune to disease, but many of the hybrid varieties have more resistance than the older heirloom varieties.

Don't let that discourage you from trying some heirloom varieties, though. The best way to assure vigorous, healthy plants is to choose your variety carefully and grow them yourself from seed.

Nurseries and garden centers are a good source for transplants, but varieties are limited. Choose sturdy, thick-stemmed, dark green plants that are six to eight inches tall, without flowers.

CULTURE

Tomatoes are warm season plants that require a minimum of three frost-free growing months. Optimum growing temperatures are between 65 and 90° F. Below 55°F and above 95°F, they may not set fruit. In areas where summer nights are cool, choose early maturing varieties.

Tomatoes respond to soils enriched by compost or other organic material. They have only moderate nitrogen needs, and high nitrogen levels will cause lush growth of foliage and stems at the expense of flowering and fruit production. At fruit set, increase irrigation slightly and either side dress with a handful of compost or apply a dilute solution of a balanced (*low nitrogen*) fertilizer.

Tomatoes are best irrigated with drip or furrow irrigation. Drip irrigation will reduce weed growth. Overhead water can be used up to first ripening, if managed properly. Moisture stress reduces yield and fruit size but can intensify flavors when used at the end of the fruiting cycle in

determinate varieties. Avoid large fluctuations in soil moisture, however, to reduce blossom-end rot and fruit cracks.

Blossom-end rot, which is characterized by a sunken, leathery, dark spot on the bottom of the fruit, is associated with fluctuations in soil moisture and calcium deficiency in the fruit. It is more common in larger fruits and Roma type tomatoes.

GROWTH HABITS

Tomatoes exhibit two growth habits: determinate and indeterminate. **Determinate** tomato varieties grow to a certain size (*usually three to five feet*), then flower and set fruit. They bear fruit all at once and then decline. Grow this type if you have a short growing season or if you want your tomatoes all at one time. Most of the early ripening varieties are determinate.

Indeterminate varieties flower and set fruit continually throughout the growing period. They continue to grow, bearing flowers and fruit until frost or disease kills them. Most large-fruited, beefsteak, and cherry tomatoes are indeterminate. Indeterminate varieties need to be staked, caged, or trellised to keep the plant off the ground and protect the fruit.



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TOMATO VARIETIES FOR LOWER ELEVATIONS

INDETERMINATE VARIETIES

Big Pick VFN TMV — Large, round, smooth fruits. Excellent for fresh eating. 72 days.

Early Girl V — Medium sized, red fruit, prolific, early and excellent flavor.

Fourth of July — Hybrid, medium sized (4 oz.) red fruit, very early. 49 days after transplanting.

Golden Jubilee — Large, mid-season, sweet fruit ("low acid"), prolific, golden-orange color. 80 days.

Brandywine (Amish heirloom) — pink-red, great flavor, but not disease resistant. 120 days.

DETERMINATE VARIETIES

Ace Hybrid VFN — Medium to large, solid, deep red meaty fruits with mild taste. Low acidity. 85 days.

Celebrity VFN TMV (semideterminate) — All-purpose variety, superb flavor and heavy yield. 70 days.

Floramerica VFN — Dark red globe-shaped fruits on bushy plants. Heavy bearer, very adaptable.

Roma VFN — Small, pear-shaped fruit, paste type, good flavor, 85-90 days.

CHERRY TOMATOES

Sweet 100 — Cherry sized, red fruit, grows in clusters, very flavorful and productive.

Yellow Pear — Delicious yellow pear shaped fruits in abundance. Open pollinated.

Cherry Grande VF — Very productive cherry type with large clusters of 1½" fruits. Determinate. 74 days.

Sungold — Very early, bite-sized, sweet, golden fruit. Indeterminate, hybrid. 57 days

VARIETIES FOR HIGHER ELEVATIONS

INDETERMINATE VARIETIES

Early Girl V — (see above)

Stupice — 2-3" fruit, sweet, very early, prolific, open pollinated. Dwarf indeterminate vines need no trellis.

DETERMINATE VARIETIES

Celebrity VFN TMV — (see above)

Siletz F1 V Parthenocarpic — Early, true slicing type, large red fruits, open pollinated. 70 days.

CHERRY TOMATOES

Principe Borghese — Red fruit, grown for drying, Italian heirloom, determinate. 75 days.

Sungold — (see above)

CONTAINER VARIETIES

Although many of the garden varieties will do well in containers, there are several specially-developed container varieties. These include:

Patio Hybrid — Medium size fruit with good color, taste.

Small Fry Hybrid — Sweet, juicy, bite-size red fruits. Indeterminate. 65 days.

Toy Boy Hybrid — Especially bred for containers and hanging baskets. Tasty, 1½" inch fruits on compact 14 inch plants. Determinate. 55 days.

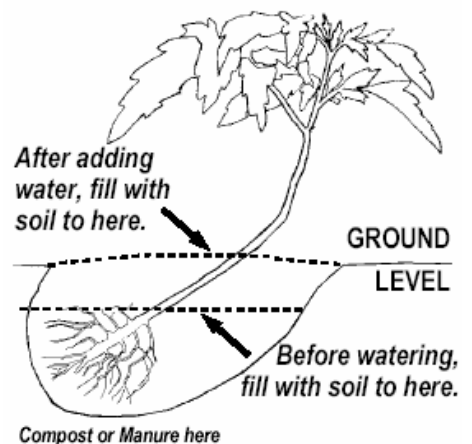
PLANTING

If planting seed, plant indoors or in a hothouse six to eight weeks before the last average frost date. The plants need plenty of sunlight

and a light soil mix. If the plant gets too big before you can plant it out, transplant it to a deeper container. Remove the lower leaves and bury it up to the first true leaf. The tomato will root along the stem, making a sturdier, healthier plant.

Several weeks before transplanting, harden off the plants by reducing irrigation and exposing them to an increasing number of hours outdoors each day. When setting the transplants out in the garden, follow the same procedure of burying part of the stem using either the trench method (see illustration) or deep hole method.

Space plants three to four feet apart for unstaked, and one and a half to two feet apart if staking the plants. Caged plants do best about three feet apart to allow sufficient air circulation and avoid disease. Tomatoes need at least six hours of sun per day in order to blossom and set fruit. Pick a sunny area where water does not stand after a heavy rain and trees do not cast shadows.



PROBLEM DIAGNOSIS FOR TOMATOES



WHAT THE PROBLEM LOOKS LIKE	PROBABLE CAUSE	COMMENTS
Worms up to 1¾ inches long in immature or ripe tomatoes	Tomato fruitworm	In cases of severe infestations, use B.t. (<i>Bacillus thuringiensis</i>)
Leaves eaten, stems remain. Fruit with small to large gouged out areas. Very large caterpillars may be present.	Hornworms <i>Insects have distinctive horn on end.</i>	Hand pick off plants. Disk or rototill after harvest.
Fruit surface eaten away or fruit hollowed out.	Snails or Slugs <i>Snails feed on surface of fruit. Slugs hollow out fruit.</i>	Stake tomatoes to get fruit off ground and away from slugs and snails. Use barriers to prevent entry into garden beds.
Creamy to yellowish cloudy spots lacking definite margin on ripe tomatoes. Tissue beneath the spots is spongy.	Stink bugs <i>Green to gray shield-shaped bugs, ¼ inch long.</i>	Stink bugs overwinter beneath boards in weedy areas and refuse piles. Remove debris from garden area. Hand pick egg masses and bugs. Weed control.
Lower leaves, stems have bronze, oily brown color. Discoloration moves higher on plant. Dry lower leaves drop from plant or plant may lose leaves.	Tomato russet mite <i>Very tiny mites not visible to naked eye. Use 20 power hand lens. Mites appear as whitish-yellow pear-shaped bodies moving slowly.</i>	Do not grow tomatoes near petunias or any solanaceous plant such as potato because they are alternate hosts of the russet mite. Use liquid sulfur or insecticidal soap with sulfur.
Leaves yellowish, slightly curled. Some leaves and fruit with small shiny spots; others may appear blackened.	Whiteflies <i>Clouds of tiny, white, winged insects fly up when plant is disturbed. Tiny oval yellowish to greenish scalelike bodies fasten to undersides of leaves.</i>	Encourage beneficials. Remove heavily infested leaves, but do not remove leaves with dark parasitized pupae.
Leaves curled downward. Some leaves of fruit with small shiny spots; other may be blackened. Heavily infested plants may be stunted.	Aphids <i>Found on undersides of some leaves, or stems, with colonies of small green to pinkish insects.</i>	Not a problem unless honeydew or sooty mold becomes obvious. Can use insecticidal soap.
Seedlings or small transplants with small holes in leaves. In severe cases, entire plants may be completely destroyed.	Flea beetles	Rarely damaging except on seedlings. Tomatoes tolerate a lot of beetle damage if they are healthy.
Trails, tunnels in leaves	Leafminers	Use natural enemies or neem oil to control.
Young plants cut off at ground	Cutworms	Use cutworm collars.
Plants with poor vigor, reduced yields. Foliage yellows, turns brown from bottom up. May look wilted. Many beads or swellings on roots.	Root knot nematode <i>Nearly microscopic eelworms which attack feeder roots.</i>	Plant varieties resistant to root knot nematodes. Such varieties are labeled VFN, referring to resistance to <i>Verticillium</i> wilt, <i>Fusarium</i> wilt, and nematodes. Rotate to non-Solanaceous crops. Remove old plant debris.

PROBLEM DIAGNOSIS FOR TOMATOES (CONTINUED)

WHAT THE PROBLEM LOOKS LIKE	PROBABLE CAUSE	COMMENTS
Blossoms fall off	Night temperatures too low (<55°F)	Fertilize properly. Do not plant too early. Hormone sprays can improve fruit set during low temperatures but will not help in high temperatures.
	Day temperatures too high (>90°F)	Keep soil moderately moist.
	Smog during blossoming period	Tapping on blossom stems three times per week in midday when flowers are open may help set fruit.
	Excess nitrogen fertilizer Too much shade from trees, house	Plant tomatoes in full sun.
	Susceptible variety	Some varieties are not adapted to California's hot summers and these often fail to set fruit.
	Early blossoms	Early blossoms do not consistently set fruit.
Leaves have irregular light and dark green color pattern. May be wrinkled or frilly. Terminal growth may be spindly with narrow, wrinkled leaves.	Mosaic virus	Plant tobacco mosaic virus (TMV) resistant varieties. Do not handle plants more than necessary. Plant tomato seeds rather than transplants. Do not smoke and handle plants since TMV can be spread in tobacco. No cure for virus infected plants. Infected plants produce edible fruit but yield, size, and quality are reduced.
Plants turn yellow starting with one side or branch and gradually spreading. Main stem when cut off at base is dark reddish brown instead of normal ivory color. Wilt.	<i>Fusarium wilt</i> <i>Disease is caused by a soil fungus that infects tomatoes only. Favored by warm soil.</i>	Grow varieties labeled VF. They have resistance to most (but not all) races of <i>Fusarium</i> .
Older leaves begin to yellow and eventually die. Yellowing begins between main veins of leaves. Internal stem is very slightly tan-colored, usually in small patches.	<i>Verticillium wilt</i> <i>Disease is caused by a soil fungus that infects many plants. Favored by cool soil and air temperatures.</i>	Grow varieties labeled VF. Avoid ground previously planted with tomatoes, potatoes, peppers, eggplant or cucurbits. Symptoms most severe when plants are water-stressed in hot weather with heavy fruit load.
Plants grow slowly and wilt. Roots have water-soaked areas that turn brown and dry up.	<i>Phytophthora root rot</i> <i>Caused by a soil fungus.</i>	Most common in heavier clay soils. Irrigate affected plants carefully to maintain them. Do not saturate soil for extended periods and water more frequently for short periods.
Fruit turns light brown, leathery on side exposed to the sun.	Sunscald <i>Caused by overexposure to sun</i>	Maintain plant vigor to produce adequate leaf cover.
Irregular yellow blotches on leaves. Blotches turn brown and die but leaves usually do not drop, unless disease is severe. No symptoms on stem or fruit.	Powdery mildew <i>Caused by a fungus</i>	Disease usually occurs late in summer or fall but does not cause significant loss unless very severe so no control normally needed. Avoid water stress. If young plants attacked, sulfur dust will control the disease.

PROBLEM DIAGNOSIS FOR TOMATOES (CONTINUED)

WHAT THE PROBLEM LOOKS LIKE	PROBABLE CAUSE	COMMENTS
Fruits are brown-black on bottom (blossom) end. Superficial dark specks on green fruit.	Blossom end rot <i>A physiological disease (not caused by a microorganism)</i>	Disease involves calcium nutrition and water balance in plant. Aggravated by high soil salt content or low soil moisture. More common on sandier soils. Maintain even soil moisture throughout growing season.
Lower leaves yellow with tiny brown specks. Leaves die. Blossoms drop. Poor growth.	Smog	Some varieties more susceptible than others. Very difficult to diagnose accurately.
Fruit with large cracks in concentric circles around stem	Usually follows rainfall or irrigation especially after dry spell	Remove ripe fruit immediately after a rain to prevent cracking.
Fruit with large cracks radiating from	High temperatures (>90°F) High sunlight	Keep soil evenly moist. Maintain good leaf cover. In stem very hot regions, choose planting time to avoid fruit maturity when temperatures will be consistently above 90°F or use shade cloth.
Fruit with black mold along growth cracks. Develops on damaged, cracked tissue.	Fruit rot	Prevent fruit cracking. See above. Handle fruit carefully.

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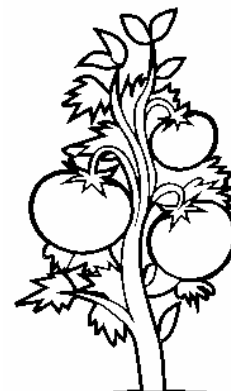
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Specialty Tomato Varieties. P. Vossen, Farm Advisor, Sonoma County at: <http://www.rain.org/greenet/docs/exoticveggies/html/tomatoesspecialty.htm>



WARNING ON THE USE OF CHEMICALS

Pesticides are poisonous. Always read and carefully follow all precautions and safety recommendations given on the container label. Store all chemicals in the original labeled containers in a locked cabinet or shed, away from food or feeds, and out of the reach of children, unauthorized persons, pets, and livestock.

Confine chemicals to the property being treated. Avoid drift onto neighboring properties, especially gardens containing fruits and/or vegetables ready to be picked.

Dispose of empty containers carefully. Follow label instructions for disposal. Never reuse containers. Make sure empty containers are not accessible to children or animals. Never dispose of containers where they may contaminate water supplies or natural waterways. Do not pour down sink or toilet. Consult your county agricultural commissioner for correct ways of disposing of excess pesticides. Never burn pesticide containers.