Vegetable Gardening Tips

Growing Information for the Home Gardener Series

LSU AgCenter Research & Extension

Tomatoes

The tomato is one of the most popular vegetables grown in home gardens. It requires little space when staked and tied and can produce 5 or more pounds of usable fruit per plant. The tomato is relatively low in calories and is a good source of vitamins C and A.

All tomatoes are acidic. Those said to be low acid are really normal or high in acidity but also are high in sugars, which impart a sweet taste that masks the sharp acidity.

Varieties

Selecting which kinds of tomatoes to grow is important. Personal preferences can be considered, but they usually give way to disease-resistant varieties that yield well in our hot, humid climate. An example is extra large beefsteak types that won't do well here. If you must try for extra large, plant Beefmaster, Ponderosa, Delicious or Oxheart.

Tomato vines may be classified as determinate or indeterminate. Indeterminate, also called vine type, grow tall and can continue until frost. These are pruned to develop one vigorous stem. Some gardeners prefer to stop pruning the side shoots about knee-high up and allow the top of the vine to bush for extra protection against sunburned fruit.

Determinate, or bush types, require support but stop growing after 3 or 4 feet in height. Although shorter, determinates produce heavy and more concentrated yields before the top ends in a flower cluster. **Prune these little, if at all, or yields will suffer.**

Several dozen varieties are available, but not all grow well in Louisiana. The table includes varieties that have good to superior performance in our climate.

Indeterminates	Resistance Listed
Better Boy	N, F, A, S
Big Beef (large) AAS	N, F1 & 2, T, A, S
Champion	N, F, T
Creole	F1
Cupid (grape)	A, F1, S
Husky Gold, (dwarf) AAS	F
Jet Star (low acid)	F
Jolly, AAS (cherry)	—
Juliet, AAS (grape)	A
Navidad (grape)	F2
Monte Carlo	N, F, A, S
Pink Girl (pink)	F, A, S
Smarty (grape)	F1
Sugary (grape) AAS	—
Sun Gold (cherry)	—
Sweet Chelsea (cherry)	N, F, T
Sweet Million (cherry)	N, F, T
Terrific	N, F, A, S

Determinates	Resistance Listed
Amelia	N, F1, 2 & 3, TSW, S
Bella Rosa	heat tolerant, A, F1 & 2, S, TSW
BHN 410 (Plum)	B, F1 & 2
BHN 640	F1 & 2, TSW
Carnival	N, F1 & 2, T, A, S
Carolina Gold	F1 & 2
Celebrity (AAS)	N, F1 & 2, T, A, S
Cherry Grande (cherry)	A, F, S
Crista	N, F1, 2 & 3, TSW
Elfin (grape)	—
Floramerica (AAS)	N, F1 & 2, A, S
Floralina	heat tolerant, F1, 2 & 3, S
Heatwave II	heat tolerant, F1 & 2, A, S
Florida 91	heat tolerant, A, F1 & 2, S
Macero II (roma) (dwarf)	F, A
Mountain Delight	F1 & 2, A, S
Mountain Belle (cherry)	F1 & 2
Mountain Fresh Plus	N, F1 & 2
Mountain Spring	F1 & 2, S
Muriel (roma)	A, N, F1 & 2, S, TSW
Phoenix	heat tolerant, A, F1 & 2, S
Picus (roma)	A, F1, S, TSW
Small Fry, (cherry, pot) AAS	N, F, A, S
Solar Fire	heat tolerant, F1, 2 & 3, S
Solar Set (Fall only)	heat tolerant, F1 & 2, A, S
Spectrum 882 (roma)	N, F1 & 2, B, A, S
Spitfire (dark red) (fall)	F1 & 2, A, S
Sun Start	A, F1 & 2, S
Sunbeam (large)	F1 & 2, A, S
Sunchaser	heat tolerant, A, F1 & 2
Sunleaper	heat tolerant, F1 & 2
Sunmaster	heat tolerant, F1 & 2, A, S
Talladega	F1 & 2, TSW

N = nematode; AAS = All America Selection; F = Fusarium Wilt race 1, 2 or 3; B = bacterial speck; A = Alternaria; S = Gray Leaf Spot; T = TM Virus; TSW Spotted Wilt Virus

For an early crop, choose Early Girl, Fantastic, Sun Start or one of the cherry types.

For summer tomatoes, plant the seed of Florida 91, Sunchaser, Heatwave II, or try Sunmaster, Solar Set or Sunleaper. Be generous with nitrogen, and irrigate in the morning when needed. Control pests and weeds by spraying weekly if needed and cultivating. Remember, it takes the proper variety and care to produce tomatoes in our summer heat.

For a fall crop, choose 91, Spitfire, Solar Set, Heatwave II, Phoenix, Sunleaper, Sunmaster, Solar Fire or Talladega.

Soils and Planting

Choose a sunny spot to grow tomatoes. Ideally, tomatoes should receive full sunlight all day. If this is not practical, try to locate plants where they will receive the maximum amount of sunlight, but not fewer than 6 to 7 hours each day. Tomato plants become tall and spindly, setting few fruit, if any, when grown in too much shade.

Increase the organic matter of the soil as much as possible by adding leaf mold, peat moss, rotted manure, rotted sawdust or other humus. Tomatoes can be grown on most garden soils in the state, but a fertile, well-drained soil with high organic matter is best.

Tomatoes are heavy users of plant nutrients, so you'll need to fertilize them. On soils of medium to low fertility, use about a pound or pint of a complete fertilizer (8-24-24 or 8-8-8) for 20 feet of row. If your soil is highly fertile, reduce this rate by about one-half. Apply the fertilizer in a furrow 6 to 8 inches below the top of the row, or broadcast over the top of the row and work into the soil several days before planting.

The soil pH (a measure of the acidity or alkalinity of the soil) at which tomatoes produce best is between 5.8 and 6.7. A soil pH that is too low can reduce production. Lime raises the soil pH to the desired level and also supplies calcium. Apply lime only when a soil test shows it is needed, since it can change the soil chemistry. Some soils in Louisiana have a high soil pH, but a low calcium level. Adding lime may raise the soil pH to an undesirable level. In a case like this, the neutral calcium sulfate (gypsum) is recommended. To apply lime, sprinkle it over the entire area and work it into the soil. Lime acts slowly, so the results will not be immediate as with the other fertilizers.

Apply an additional sidedressing of nitrogen fertilizer only after the fruit of the first flower cluster are about the size of a half dollar. Apply it at the rate of 3/4 pound of ammonium nitrate for 100 feet of row. You may also substitute 1 pound of ammonium sulfate or 3 pounds of 8-8-8 (a good idea in sandy soils) as a sidedressing. Apply it along one side and about 6 inches away from the base of the plants. Work the fertilizer in lightly, but do not damage roots.

Cultural Practices

You may choose to start your own plants from seed or buy transplants at a local garden supply store. To start tomatoes from seed, obtain a good potting soil and fill cups, peat pots, clay pots or flats with the potting medium. Make a hole about 1/4 inch deep, drop two seeds in and cover them. Moisten the mixture and keep the temperature about 70 to 80 degrees F. After the seeds germinate, expose plants to as much sunlight as possible to prevent them from becoming spindly. If plants begin to become spindly, water less often and try to provide more sunlight. About four to eight weeks are required to produce a plant of transplant size — four weeks in summer and eight in winter. Top quality tomato plants for transplanting are about 6 to 10 inches tall with straight, sturdy stems about the size of a lead pencil. The plant should have a healthy, large root system and large, fully expanded leaves.

The ideal transplant is as wide as it is tall (Figure 1). The plants should be free of insects and diseases and not yet in bloom. Tomato plants should be "hardened off" before they are set in the garden, especially the early tomatoes. To "harden off" the plants, gradually expose them to lower temperatures and gradually withhold water. This toughens the plants and helps them to better withstand the move from a hotbed or nursery area to the garden. When plants are grown in individual pots, they will have less transplant shock and will become established more quickly than those plants having the root system disturbed. If transplants are grown in peat pots or other degradable materials, set the plant with container in the ground.

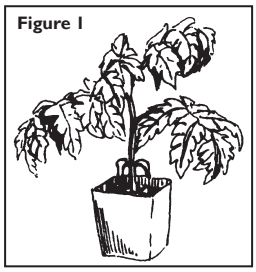
Figure 1

Don't transplant tomato plants until after the danger of frost has passed in your area. If you set your plants out early, provide protection on nights when frost is predicted. Buckets, milk jugs, boxes, hot caps and paper sacks are suitable. Remove these objects during the day.

Here is a general guide for early tomato transplanting: In New Orleans, Morgan City and Lake Charles plant mid-February. In early to mid-March, plant in Covington, Baton Rouge, Opelousas and De Ridder. In late March, plant in Vidalia, Alexandria, Many, Winnfield, Monroe and Lake Providence. Shreveport to Farmerville residents should wait until early April.

These early dates are average last freezes. To be sure, wait a week or two beyond your date.

With fall-planted tomatoes, the strategy is to harvest a good crop before a killing frost takes your plants. Since soils are so warm, seeds can be directly seeded in the garden row. In north Louisiana, sow seeds the end of June or transplant in July. In south Louisiana, sow seeds by mid-July and transplant in August. Black plastic mulches benefit early spring tomato production. The plastic warms up the soil early in the season, helps to control weeds, conserves moisture and fertilizer and reduces fruit rotting by preventing the fruit from touching the soil or soil splashing up on the fruit.

Lay the plastic mulch before transplanting, and cut holes at the desired intervals. Set the plants in these holes. Apply fertilizer before laying the plastic. The soil should be moist.

Space tomato plants 18 to 24 inches apart on rows at least 3 feet apart. Raised beds provide good drainage and encourage extensive root development.

Set spring plants in the soil a little deeper than they were growing in the containers. Completely cover peat pots with soil. If peat pots are exposed to the air, they will act much like a wick and draw the moisture out of the pot, damaging the plant roots. Plant tall, leggy plants on their sides 3 to 4 inches deep rather than in deep holes (Figure 2). Roots will develop along the buried stems of plants. Later-season plantings do better if set about 6 inches deep.

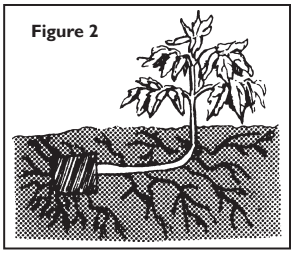
Figure 2

After tomato plants become established, use a mulch such as straw or leaf mold around the plants to conserve moisture and help control weeds. Stake the plants soon after transplanting by placing the stake on the opposite side of the stem from where the flower cluster appears. This will keep the fruit from being jammed against the stakes since all the flower clusters will be formed on the same side of the stem. Prune the plants to one or two main stems by pinching out the suckers that form where a leaf joins the stem (Figure 3). If two main stems are to be left, pinch out all the suckers after the first flower cluster.

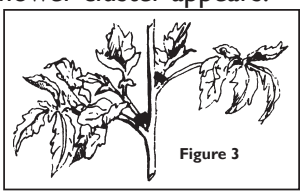
Figure 3

Tie the plant to the stakes with a soft cord or strip of cloth. Tie the cord to the stake and then around the plant. Pass the cord under a leaf stalk to give more support (Figure 4).

The main advantages of pruning the suckers are earlier fruit ripening with a higher percentage of perfect fruit, larger fruit and easier cultivation. Disadvantages of pruning are exposure of fruit to sun and possible sunscald and fewer fruit. Prune determinant tomatoes after the suckers are about 2 inches long. Do not disturb the flower buds that appear between where the leaves are attached to the stem. A good compromise strategy is to prune to a height of 1 to 2 feet and then let the top bush out to help protect the fruit. Strong determinates should have very little pruning.

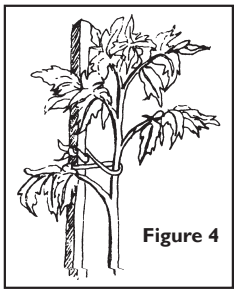
Figure 4

Caging is a method of supporting indeterminate tomato plants. It has an advantage over staking in that no pruning or tying is required, and fruit are held up off the ground (Figure 5). Any mesh wire can be used if the mesh is large enough to permit harvesting through it. A 5- to 6-foot-wide section of wire, 4 to 5 feet tall, is formed into a circle and placed over the plants soon after transplanting. Concrete reinforcement wire works well because it is strong enough to support the plants.

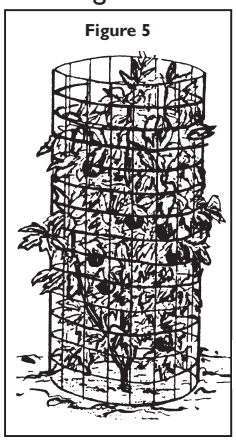
Figure 5

Depending upon the tomato variety, the average number of days from transplanting to first harvest is 65 to 75 days. The average number of days from bloom to ripe fruit is 50 days. Factors that cause problems with pollination and fruit set in tomatoes include: high and low temperatures, both day and night (day temperatures above 90 and night temperatures above 75 or nights below 55); high humidity; too much shade; and overfeeding (especially with nitrogen).

For the best flavor, harvest tomatoes after they are fully ripe. Tomatoes that have reached the "breaker" or "white star" stage will ripen at room temperature if pulled off the vine. Never refrigerate tomatoes until fully ripe, and always serve at room temperature.

Pests and Problems

Blossom-end Rot (Figure 6) is one of the most troublesome fruit problems of tomatoes. It is caused by a calcium deficiency and is aggravated by any kind of drought stress or extreme fluctuation in soil moisture and overfertilization, especially with nitrogen. The calcium content of the soil should be determined by a soil analysis. If calcium is low, the soil should be limed. Another practice that will help to reduce Blossom-end Rot is to try to keep the soil as uniformly moist as possible. Do not let the plants dry out before irrigating. Provide good drainage to remove excess water after a heavy rain, use a mulch and do not overfertilize.

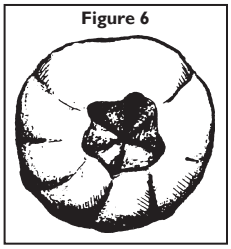
Figure 6

Current herbicides cleared for use on tomatoes in Louisiana are Treflan, Sencor and Poast.

Some of the major disease problems of bearing age tomatoes are Buckeye Rot, Blossom-end Rot, Early Blight, Leaf Spot, Fusarium Wilt and Tomato Spotted Wilt Virus (curly top).

As you await your first picking, you may suddenly find much of the fruit rotting after a period of heavy rainfall. Spores that cause Buckeye Rot are splashed from the soil onto the lower fruit cluster. They then enter the fruit and may rot half of it rapidly. The rot may form regions with lighter and darker bands or rings in the fruit just under the skin. Buckeye Rot can be controlled only by spraying immediately after periods of heavy rainfall. A good mulch cover will help stop some of the splashing of mud.

Early Blight is a fungus disease that can affect both leaves and stems. The symptoms are brown spots on leaves or stems. These spots average about 1/2 inch in diameter, are irregular and may take on a concentric ring or "bull's eye" pattern. Preventive sprays at regular intervals are necessary to control Early Blight.

Fusarium Wilt is the most common and destructive soil-borne disease in Louisiana. The disease is most severe during warm weather and enters the plant through the roots to develop inside the stem. The plants show a slow, progressive yellowing and wilting, starting at the bottom. A week or two may elapse between first symptoms and death. If the stem is cut near the soil line, a brownish discoloration can be seen in the inner tissues of the plant. The best control measure is to use disease-resistant plants. The presence of this resistance is often designated on a seed packet as "F1, F2 or F3"

following the variety name. Many varieties have resistance, but remember that resistance does not imply immunity. Under stress conditions or in heavily infested soils, these resistant varieties may also develop the disease. In severe cases, soil sterilization or a new planting site should be considered.

Bacterial Wilt is a serious disease in the southern United States. It is caused by a soil-borne bacterium. It is similar to Fusarium Wilt in symptoms, except that it kills the plant in a couple of days. If bacterial wilt is contracted, it will be necessary to rotate the tomatoes to a new planting soil.

Southern Blight is a soil-borne wilt. It develops in warm weather and quickly spreads from plant to plant. A cottony fungus growth at the soil line may be observed. In later stages the fungus develops mustard seed-like 'sclerotia' on the stem near the soil line. Soil-applied fungicides are very expensive, so discard affected plant and associated topsoil.

The Tomato Spotted Wilt Virus can cause unusual symptoms to develop in the plants. The upper leaves and upper portion of the plants may curl and twist and become very stunted. The leaf veins often turn purplish and the leaves, yellow. The virus is transmitted by insects called thrips. These insects should be controlled early with a recommended insecticide. Discard infected plants. Plant TSW-resistant cultivars.

Nematodes

Nematodes are microscopic soil worms that feed on roots. They may form knots or galls on the roots or just weaken and stunt the growth. When hot weather and drought come, these are the first plants to show injury. Choose resistant varieties designated as "N" following the variety name. In severe cases, a new planting site should be considered.

Cultural Control for Nematodes

1. Plant early, before nematodes get active in soil.
2. Rotate crops in the garden and also the garden site each year.
3. Add organic matter such as green manures, compost or mulches to stimulate nematode enemies and improve growing conditions.
4. Use fallow plowings during mid-summer to reduce nematodes.
5. Clean the garden of weed hosts of nematodes.
6. Keep soil fertility levels high, and have the proper soil pH.
7. Provide extra water during dry spells.
8. Remove crops immediately after harvest, especially the roots.
9. Most marigolds (except Signet types) are effective trap crops against root-knot nematode. Plant the marigolds solid for at least 2-3 months, and then plant vegetables.

Pest	Control	Rate/ gal.	Days before harvest	Remarks
Aphids Thrips	Bifenthrin (Bug B Gone Max)	3 T	1	Weekly as needed
	Thiodan 50% WP	2T	1	
	Malathion 57% EC	2t	1	As needed
Stinkbugs Whiteflies	Cyfluthrin (Bayer L &G Multi Insect	1T	0	Max of 5 apps.; weekly as needed
	Bifenthrin (Bug B Gone Max)	3 T	1	Weekly as needed
	Sevin 80% WP	2T	0	
	Thiodan 50% WP	2T	1	
Worms Caterpillars	Same as stinkbugs			
	Bacillus (B.t.)	Follow the label		When insects are present
	Spinosad 0.5%	4T	1	Max 6 apps. per season (wait 4 days between apps)
Leaf Miner	Spinosad	(see above)		
Early Blight Late Blight Leaf Spot Anthracnose	Chlorothalonil Fixed Copper	As directed	0	At first appearance and weekly as needed
	Maneb		5	Alternate for best results
	Mancozeb		5	

T = Tablespoon; t = teaspoon. Thiodan also as a 4 % dust and Sevin as a 10% dust.

Note: Use water for mixture with a pH (acidity) of 5 to 6.

Authors

Thomas J. Koske, Professor (Horticulture)
Alan L. Morgan, Professor (Entomology)
Charles Overstreet, Professor (Plant Pathology)
Donald M. Ferrin, Asst. Professor (Plant Pathology)

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Louisiana State University Agricultural Center
William B. Richardson, Chancellor
Louisiana Agricultural Experiment Station
David J. Boethel, Vice Chancellor and Director
Louisiana Cooperative Extension Service
Paul D. Coreil, Vice Chancellor and Director

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