

Tomatoes In The Florida Garden¹

James M. Stephens²

The tomato, a relative of pepper, potato, and eggplant, is not only the most important commercial vegetable in Florida, but also is the most popular garden vegetable. It can be grown successfully by many methods of culture: in baskets, in solution, on stakes, on the ground, mulched, unmulched or in a greenhouse.

VARIETIES

Staking (Indeterminate) Large Fruit

`Floradel' — once a leading vine-ripe commercial variety; seeds hard to find. Fruit large red. Resistant to Fusarium wilt (1); gray leafspot; and graywall.

`Tropic' — another hard one to find, but worth looking for. Fruit large red. Resistant to Fusarium wilt (1); vert. wilt; gray leafspot; graywall.

`Manalucie' — another old commercial standard staking type. Large red fruit. Resistant to: Fusarium wilt (1); early blight; gray leafspot; graywall; leaf mold.

`Better Boy' — nationwide favorite that does well in Florida. Resistant to Fusarium wilt (1); vert. wilt, and root-knot nematodes.

`Bonnie Best' — grows better in North Florida than South Florida. Medium size red fruit. Likes cages.

`Manapal' — old Florida variety. Medium size red fruit.

`Bragger' — Has produced good yields of 1-pound fruits in organic amended soils.

Indeterminate (Small fruit)

`Red Cherry' — fruits are 1 1/4 inches diameter.

`Sweet Chelsea' — vines vigorously; fruits profusely (1 1/4 inch).

`Sweet 100' — beautiful `hands' of fruit that are 1 inch or less in diameter.

`Sweet Million' — Fruits similar to cherry types, but produced in extra-long clusters.

Bush-type to Semi-vining (Determinate) Large Fruit

`Walter' — old standard, large red fruit, resistant to: Fusarium (1 and 2), gray leafspot, graywall.

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`Suncoast' — New deep red inside and out, large fruit; resistant to Fusarium (1 and 2), vert. wilt, gray leafspot. A University of Florida release.

`Floramerica' — Award winner. Large red fruit. Resistant to Fusarium wilt (1 and 2), gray leafspot, gray mold, crown rot.

`Flora-dade' — Recommend this one. Big red fruit; resistant to Fusarium wilt (1 and 2), vert. wilt, gray leafspot.

`Duke' — commercial variety good for the garden. Large red fruit; resistant to vert. wilt, Fusarium (1 and 2), gray leafspot, alternaria stem canker.

`Sunny' — standard commercial variety. Large red fruit. Resistant to vert. wilt, Fusarium (1 and 2), Alternaria, gray leaf spot.

`Solar Set' — new variety released by University of Florida. Sets large red fruits at higher temperatures than most varieties.

`Celebrity' — A favorite, disease resistant variety in Jacksonville, does well in other areas of the state.

Small fruit (determinate)

`Floragold', `Florida Basket', `Florida Lanai', `Florida Petite', `Patio', `Cherry Grande', `Castlette', `Roma', `San Marzano', and `Micro-Tom'.

Extra-large varieties

`Abe Lincoln', `Beefmaster', `Beefsteak', `Bragger', `Giant Belgium', `Holmes Mexican', `Mortgage Lifter', `Giant Oxheart', `Ponderosa', and `Wolford's Wonder'. State record held by `Delicious'.

Others

`Champion' (Ind), `Big Boy' (Ind), `Hayslip' (Det), `Horizon' (Det), `Homestead' (Det), `Oxheart' (Ind), `Stakeless' (Det), `Four-Way Hybrid' (Ind), `Jubilee' (Int. orange), `Sun Ray' (yellow), `Pirate' (Det). `Burgess Stuffing' is hollow for use like a stuffing pepper.

Odd Types — "topato" - usually this is a tomato seed sown inside a potato tuber ring, thus yielding both tomatoes and potatoes. Two popular tomato look-alikes are the tomatillo and the husk tomato, both having a fruit enclosed by a thin, papery husk.

Note — Variety names of tomatoes often include such letters as V, F, N, which stand for, respectively, verticillium wilt, fusarium wilt, and nematodes. "Indeterminate" means the plant will grow tall and the vines need to be trellised. "Determinate" describes a bushy plant that produces a crop of fruit over a short season.

PLANTING INFORMATION

Tomatoes may be started in the garden or container by planting seeds or by setting transplant seedlings. Suckers are also sometimes used. If seeded, sow seed sparingly down the furrow. When the seedlings emerge and are 3-4 inches tall, thin them to desired stand. The extra plants may be used to transplant into `skips' which have occurred in the row. Table 1 gives some specific planting information.

PRODUCING TRANSPLANTS

With proper care, well-rooted, sturdy, 4 to 5 inch high tomato plants can be produced in 4 to 5 weeks. Older plants up to eight weeks old may be used but yield less than the younger plants. Plants can be grown in plant beds, peat pots or peat pellets, or containers such as wooden flats, metal pans, plastic "cell-paks", and milk cartons, or in hotbeds, coldframes or outdoor seedbeds.

How to grow transplants in a seedbox:

1. Put holes in bottom of containers for drainage, then fill with 2 or 3 inches of good, clean garden soil.
2. To sterilize soil, heat 2 inch layer of moist soil in over (160°F) for one hour.

3. For fertilization, add 1 tablespoonful of 6-8-8 or similar analysis fertilizer to each gallon of soil. Mix well with soil. Be careful not to over-fertilize.
4. For a better medium than sterilized garden soil, purchase a blended potting mix (commercial grade), or you can prepare your own.
5. Buy treated seed, freshly packaged of the varieties best suited for your purpose and area.
6. Sow seed by either of the following methods:
 1. Scatter seed over smooth, firm, moist surface; lightly cover with soil, then sprinkle with water; or
 2. Open up 1/4 inch deep grooves in soil at 2 to 3 inch intervals; drill the seed into these grooves, then cover and sprinkle.

In both cases, keep containers moist and in a warm place after seeding.
7. If 'damping-off' is noticed after young plants come up, wet the base of the plants with an approved fungicide.
8. Thin plants to 2 to 3 inches apart when they are 1 inch high. Resetting into larger pots is often done to obtain more vigorous transplants.
9. Tomato plants grown in protected places tend to become somewhat weak and spindly. A few days exposure to the outdoor environment while they are still in containers will help them survive better.

SOIL PREPARATION

Liming — The best soil pH for tomatoes is 6.2 to 6.5. Lime is needed if pH is less than 6.0. Three to 5 pounds of dolomitic limestone per 100 square feet applied 3 months prior to planting will usually be enough. If the pH is normal, but calcium level is low, apply gypsum at the rate of 1 lb/100 sq. ft.

If pH is 6.5 or higher, minor plant foods such as iron and manganese should be applied to either soil or foliage. Applications of manures and other organic fertilizers provide micronutrients also.

Fertilization — For every 100 square feet of most irrigated soils, about 10 pound of 6-8-8 or similar fertilizer will be needed during the life of the tomatoes. One half should be applied at planting time, placed in 2 bands each located slightly below and 2 to 3 inches to the side of the row. Part of the remaining 1/2 should be applied as a side dressing 3 weeks after planting. The rest should be added later at 7 to 10 day intervals. Adequate irrigation is a must to get full benefit from the fertilizer.

If chicken manure or compost is used, broadcast and mix well into the soil 2 to 3 weeks prior to planting. Apply up to 100 pounds per 100 square feet. Then at planting time, make side band applications of low nitrogen inorganic fertilizer (for example, use 1 quart of 4-8-8 per 50 linear feet of row).

Compost and well-rotted, aged manure can be placed in the transplant hole, then mixed with the soil. A mixture of 2 pounds of composted yard waste plus 2 pounds of poultry manure makes a good transplant hole amendment.

SETTING THE PLANTS

Tomato plants are easily injured or even killed by frost. In the Spring, they should be set in the garden as soon as frost danger has passed. They should be set early enough in the Fall to produce a crop before danger of frost. Winter production is possible in south Florida.

Transplant soon after a rain, when cloudy, or in late afternoon. Keep roots moist and undamaged. Set the plants slightly deeper than they grow in the flat.

A starter solution of 1 to 2 tablespoons of 6-8-6, 4-8-8, 6-6-6 or similar analysis fertilizer per 1 gallon of water will get plants off to a fast start. Pour 1 pint around the base of each plant. Protect the plant by shading for 2 to 4 days after transplanting.

CARE

Mulching— A material such as straw, leaves, dried lawn clippings, or plastic which is placed on the soil around the plant is called a mulch. It conserves soil moisture, holds down weeds, keeps fertilizer from leaching, and keeps fruits from rotting on the soil.

Black plastic mulch is suggested for use by home gardeners. To mulch with plastic: 1) prepare soil and apply all the fertilizer; 2) make sure soil bed is moist and lay plastic over the bed and anchor the edges with soil; 3) cut slits in plastic and set plants. Enough moisture from rainfall and irrigation will seep into the rootzone from row middles and through the slits. However, be sure to water each plant as it is set.

Staking and Pruning— See the list of varieties for those that should be staked and pruned. Staking any variety will help to keep fruit off the ground and help to conserve space. One method of staking is to drive a 6-foot stake into the soil 3 to 4 inches from each plant, preferably before the plant is set. As the plant grows, tie it to the stake with string 4 to 6 times during the season. Make the ties just below the fruit clusters. Old stockings make great ties. There are many other techniques used by gardeners for trellising their plants. Tomato cages are quite popular, and last a long time.

Suckering is the practice of removing the side branches as they emerge. This reduces the number of fruit, but causes those produced to be larger and easier to find. Leave 2 to 3 main stems to develop canopy and fruit.

Watering— Tomatoes need about 1-2 inches of water per week. If rainfall is not enough, water plants thoroughly once a week. Heavy soakings once a week are better than many light sprinklings. More frequent

watering may be needed in sandy soils, especially in the first week plants are set. Include a lot of organics in your soil to help absorb and hold water.

A fairly new watering technique, called 'trickle' or 'drip' irrigation is worth trying in your garden. Materials for installation are available at many garden supply stores. It works best in conjunction with mulching. This method conserves water.

Weed Control— For the home gardener, the best means of controlling weeds is by cultivation. This can be done by hand or with a hoe or cultivator. Mulching also helps to keep weeds down.

PROBLEMS AND PESTS

Insects— Some of the serious tomato pests are whiteflies, hornworms, fruitworms, aphids, leafminers, pinworms, stinkbugs, loopers, cutworms and mole crickets. Worm damage appears as chewed out areas or holes in leaves, stems or fruit. Aphids suck juices from young tender leaves and carry plant diseases. Swarms of tiny whiteflies may be seen on and around plants. They cause plant yellowing and poor color development in fruits. Ants may be troublesome, especially in organic amended soils. Ants chew holes around the stem scar.

Leafminers and pinworms feed within the leaf, leaving tunnels and darkened area.

Stinkbugs suck juices from fruits and cutworms chew seedling stems and feed on leaf parts. Mole crickets tunnel under seeds and young plants and cause soil and roots to dry out.

Insecticidal soap and Bt are used by many organic gardeners with fair success. A general purpose garden insecticide applied according to label directions will control some of these pests. Spider mites, although not insects, can cause serious injury to the foliage.

Diseases— Some of the most serious diseases of tomatoes are early and late blights, leaf spots, wilts, and viruses. Leaf spots can usually be controlled with sprays or dusts. Wilts and viruses must be controlled by other means such as use of resistant varieties. The letters V, F, N which often follow a variety name, refer, respectively, to that variety's resistance to verticillium wilt, fusarium wilt, and nematodes. When, two of the same letters occur together, such as FF, it denotes resistance to 2 'races' of the disease. (T) stands for tobacco mosaic, and (A) means resistant to alternaria leaf blight.

Nematodes— These are tiny, parasitic eelworms that can cause severe damage. They are abundant in most garden soils. Plants become stunted, wilted, and may die. Injury can usually be found by examining roots for swollen, knotty galls or brown, sheared-off areas.

Soil solarization reduces the problem under optimum conditions. Some tomato varieties have a tolerance for nematodes, as indicated by an 'N' designation in their description. However, under Florida conditions, that resistance may not be evident. The variety 'Better Boy' has shown to be somewhat resistant to root-knot nematodes in Florida.

Problems— Blossom-end rot is a nutritional disorder. Too little available calcium, too much or too little water and severe pruning favor its development. This can be corrected to some degree by spraying the plant with a solution of 4 tablespoons of calcium chloride mixed in 3 gallons of water. Spray twice weekly, 1 quart per plant, according to product labels.

Blossom drop can be caused by too low or too high night temperatures, too much nitrogen, too much shade, over-watering or even insects, such as flower thrips.

Other tomato disorders include fruit cracking, blotchy ripening, sunscald, yellow-shoulder, leaf-curl, and herbicide injury. The whitefly and a virus have teamed up to cause plant stunting and irregular ripening.

CONTAINER CULTURE

For those desiring to grow tomatoes in a container rather than in the garden, use bushel baskets, hampers, five-gallon cans or other similar vessels. Punch holes in the bottoms to allow adequate drainage. Fill with shavings, sawdust, or well-rotted plant material. Sand and soil may also be used, but generally are more troublesome than shavings or sawdust. Unlike soil, shavings and sawdust need not be treated for diseases and weed seeds.

Feed the plants by using dry fertilizer, or osmocote, or solution culture method. No one nutrient solution is superior. Either buy a ready prepared, highly soluble fertilizer and follow directions, or make your own solutions. One suggested nutrient solution may be made by dissolving 2 cups of either a 6-6-6, 6-8-6, 6-8-8, or 8-8-8 analysis common fertilizer, 6 tablespoons of epsom salts, and 1/2 teaspoon iron chelate in 1 gallon of tap water. This is your base solution. From this you will make your Growing Solution.

For young plants, use 2 tablespoons of base solution mixed in 1 gallon of water. Apply once every 3 days, or depending on plant needs. Apply enough solution to wet the shavings or sawdust to the bottom of the container at every application.

In one case, a gardener used 5-gallon size cooking oil cans. These were lined up on a 4-foot wide strip of polyethylene mulch in full sunlight. Well-rotted sawdust was placed in the cans, mixed with 1/2 cup of dolomite for good calcium supply. Varieties used were 'Floradel', 'Walter', 'Big Boy', and 'Stakeless'. But any of your favorite varieties will do.

A fertilizer solution was prepared and applied daily to each can. The solution was made by adding two tablespoonfuls of high analysis soluble fertilizer (Nutri-Sol) in 5 gallons of water. One gallon of this solution was poured into each can of tomato each day. At the end of the week, the fertilizer was omitted, and each container got a thorough wetting with the garden hose to wash out fertilizer salt build-up. For more information, see the Fact Sheets, "Minigardening (Growing Vegetables in Containers)"

and "Grow Your Own Vegetables Without Soil."

HARVESTING AND HANDLING

For best quality, harvest tomatoes when fully red-ripe. If need be, they can be harvested when pink and allowed to ripen in the home.

Mature green or pink fruit require a temperature around 70°F to ripen properly. Place unripened fruit in a well-ventilated place at room temperature. Fully ripened fruit may be placed in the refrigerator to prolong keeping, but never place unripened ones in the refrigerator.

Tomatoes are high in vitamins and minerals, particularly in vitamins A and C. While tomatoes are acidic, being below pH 5.0, some varieties are more so than others.

Zesty Seed Sprouts: As the tomato fruit becomes over-ripe, the seeds start to sprout inside the fruit, resulting in a new taste that is "zesty and different." Check this out!

Canning Tomatoes

You can extend the tomato seson by learning to can tomatoes by either the "cold pack" or "hot pack" method. Get the latest directions on canning from your local County Extension Home Economist.

Table 1.

Table 1. Planting Information			
	NorthFlorida	CentralFlorida	SouthFlorida
Planting Dates:			
SpringFall	Feb-AprAug-Sept	Jan-MarchAug-Sept	Nov-FebAug-Sept
Days to Maturity:			
TransplantsDirect Seeded	70-9090-115	70-9095-115	70-9095-115
Row Spacing (in):	36-60	36-60	40-60
Plant Spacing (in):			
StakedGround	12-2418-40	12-2418-40	12-2418-40
Seeding Depth	à inch	à inch	à inch