

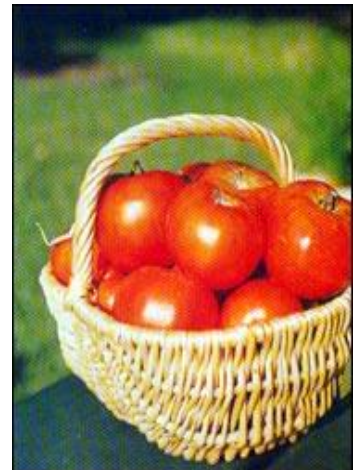


By Skip Richter, Contributing Editor

When it comes to the vegetable garden the tomato is king. You do not have to be a gardener for long to realize that the pursuit of the perfect tomato is a common goal of most gardeners. As a County Extension Agent I can tell you that no other veggie makes the phone ring or brings clients through the office door like the tomato.

What is the best variety? When should I plant? How do you grow more or larger fruit? What is wrong with these plants? People get into growing tomatoes and the veteran tomato gardeners are serious about their favorite varieties and techniques. I have seen two grown men almost get in a fist fight over their divergent views of the merits of a particular tomato variety!

Despite a shaky past in which it was once thought to be poisonous or to bring on madness, the tomato now stands as the unchallenged ruler of the vegetable garden. I will note, however, that after quite a few years of observing tomato growing aficionados ecstatically consumed with their hobby I am not so sure that the "madness" claim was all that erroneous! There must be something in those fruits.



We Texas gardeners face a few challenges to growing great tomatoes, including soil, climate and pest problems. However these can all be overcome by understanding what we are up against and by following a few simple steps. Most gardeners are interested in growing veggies with a minimum of synthetic chemical inputs and many prefer to garden organically. What follows is a basic primer on organic tomato growing. While it is geared to the organic gardener, the principles are keys to success for all Texas gardeners.

Successful tomato growing really can be simplified to a few key factors: good soil, adapted varieties, early planting, lots of sunlight, dependable moisture and wise fertilizing. Let us take a look at each of these key points as we build the basic how-to primer on growing tomatoes organically.

GOOD SOIL Tomatoes are deep-rooted plants that can be heavy feeders. They need a quality soil to do their best. Few gardeners have ideal soil but we all can turn what we have into a first rate growing mix. Sandy soils lack the ability to hold water and nutrients. Tomatoes in a sandy soil will be prone to blossom end rot due to a lack of calcium in the fruit. They will also tend to suffer from dry spells more and will lack nutrients needed for optimum growth and production.

Clay soil can be tight and poorly aerated. While it holds moisture and nutrients better than sands, poor drainage can be a problem. Tomatoes are not aquatic species and can get downright picky about having their roots submerged.

The key to good tomato soil is organic matter. Add several inches of compost or wellrotted manure and mix it into the existing soil as deeply as possible. Then build up raised beds about 8 to 10 inches high to facilitate drainage during rainy spring periods. You can always add water but you cannot take it away. Raised beds are especially important in the eastern portions of the state where extended spring deluges are quite common. Raised beds also warm up faster in the spring, an important factor in rapid growth and increased production.

Another option is to buy a landscaping "bed mix" and essentially haul in your raised bed garden. Spread a few inches of the mix over existing soil and till or spade it in to blend the interface between the native soil and the bed mix. Then add more bed mix until the desired bed height is reached.

Tomatoes can also be grown in containers. Rather than using garden soil, select a quality soilless potting medium as these allow for optimum root growth, soil moisture retention and nutrient availability. Containers should be a minimum of 5 gallons per plant although larger is better. Be ready to be more diligent with watering and fertilizing as a container grown plant has a very restricted root system.



Apply liberal amounts of organic matter for top tomato production.

ADAPTED VARIETIES There are more varieties of tomatoes than stars in the sky and more are added each year. Red, yellow, pink, or striped; slicing, paste, hollow stuffer or cherry; hybrid or open pollinated; new or heirloom; determinate, dwarf bush or indeterminate; disease resistant or not; the choice is yours. It is enough to make a gardener's head spin and to send a "tomatomaniac" into nirvana.

When possible select a variety with disease and nematode resistance. The "VFN" after some variety names stands for resistance to verticillium and fusarium, two soilborne wilt diseases, and nematodes, which are tiny rootdamaging worms. **Many organic growers prefer to use open pollinated varieties so they can save seeds from year to year. This is fine, but you may have to contend with a few disease problems** that might otherwise have been avoided.

Varieties that have shorter days to harvest intervals tend to do better here in Texas. We have a short growing season for tomatoes in between the last frost of winter and the hot weather of summer. **Once daytime temperatures reach the 90s and nights the mid70s, tomatoes will start to abort their blooms. This is more pronounced on larger fruited types than on cherries.** The goal is therefore to get as many tomatoes as possible set before hot weather arrives.

Many famous old varieties, such as Brandywine, are excellent quality tomatoes, but may not set very heavily before temperatures shut production down. In fall the same short season returns, only in reverse, with frost threatening to shut down the slowpokes in the tomato patch.

Certified organically grown transplants are not very available and you can grow your own. Several companies offer certified organic seeds and are also beginning to offer such seed in packets.

LOTS OF SUNLIGHT Wanna know the secret of tasty tomatoes and productive plants? In a word, it is sunlight. Sun shines on leaves enabling them to produce carbohydrates. Carbohydrates mean more fruit set and larger, tastier fruit. Less than ideal light and you get less than ideal production and quality. You cannot make up for a lack of sunlight with water, fertilizer or hope.



Wait until temperatures have warmed to apply an organic mulch around your plants.

Give tomatoes at least 6 hours of direct sunlight each day, and more is even better. If you lack a good sunny garden spot another option is to plant in containers and locate them on a sunny balcony, alongside a sunny driveway or in another direct sun location.

EARLY PLANTING I mentioned earlier about our short season and the need for quick maturing varieties. We can cheat a little in the early part of the spring season by starting with larger plants that are ready to start bearing fruit and by getting them out before the danger of frost has passed.

Start your transplants indoors a few weeks earlier than normal, say 10 weeks rather than 6 to 8 weeks, or buy transplants really early when garden centers offer them to uninformed, anxious, impulsive customers. Do not put them out in the garden yet. Transplant them into larger containers and keep them indoors until it is time to plant them into the garden.

By continuing to move an early transplant up into larger containers you can have a flowering tomato in a gallon pot when other gardeners are still pulling those spindly little specimens out of a six pack.

A conservative planting date is about the time of the average last frost for your area. You can cheat on this date by about 4 to 6 weeks with the following tip (which, I might add, is alone worth the price of this magazine!).

Plant the tomatoes as you normally would down the row. Then place a milk jug filled with water on the north side of each tomato plant, right up against the stem of the plant. This allows for the plant to still receive the full benefit of the low, south oriented winter sun. During the day the sun will heat up the water in the jugs. At night this heat is slowly released, warming the plant and preventing cold injury.

To further protect the plants make a hoop tunnel down the row by driving 3/8 inch sections of rebar into the ground every 5 feet or so down both sides of the planting row. Orient each rebar spike at about a 60 degree angle leaning toward the center of the row, and leave about 4 inches sticking above the ground. Place each pair of rebar pieces about 3 or 4 feet apart across the row. Slip a section of half inch PVC onto each pair of rebar spikes to form a hoop over the row. Cover the row of hoops with clear plastic, securing the edges with soil to hold it in place. Leave the ends open on warm days to prevent overheating inside the plastic tunnel. Secure the ends to the ground with bricks or boards on cold nights.

The folks at Boggy Creek Farm, an organic produce farm in Austin, use this technique to get a month or more jump on the spring season. This is a great way to expand that narrow production window for tomatoes we have here in Texas.

MULCH The benefits of mulch are numerous and familiar to most gardeners.

Organic mulches, including leaves, grass clippings, pine needles and shredded bark, cover the surface of the soil and protect it in many ways. Mulch moderates soil temperature, reduces evaporative losses, prevents crusting and improves infiltration of rainwater into the soil.

Mulch also can help deter some disease problems by reducing soil splashing up onto foliage and fruit from rain or sprinkler irrigation. Mulch provides a surface covering to prevent this from happening. Mulch can also help keep fruit cleaner by preventing soil splashing.

However, early mulching can prevent the soil from warming up quickly in spring and slow growth considerably. We illustrated this one spring by mulching one section of a demonstration garden in east Texas. The mulched plants remained small longer and were much slower to come into production.

Wait until the weather warms up to mulch your tomatoes. I like to lay 4 to 6 sheets of newspaper over the soil and young weed seedlings and then cover it with leaves to hold it in place and make the row more attractive. This smothers developing weeds and continues to provide weed control for the remainder of that crop cycle.

DEPENDABLE MOISTURE Tomatoes prefer a moist soil and suffer when soil moisture fluctuates widely. When soil is dry for a period of time followed by a soaking, tomato fruits will crack. Fluctuations can also contribute to blossom end rot, a common problem with the first fruit to set each spring. Water your plants frequently to maintain even soil moisture and a consistent supply of nutrients to the roots.

WISE FERTILIZING Organic gardeners have some of the best soil around and appreciate the value of organic matter and the soil life that helps release nutrients to growing plants. There is much we can do to enhance soil fertility and encourage strong growth and heavy fruit set. Many of the new tomato varieties are real racehorses, able to produce heavy loads of fruit if given proper nutrition. Do not be afraid to push them

along after they begin to set fruit.

Before setting out transplants, work two tablespoons each of fish meal and cottonseed meal into the soil in the bottom of each planting hole. Water new transplants with a dilute solution of seaweed and fish emulsion at the label rate. Include a tablespoon of molasses in each gallon of transplant solution. There are liquid blends of these three ingredients that are another good option for use as a root drench or as a foliar application.

Begin to spray the foliage once a week with a diluted seaweed and fish emulsion spray. Follow the label for mixing instructions. When the first blooms appear on the plants apply one half cup of cottonseed meal or an organic fertilizer like 824 or 622 in a wide banded circle around each plant about 6 to 8 inches from the plants. Work the fertilizer into the soil surface and then water it in well. Continue to foliar feed with seaweed and fish emulsion once a week. These nutrient applications keep the plants healthy, vigorous and productive.

PEST, DISEASE CONTROL The best pest control is prevention. The second best is prompt action when pest problems appear. Reduce disease problems by giving tomato plants room to grow so air can circulate freely around them. Avoid wetting foliage when you water, to reduce conditions that favor disease development.

Organic gardeners have reported success in managing some tomato diseases with baking soda (sodium bicarbonate) sprays. Now there are labeled products containing potassium bicarbonate that are also fairly effective. However, the standard low toxicity choice for disease control are products containing fixed copper. Copper sprays are effective against many fungal and bacterial diseases including septoria leaf spot, bacterial spot, bacterial speck, anthracnose, gray leaf mold and early blight (to some degree). Applied early, before diseases appear, or at the first start of disease symptoms they can effectively prevent problems from developing. Repeat applications, especially after a rain, are needed to maintain control. If you wait until diseases are rampant, sprays will do little to cure the problem.

Keep an eye on plants to note when pests first begin to appear. Early detection leaves you better options for managing a potential outbreak. Strong sprays of water directed upward from beneath the foliage can dislodge mites and even some aphids. Mites love a dry, dusty surface and detest a bath! Repeat this once every week or two to keep mites under control.

Aphids and very young caterpillars can be easily managed with insecticidal soap sprays. Avoid overuse of soap sprays as they will decrease productivity if applied repeatedly. Caterpillars can be easily controlled with sprays containing BT (*Bacillus thuringiensis*). The younger the caterpillar the more effective the spray will be.

The other major pests of tomatoes are the stink bugs and their cousins, the leaffooted bugs. These pests damage tomato fruit by piercing the skin and sucking the juices out,

leaving behind yellow hard spots. One option is to cover plants completely with a lightweight rowcover fabric to exclude these pests.

Stink bugs are tough to control with sprays but are susceptible to products containing neem or pyrethrin/rotenone. Some neem formulations can burn plants especially if sprayed on a sunny day, so take care and follow the label directions carefully. Rotenone sprays are more toxic than most organic ingredients, but combined with pyrethrin are an effective knockdown product when stinkbugs threaten to ruin a crop. Apply the spray early in the day when the bugs are sluggish and less apt to fly away.

Some gardeners report success with planting a row of plants nearby to attract these pests away from the tomatoes. [See "Trap Cropping" on page 20.] Sunflower, clover and fallplanted oriental poppies are among the possible choices. When these pests appear on the "trap crop" simply direct sprays to these plants which allows the tomatoes to go unsprayed.

With a little attention to these key factors, you can grow a bumper crop of delicious tomatoes this spring. Organic gardening is a process, not a "cookie cutter" formula, so be patient and take time to build your soil, learn about the pests and beneficials in your garden, and experiment to find the varieties and techniques that work best for you.