

Tomatoes

**Nutritional Value:**

Tomatoes have vitamin C, A (beta carotene) and several phytonutrients. If flavor was a vitamin, though, tomatoes would be all you'd need.

Challenges / Advantages:

Well, yes, tomatoes are the source of humor for gardeners that grow the \$20 tomato. They're the most popular garden crop in the U.S. It can be a notoriously finicky plant, and has confounded gardeners for years. But the

reason people still endeavor to grow this sensitive gem in their gardens every year is the unparalleled experience of eating fresh tomatoes at peak ripeness out of your own garden. It's one of those things in life that is really worth the effort. All joking aside, in most average growing seasons, tomatoes are easy to grow and offer one of the highest yields of any garden vegetable. In areas with shorter growing seasons they can be trickier, but there are some key steps to ensure success that are touched on here.

Sowing:

If you have a very long, mild growing season, you can direct sow tomato seeds outdoors. For most people, seedlings are the key to help lengthen shorter growing seasons in order to give the tomatoes enough time to ripen on the plant.

The plants are very sensitive and won't do well in late frosts, which is why many people pull their hair out after they put their precious tomato seedlings out too early and get wiped out by late frosts. The "walls of water" industry has been built on this phenomenon.

Whether direct seeding or transplanting tomatoes, they will need warm soil to start out. Soil temperature should be at least 60 degrees F. for planting tomatoes. If seeds or transplants are moved to cold soil, they will either stagnate or rot.

There are two general classes of tomato; Determinate, and Indeterminate. The determinate varieties grow faster, in short, bush form, and fruits ripen all at once for single harvest. The indeterminate class, which is where you will find many open pollinated and heirloom varieties, grow slower, and tend to vine out, needing support, and keep producing waves of tomatoes over a longer harvest period. Indeterminate tomatoes will have larger yields per plant than determinates.

Sow seeds indoors 1/4" deep in flats, cell trays, or soil blocks. Put them in a warm place to germinate. Best soil temperature for germination is around 77 degrees, so

it's a challenge to keep them that warm. Seedling flat heaters help, or a utility closet with a hot water heater giving off heat. You can place cellophane over the tray to hold in heat and moisture until they germinate. Don't place in direct sun, though, as it can overheat with the plastic on.

For uninterrupted growth, tomato seedlings should be transplanted to 4" pots after their first true leaves appear. Plant tomatoes deeper each time you transplant them. Whether you are moving them to larger pots or into the garden later on, always bury most of the plant up to their top few layers of canopy. This will enhance rooting and stability in the plant. Once the seedlings become about 4 weeks old look for evidence of root binding, where the roots start circling around the pot. This should be avoided and is a signal the plant needs a larger growing vessel soon. If you plant in soil blocks this becomes less necessary, as they don't become root bound in the compressed blocks of soil.

You can transplant seedlings once all threat of frost has passed. Don't risk putting them out early and having them die in a late frost. It's better to wait. You should **'harden them off'** first however. Simply move the seedlings in trays, pots, or soil blocks outside for longer periods each day and lessen their water a bit so they can get used to harsher temperature swings and conditions before they are transplanted into garden soil.

To transplant seedlings into the garden:

The tomato seedlings will be very vulnerable for the day of transplant and the following week in the garden. To minimize shock to the plant, it is best to plant them out during slightly cooler temperatures, preferably in the afternoon, optimally when it is cloudy. Its best that they have the first night to adjust before facing the bright sunlight. If you plant out in the morning on a warm day, you may lose some of the plants to severe wilt that first afternoon.

Prepare holes at 18" centers in the bed. Add the handful of compost, bone meal, rock phosphate, and greensand if that wasn't added to the bed already. The hole should be deep enough to accommodate the entire seedling plant up to the top two or three branches. A major mistake is to plant just the root ball into the ground with the spindly 'leggy' stem of the tomato exposed to the wind, as it is usually too weak to withstand conditions and will fall over. If you have an extra-leggy seedling, it can be planted sideways in a shallow trench, with the last few inches bent vertically and staked off. Pinch off any branches that will be below the soil line and they will re-grow roots for more stability.

Make a slight depression around the top of all the holes, once planted, for extra water holding. Placing a bit of mulch on top will also help to retain soil moisture. You can install small stakes or sticks next to weaker seedlings and tie off with twist ties or string to keep them vertical and out of the water and soil until they can stand on their own in a week or two. Water all seedlings deeply right after planting.

Soil prep:

Since tomatoes are heavy feeders of both nitrogen (early on), and phosphorus, and potassium (for fruit and root production), you should put some effort into prepping the soil before planting tomatoes. Start with the base prep of any bed with 2" of organic compost worked into the top 6" of soil. But just before planting tomatoes in their holes, you will want to amend the holes individually with a small handful of bone meal or colloidal phosphate in the bottom for the phosphorus they will need to set fruit. You can also add a dash of greensand in the hole for added potassium. If you have already amended the entire beds with rock flour and greensand, this step isn't as necessary.

You don't want any quick release nitrogen fertilizers on tomatoes since this will promote too much leaf growth, which can dominate fruit growth. You will want to prioritize fruit growth, so you will offer them the even, slow release nitrogen from your initial compost and then provide bone meal or colloidal phosphate for phosphorus as they grow. This combination usually works very well.

The best soil for tomatoes is a deep, well-drained, warm, fertile soil with plenty of organic compost worked into the top 6" of soil.

Growing Conditions:

Tomatoes do best in a warm, sunny spot that is protected from the wind. You will need a place that has at least 6 hours of sun per day minimum to produce fruit on the plants. The longer the sun exposure, the larger yields you will enjoy.

Planting tips:

Indeterminate varieties will need support at some point. If you're using stakes or tomato cages, it's best to install them as you transplant the young seedlings, so you don't damage their roots later on. Many methods work on supporting tomatoes. You can use wood, metal, plastic or bamboo stakes, and tie off growing stems and branches as they grow. Measure stake length based on variety. Some can grow over 6 feet tall (photo at left)



Or you can place tomato cages around the entire plant, although this can be expensive if you have more than a handful of plants. Cheaper cages can be fashioned using concrete reinforcement wire or wire mesh bought in lengths at the hardware store.

For supporting an entire bed of plants, you can stake the rows on either end with fence poles or other sturdy stakes and use wire or heavy string to provide a horizontal tie-off for the plants at different levels of growth. (photo at left)

This is an inexpensive, yet effective method to support large numbers of indeterminate plants. More horizontal lines can be added as the plants get taller. Vertical lines can be tied off at each plant if necessary and clipped, or tied to growing stems and branches.

The easiest way to start tomatoes in the garden is to buy them already started. Most garden centers and nurseries have a plentiful supply of tomato seedlings in the early spring to choose from. Your choices will be limited, however, compared to the hundreds of varieties of seed available in catalogs. Buying seedlings will get you past several touchy steps with raising them from seed on your own. So if you are just starting out, or are short on time in the spring or space in your windowsills, go ahead and buy some seedlings. Remember to harden them off for a week or so if you are planting in cool spring conditions. (see above in sowing section)

***Look for healthy plants** with deep green leaves, no yellowing, or signs of disease. Smaller is better, in that you don't want larger seedlings that are root bound and already flowering. If they already have blossoms or fruit on them, avoid them. Those plants are already going into production because they have been left too long in the pots and are thinking that their life will be short in the pot so they are accelerating their growth cycle to make do. These plants will not produce well in your garden, since they've already bypassed much of their growth cycle. You want young seedlings that are just starting to grow, so when you transplanting to the garden, you are continuing the next stage of adolescent growth and later maturity.

Watering:

Tomatoes will need only a moderate, but uninterrupted water supply for the entire growth season. They can hold up in brief dry periods, and it can actually improve their flavor, but especially after blossoms appear, keep them watered daily. Drip fed irrigation is very beneficial here. Drip irrigation also avoids many of the water born fungal infections that can prey on wet tomato leaves.

* If you see black spots on the bottoms of ripening tomatoes, this is a sign of "**blossom end rot**" which shows a calcium deficiency. This is usually in response to a lack of water. Since the plant relies on water to deliver the soluble calcium to the fruit, when it runs low on water, it can't deliver the calcium to the tomatoes that is critical for continued growth and the outer end of the tomato starts to rot. No big deal. It's not a disease. It's a condition. And you can remedy it with two steps. Get back on that watering, and remove and toss any of the offending fruits from any plant into the compost. They are no good, and they are putting unnecessary labor on the plant.

Harvest:

Several weeks before harvest, it's a good idea to clear out any dense, dry or dead plant material that can build up on larger tomato plant groups. This is to lesson the work on the plant that is still keeping that material alive, and more importantly it helps improve air circulation around the plant to minimize fungus or other disease that may affect the plants. Clean out around the bottom of the plants every week or so. If they are growing too densely together, thin out around the bottom to get some air in there.

Notes:

Cherry tomatoes will, in general, produce more reliably than full sized varieties, especially in shorter seasons. It is less work for the plant to produce the smaller fruits, and they are less susceptible to disease and blossom end rot.

I don't personally adhere to pruning tomatoes that much. I simply don't have time for it, and the labor involved doesn't match my easy-gardening approach, especially when I've got 40-50 tomato plants growing. But, in theory, you can pinch the 'sucker' branches that grow in the axils of the leaves. You don't want them to grow into stems because they aren't going to fruit anything on those stems and the plant is 'wasting' energy supporting their growth.

***Tomato horn worms** are the nemesis for tomato plants. It is the caterpillar stage of the spectacular sphinx moth that is a night pollinator moth that will emerge later in the season and looks much like a hummingbird. In the caterpillar stage they can decimate entire tomato (and potato) plants in a night or two. So if you see this very large 4-6" green monster with the signature 'horn' on its tail end, get rid of it. It's either them or the tomato plant. Heartless, I know.

Other pests and diseases can harm tomatoes. Everything from aphids, cutworms and leaf hoppers, to various bacterial infections and early blight can attack your poor tomatoes. Your best defense for most of it is to have healthy, diverse soil organisms fed by rich compost. This base will help keep most things in balance in the garden.

Cooking:

A million recipes. I think they are best eaten fresh, all through late summer and fall. They can be ripened inside a paper bag on the counter at room temperature, if they aren't ripe already. Don't put tomatoes in the refrigerator, ever, unless they are in the form of salsa or spaghetti sauce already. Fresh tomatoes lose their flavor in the refrigerator and get mushy.

Storage:

Tomatoes can be dried, canned, or chopped up and frozen for later use.

Good Varieties: Centennial, San Marzano, Oregon Spring, Sun gold, Early girl, Bella Rosa, Ponderosa, *old, large-fruited*, Marglobe, *red and juicy (1900)*, Red Cherry, *an old red cherry tom (1865)*, Chadwick Cherry, Nepal, Brandywine, Moskvich, Matt's Wild Cherry.

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