

# Grow Your Own Tomatoes and Tomatillos

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## Tomatoes

### Cultivars

Tomatoes have been in cultivation so long that hundreds of cultivars have been developed. The fruit was originally cultivated by indigenous people in what is now Mexico. Following the European colonization of the Americas, tomatoes were taken to Europe and Asia and were in cultivation there by the end of the 16th century. Since they are an important agricultural crop, breeding programs have produced many modern cultivars to add to the original heirloom varieties.

Tomato cultivars can be categorized by their fruit characteristics, intended use, and growth habit. For example, there are cherry tomatoes, paste tomatoes, and slicers that are used in different ways. Selecting a cultivar for your garden depends on what type of tomato you want and how your climate and growing conditions influence ripening.

### Time to maturity

Tomato cultivars mature over a wide range of time, commonly from 50 days for early cherry types to 60 days for early, full-size fruit types; 75 days for mid-season maturing cultivars; and 85 days for later, full-season cultivars from transplants. Direct-seeded plantings take about 25 days longer to mature.

In central Oregon's cold-climate, short-season areas (Deschutes, Crook, and Jefferson counties), choose tomato seeds that have the least number of days to maturity (when the first fruit ripens) listed on the packet. Colder evening temperatures delay plant growth and fruit maturation, so add a minimum of 10 days to 2 weeks to the number of days to maturity listed on the seed packet.



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### Growth habit

Tomatoes fall into three categories of growth habit: determinate, indeterminate, or semi-determinate. Growth habit determines the size of the plant, the pattern of fruit ripening, and the type of plant support and pruning the plant requires.

#### DETERMINATE

Determinate tomatoes have several main stems that produce side shoots freely. The main shoots and branches grow vigorously and then produce flower clusters at their tips, which stop further stem growth and allow the plant to begin ripening the fruit. As a result, determinate plants tend to ripen their fruit over a short period, usually just a couple of weeks.

This type of tomato is a good choice for a cold-climate area because it matures early. Also, their compact growth habit makes them easier to

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protect from frost using techniques such as frost cloths and “walls of water” (see “Water rings and tepees,” page 7).

Because of their branching and flowering characteristics, determinate cultivars tend to be fairly short (3 to 4 feet tall) and bushy. So, these types of tomatoes grow well in containers and, because of their concentrated ripening, are well-suited for processing.

#### **INDETERMINATE**

Indeterminate tomatoes grow and produce flowers all season. These types of tomatoes do not produce terminal clusters of flowers, so the stems continue to grow until they are killed by frost. As a result, fruit is produced continually and ripens over an extended period. They are often referred to as “vining” tomatoes, although they cannot wrap themselves around a trellis; the gardener must tie their stems by hand. These types of tomatoes are especially well-suited to staking and pruning in the garden.

#### **SEMI-DETERMINATE**

Semi-determinate tomatoes, especially beefsteak types, have a growth habit between that of indeterminate and determinate types. They produce vigorous lateral shoots that often terminate in a flowering **truss** (cluster). As a result, lateral shoots are not usually removed.



Photo by Neil Bell, © Oregon State University

Tomato flower cluster

#### **Fertility and genotype**

Tomatoes are normally self-pollinated, although some wild relatives and certain cherry types have a tendency to **outcross** (require another cultivar as a pollinator). Self-pollination helps maintain many traditional types as pure lines, which means that one seed has the same **genotype** (genetic composition) as all others, and will breed true from generation to generation.

A number of modern cultivars are F1 hybrids. These are uniform and can be more productive than traditional types, but they will not breed true from saved seed. The seed packet will generally indicate whether the cultivar is an F1 hybrid.

Some tomato types can set fruit without fertilization by the pollen (parthenocarpic fruit). They will be productive even when growing temperatures are too hot or too cold for normal tomato fruit set. A number of cultivars bred by Oregon State University have this trait (designated with a \* in tables 2 and 3, page 3). Because they also have the earliness of a determinate growth habit, these cultivars will set fruit during the cool Oregon spring and early summer. When temperatures warm up, the tomato flowers will be pollinated, and the fruit will have seeds.

A number of tomato cultivars do not fit the descriptions above. These may include heirloom types that vary tremendously in size, shape, color, taste, and other attributes. Note that not all types in this category are true heirlooms. Some are newer cultivars, such as ‘Indigo Rose’, which is distinguished by a very high **anthocyanin** content. Anthocyanins are pigments that give fruit their red, purple, or blue color.

The cultivar suggestions on page 3 are based on field trials in Corvallis, Oregon. These cover only a small fraction of the many cultivars available. Depending on your preference and growing environment, there are many others to choose from. Finding out what is best for your garden is definitely part of the fun of growing tomatoes.

**Table 1. Cherry and grape tomato cultivars and their characteristics.**

Cultivar	Type	Maturity	Vine type	Fruit color
'Sweet Mojo'	grape	early	indeterminate	red
'Gold Nugget'	cherry	early	determinate	yellow-orange
'Orange Paruche'	cherry	mid-season	semi-determinate	orange
'Sapho'	cherry	mid-season	semi-determinate	red
'Sungold'	cherry	mid-season	indeterminate	orange
'Smarty'	grape	mid-season	semi-determinate	red

**Table 2. Paste-type tomato cultivars and their characteristics**

Cultivar	Maturity	Vine type	Fruit color
'Cordova'	early	determinate	red
'Roprecht Paste'	early	semi-determinate	red
'Belstar'	mid-season	determinate	red
'Mariana'	mid-season	determinate	red
'Olivade'	mid-season	indeterminate	red
'Saucy'*	mid-season	determinate	red

\*Parthenocarpic (seedless) type developed by Oregon State University

**Table 3. Slicer-type tomatoes and their characteristics**

Cultivar	Maturity	Vine type	Fruit color
'Big Beef'	mid-season	indeterminate	red
'Celebrity'	mid-season	determinate	red
'Country Taste'	mid-season	indeterminate	red
'Fantastic'	mid-season	semi-determinate	red
'Fraziers Gem'	mid-season	determinate	red
'Grandma's Pick'	mid-season	indeterminate	red
'Legend'*	mid-season	determinate	red
'Medford'	mid-season	determinate	red
'Orange Blossom'	mid-season	determinate	orange
'Oregon Spring'	mid-season	determinate	red
'Paul Robeson'	mid-season	indeterminate	red
'Ramapo'	mid-season	semi-determinate	bright red
'Santiam'*	mid-season	determinate	red
'Siletz'*	mid-season	determinate	red
'Willamette'	mid-season	determinate	red
'Ananas Noire'	late	indeterminate	yellow, orange, red
'Brandywine'	late	indeterminate	pink
'Big Daddy'	late	indeterminate	red

\*Parthenocarpic (seedless) types developed by Oregon State University

## Propagation

An easy and inexpensive alternative to buying transplants is to propagate tomatoes from seed. It's often the only way to get plants of rare heirloom cultivars. You can grow plants from seed in a greenhouse, hot bed, cold frame, or window box. The best soil temperature for seed germination is 60 to 70°F. It takes from 5 to 8 weeks to produce good plants from seed, depending on the temperature.



Photo by Amy Jo Detweiler, © Oregon State University

Propagating plants in a cold frame

Plant seeds in individual pots or in plastic flats filled with seed-starting potting mix. To make transplanting easier, avoid planting more than 6 to 8 seeds per square inch. Cover the flats with a plastic dome until plants are up. When the first true leaves appear, transplant into containers that are a minimum of 2 to 3 inches in diameter. Water the seedlings once a week with a complete fertilizer (see “Fertilizer,” page 8).

You also may plant seed directly in the garden after mid-April, provided you control weeds by careful hoeing. Only early ripening cultivars

should be considered for direct-seeding in Oregon. In cold-climate areas, direct seeding is not an option, due to the cooler soil temperature and short growing season. Instead, use transplants for greater success.

## Grafted plants

Tomatoes can also be grafted, a process in which the desired cultivar is grown on a rootstock of a different cultivar. Grafted tomato plants typically produce larger fruit and yields and are widely used for greenhouse production. The process was adopted as a way to avoid problems with soil-borne diseases in greenhouses, which can be very difficult to control by other means.

The real advantage of grafting to the home gardener is that it restores the yield of heirloom or other cultivars that lack resistance to diseases or pests. In one OSU study, grafted and seedling-grown ‘Indigo Rose’ plants were compared for yield. The grafted plants yielded three times as much as the seedling-grown plants. Grafted



Photo by Neil Bell, © Oregon State University

A grafted and pruned tomato plant, growing in a container

heirloom cultivars, which offer excellent fruit quality but were never bred to resist common pathogens, show similar results. Grafted plants are considerably more expensive than those grown from seed, but they may be the best chance for success with difficult cultivars.

Grafted plants are grown in much the same way as non-grafted. Be sure to keep the graft union above the soil. Remove suckers that emerge from below the graft, and do not let stems above the graft lie on the soil and form roots.

## Sun and soil

For good growth and fruit ripening, plant tomatoes where they receive as much direct sunlight as possible (7 or more hours per day). In cold-climate areas, choose a spot that provides additional heat without blocking the sun. For example, place plants next to the side of a house, other structure, or boulder, so that the radiant heat can increase the temperature near the plants on cold evenings.

Tomatoes are not fussy about soil type, but they will do particularly well on a garden loam containing a fair supply of organic matter. The soil should be only mildly acidic, with a pH of 6.0 to 7.0.

## Planting in the garden

Tomato plants that were started indoors or in a greenhouse should be hardened-off (acclimated) before you plant them in the garden. This can be done gradually over a few days by increasing their exposure to cooler temperatures, decreased humidity, and brighter light. Exposure can begin with just a few hours, adding time each day, until they're ready to be planted out.

Plant as soon as the soil is in good, workable condition and danger from frost is past. This will be May 1 to 10 in most western Oregon areas. In central Oregon, although there is no true frost date, we recommend planting in the second week of June and having frost protection in place.

Disturb the roots as little as possible when you transplant, and set the plants to the depth of the first leaves (except grafted plants, for which you must keep the graft union above the soil). Plant leggy tomato seedlings at about a 30-degree angle in a furrow long enough to leave only the top 5 or

6 inches of the plant exposed. Tomatoes can produce roots along their stems, so this effectively increases the size of the root system and increases plant growth.

Set plants 1 to 3 feet apart, depending on the type of plant and the space available. Water each plant with a complete fertilizer mixed the same as for seedlings. If you direct-seeded, thin to one plant every 6 to 12 inches.

## Planting in containers

If garden space is limited, you can raise tomatoes successfully in containers. Container planting avoids problems with pathogens that may be in garden soil. Also, you can easily move container plants to the optimum location for growth and protection from cool temperatures or frost.

Any tomato cultivar can be raised in a container, although the smaller-growing, determinate cultivars are ideal. They take longer to outgrow a pot, and it is easier to trellis a smaller plant in a pot. Place determinate tomatoes in containers that are at least 12 inches deep (such as a 5-gallon



Staking a container-grown tomato

Photo by Neil Bell, © Oregon State University

nursery pot). Tomato plant growth is limited by container size, so the larger the container, the less restricted growth and production will be. Use good-quality potting soil, and mix in your preferred fertilizer (see “For more information, Garden soil” on page 13). Place containers in a warm, sunny spot.

## Extending the season

Tomatoes prefer soil temperatures of 65°F or warmer and air temperatures of 60°F or higher to perform their best. Below are several ways to help modify soil and air temperatures and extend the growing season in early, mid-, or late season. In central Oregon, cool evening temperatures and frost damage are a threat throughout the entire season. Therefore, using several of these techniques (alone or in combination) will help protect these heat-loving plants.

### Plastic mulch

Use black plastic ground mulch to enhance earliness and yield. Plastic mulch controls weeds, conserves moisture, protects fruit from ground rot, and may increase soil temperature both during the day and at night. For black plastic mulch to increase soil temperature, it is critical that the soil surface be smooth and that the plastic be in close contact with the soil. Otherwise, the plastic shades the soil and keeps it cooler. Clear plastic mulch is superior for heat transfer to the soil, but it does not control weeds.

Plastic mulch films give good weed control and soil warming at a level between black and clear plastic. These films are called IRT (infrared-transmitting) or wavelength-selective films. They are more expensive than black or clear plastic, but they may be worthwhile where soil warming is crucial.

Plastic mulch of other colors, such as red, yellow, orange, blue, or grey, is said to improve growth and yield of tomatoes, but research results have been inconsistent.

### Row covers

Tomatoes grow and set fruit better in warm soil. Use row covers made of plastic, spunbonded, and non-woven materials for windbreaks, frost protection, and to enhance yield and earliness.



Photo by Amy Jo Detweiler, © Oregon State University

Row covers on raised beds

A “tent” of clear polyethylene plastic works well. Wickets of #9 wire, 5 feet long, and bent to form an arch are good supports for the plastic covers. Lay sheets of plastic over each side, leaving a small opening at the top for ventilation. Spring-type clothespins hold the plastic to the wickets and close the ends of the tent. Tack the bottom of the plastic to a strip of wood or bury it in the soil on each side of the row. As warm weather comes, you can partially or wholly remove the plastic. In the fall, a tent can be helpful to protect plants and extend the harvest season.

You can make single plant covers using two wickets with plastic wrapped around in tepee fashion, leaving an opening at the top. On bright, sunny days, lower the plastic for additional ventilation.

Plants under plastic row covers accumulate two to three times more heat than those without covers. Always remove the covers when plants begin to flower or if temperatures under the covers become excessive. Don't allow temperatures to exceed 90°F for more than 2 or 3 consecutive days.

You can also use frost cloth made from spun polyolefin for frost protection. This fabric comes in different thicknesses that allow air, water, and light to move through them and can protect down to 26°F. Frost cloth works quite well to protect plants from light frosts but not deep freezes.

### High tunnel, low tunnel, and greenhouse

A **high tunnel** is a temporary structure that is tall enough to walk through, has manual ventilation, portable heating (if needed), no permanent electricity, and a plastic-covered frame. The frame

Photo by Heidi Noordijk, © Oregon State University



High tunnel tomato production using a trellis training system

is usually metal. For durability, use 6-mil, greenhouse grade (UV protected) plastic. A high tunnel is not a permanent structure like a greenhouse, but it provides greater protection than an open field. It can be left up indefinitely, and it is much more cost-effective than a greenhouse, because the costs of building materials and construction are less.

A **low tunnel** is much lower to the ground than a high tunnel. It is generally used for protection at the beginning of the season. For support, it can have a permanent frame made of metal or other materials. It is critical to roll up the sides for ventilation so the plants inside will not overheat.

Photo by Heidi Noordijk, © Oregon State University



Low tunnels with greenhouse plastic covering. The sides can be rolled up for ventilation.

A **greenhouse** can be the ideal environment for starting seeds or growing your tomatoes year round, if it has adequate heating, cooling, and light when needed. Tomatoes are wind-pollinated, so in a greenhouse's enclosed environment you may need to agitate the flowers mechanically. A battery-operated toothbrush used gently on a tomato truss works well for this purpose.

### **Water rings and tepees**

Water rings and tepees help protect plants from frost using water for thermal heating. Set the ring or tepee around a plant and fill it with water. The water absorbs heat from the sun during the day and then radiates heat to the plant at night.



Photo by Amy Jo Detweiler, © Oregon State University

Water rings

Place the ring or tepee around the plant at the beginning of the season to give it additional protection, and then remove it as the plant grows larger and the weather becomes consistently warmer. In harsh growing environments, gardeners leave the water ring or tepee on the plant the entire season. This type of frost protection has been indispensable in short-season, sunny, cold-climate areas like central Oregon.

### **Raised beds**

Consider planting your tomatoes in a raised bed to extend the season. You can either build up soil volume on the ground or enclose soil in a structure. The soil will warm up more quickly in the spring and stay warmer later into the fall.

## Fertilizer

Tomatoes respond well to fertilizer applications, particularly phosphorus. A complete fertilizer contains nitrogen (N), phosphorus (P), and potassium (K) (along with other nutrients). A fertilizer's content specifies these nutrients in this order: N-P-K. To give the young plants a good start, place a handful (1 to 2 ounces) of a complete fertilizer (4-12-4, 5-10-5, or 5-10-10) in a circle 3 inches away from the plant and 3 to 4 inches deep. An additional application of nitrogen about fruit set time, placed in a circle 1 foot away from the plant, helps sustain production. More applications of nitrogen fertilizer are not recommended, as it tends to promote excessive vine growth and delay fruit maturation. Adding organic matter to the soil improves soil quality and may add nutrients (see "For more information, Garden soil" on page 13).

## Irrigation

Maintain a uniform moisture level during plant and fruit development for best results. It's better to soak the soil thoroughly at intervals of 7 to 10 days than to sprinkle frequently. Inconsistent irrigation can lead to fruit cracking or blossom end rot. A shallow sawdust, peat, or leaf-mold mulch holds soil moisture longer.

After mid-September, as the weather cools, it may be possible to water less often. But, for best fruit quality and yield, be sure that the plants do not become drought-stressed.

Sprinkling in the late afternoon or evening may favor development of foliage disease. If possible, use drip irrigation or other systems that don't wet fruit and foliage.

## Weed control

Controlling weeds is a good idea, not only right around your tomato plants, but in the vegetable garden in general. Weeds compete with tomatoes for water and nutrients. If they are large and numerous enough, they may shade or increase the humidity around plants, potentially contributing to foliar diseases. Some pests of tomato, such as cutworms and stink bugs, also use weeds for cover.

Shallow cultivation right around the plants can be an effective way to remove weeds. Be careful

not to damage feeder roots. Cultivation also breaks up any soil "crust," which improves water and air penetration into the soil.

Dark-colored plastic mulches do a very thorough job of suppressing weeds. Organic mulches such as compost or clean straw can also control weeds, but do not spread them around your plants until the soil has warmed up enough. If you apply mulches too soon in the spring, they can keep the soil cooler and potentially delay plant growth. Make sure that the mulch is free from plant disease, weed seeds, or herbicide residues.

## Staking and pruning

The term "vine" is used for many tomato plants, but they are not capable of wrapping themselves around a trellis and, without support, they naturally sprawl across the ground. It is best to support your tomato plants with some sort of trellis to get the vine and fruit off the ground. This prevents fruit rot and damage from slugs and cutworms, increases air circulation, and makes harvesting easier. Trellised and pruned plants



Trellised and pruned indeterminate tomato

Photo by Neil Bell, © Oregon State University

also tend to produce larger fruit and ripen fruit earlier. Determinate and indeterminate plants are typically trellised and pruned in different ways because of the differences in their growth habits and flowering.

### **Determinate plants**

Determinate plants grow as bushes up to about 4 feet tall. You can grow them in cages, although the typical cone-shaped cages sold in stores will usually support only the smallest of cultivars. Prefabricated tomato ladders are a sturdier option. Or, you can build your own cage using stakes driven into the soil and some sort of coarse wire such as galvanized fencing. Make a cage about 4 to 5 feet tall and at least 18 inches across. As the plant grows, simply arrange the plant so that the new growth is supported by the cage and is not touching the ground.

The only pruning required on determinate plants is to remove any side shoots that appear below the bottom flower cluster. Leave all side shoots above that point, as these will bear fruit.

### **Indeterminate plants**

Indeterminate plants usually produce from one to four main stems and continue to grow until frost. They can easily grow 7 to 8 feet high. For these, it is best to stake each individual plant and tie its main stems to the stake. Space the plants 12 to 18 inches apart. Staked plants are usually grown on a single or double stem—other stems are removed at the base. As the stems grow, tie them loosely to the stake with soft twine.

Strictly speaking, indeterminate plants do not require any more pruning than determinate types. But, for Oregon's short growing season, removing the side shoots (also known as "suckers") in the leaf axils will result in larger fruit and—more importantly—earlier fruit ripening. Inspect the plant every 7 to 10 days, and pinch off the side shoots (using your thumb and index finger) as they emerge right at the base. Also, you can remove the tip of the main stem(s) about 1 month before you expect the first frost, to stop further vegetative growth and allow the plant to ripen its existing fruit.

If you have allowed the plant to grow for a while without removing the side shoots, and they



Photo by Neil Bell, © Oregon State University

Remove the side shoots (also known as "suckers") in the leaf axils.

have become very numerous and long, it is probably best to do what is called "Missouri pruning." Prune off the tip of each side shoot after the first one or two sets of leaves, leaving a short stub to minimize shock to the plant.

Semi-determinate plants are grown in much the same way as indeterminate, except you can retain more main stems.

## **Training systems**

A system for training tomatoes to a supporting structure is useful when growing a row of plants. Two commonly used systems are the **basket weave** and **trellis**. (See also "For more information," page 13.)

### **Basket weave**

The basket weave system uses stakes with sturdy twine woven between the plants to keep them off the ground. At transplanting time, drive a stake at least 6 inches deep after every two plants. You can use wooden stakes or T-posts. Be sure to use stakes that are longer than the height you expect the plants to grow. Indeterminate varieties need stakes that are at least 6 feet long, and stakes for determinate varieties must be 4 feet long.

Secure the twine to an end post at 10 inches above the soil line, and weave it between each plant, wrapping around each stake as you go until you reach the other end post. Wrap the twine around this end post, and loop back up the row, weaving between each plant to create a sandwich trellis holding the plants secure. Weave another layer of twine 6 to 8 inches above the previous one every 7 to 10 days. Four layers are usually enough for determinate varieties; you'll need more for indeterminate types.



Photo by Heidi Noordijk, © Oregon State University

Basket-weave training system on 'Indigo Rose' tomatoes

Pruning indeterminate plants allows for easier training and better air circulation. Keep the first side-shoot that grows below the first flower cluster. Remove all side-shoots below that point, and allow side-shoots above it to grow.

### **Trellis**

To build a trellis support system, you will need a support post 3 to 6 inches wide at the end of each row, with posts 3 to 4 inches wide set every 12 to 20 feet within the row. All posts should reach

to about 6 feet above the soil surface. Stretch and nail a line of 12-gauge wire across the support posts near the top, at about 5 feet. You can also nail a bottom wire to the posts about a foot above the soil surface. Attach heavy twine to the top wire above each plant, and tie it to the base of each plant or the lower wire (if you are using one).

Train the tomato plants to two main stems by keeping the main stem and the side-shoot below the first flower cluster. Remove all other suckers as they develop. As it grows, wrap each stem around the twine or attach it to the twine with a tomato clip.

Trellising can result in earlier and larger fruit, but it can also increase sunburn and fruit cracking.

## **Effects of weather and other problems**

### **Weather**

Tomatoes are tropical plants and grow best when air temperatures are above 60°F. It is common for tomatoes transplanted to the field in early May, when the weather is cool and wet, to grow slowly and look diseased, particularly the older leaves lower on the plant. When the weather warms, they will rapidly improve. Set row covers over the plants to benefit growth and improve appearance. (See "Row covers," page 6.)

Tomatoes can develop several problems related to cold climate. Cold evening temperatures during the growing season can damage plants, stunt growth, interrupt pollen formation, and prevent fruit from ripening. In areas like central Oregon, where nighttime temperatures frequently drop below 55°F, pollen may develop incompletely or not at all. This can result in misshapen fruit or blossom drop, reducing yield. Also, there can be wide fluctuations between hot daytime temperatures and much cooler nights. This can lead to uneven soil moisture that causes plants additional stress.

### **Pests and disease**

Healthy tomato plants growing in fertile soil in full sun typically suffer few pest or disease problems. One of the most important things you can

do to keep your plants healthy is to inspect them closely on a regular basis. Pests and diseases are much easier to manage while the problem is small.

To help you identify and manage tomato pests and diseases, there are OSU Extension offices and OSU Extension Master Gardener volunteers in most counties statewide. You can find your local OSU Extension office at <http://extension.oregonstate.edu/find-us>.

Identification and management of specific insect pests and diseases are covered thoroughly in the *Pacific Northwest Insect Management Handbook* and the *Pacific Northwest Plant Disease Management Handbook*, both of which you can find online.

- *PNW Insect Management Handbook*. To find information on tomatoes, place the cursor over “Contents” and click on “Vegetable crops” and then “Vegetable Pests” in the left menu. On the next page, click on “Hosts and pests of vegetable crops,” and then scroll down to “Tomato.”
- *PNW Plant Disease Management Handbook*. On the home page, click on “Hosts and their diseases.” In the next window, type “tomato” in the search box, and click “Search” to get a list of tomato diseases.

## Harvest and storage

Tomatoes may be harvested at the mature-green stage (when the fruit cavity is filled with gel), semi-ripe (with different amounts of red pigmentation), or fully ripe. They are very perishable and subject to surface and internal damage, so be sure to handle them carefully. Tomatoes are sensitive to chilling injury, and in the fall, fruit on the plant that is subjected to several days of cold temperature (below 50°F) may start to develop rots. Proper temperature management for ripening is critical to maintain quality. See “Extending the season,” page 6.

Proper temperature management for storage is also critical. It’s best to keep tomatoes out of refrigerators. In addition to chilling injury, extended refrigeration damages the fruit’s ability to develop desirable fresh tomato flavor. A storage temperature of 50 to 55°F is recommended for semi-ripe to fully ripe tomatoes. Semi-ripe tomatoes with



Photo by Neil Bell, © Oregon State University

Tomato harvest

60 to 90 percent color can be held up to a week at 50°F. If you are picking mature-green tomatoes, the optimum temperatures for ripening range from 65 to 70°F.

## Nutrition and processing

Tomatoes are rich in vitamins C and A. They are a good source of potassium, have no cholesterol or fat, and are low in calories and sodium. They also contain lycopene, a phytonutrient that helps protect the body’s cells from oxygen damage. Increased intake of lycopene has been associated with better heart health and a reduced risk of certain cancers. OSU’s healthy recipe website, [www.foodhero.org](http://www.foodhero.org), is a great source for low-cost recipes using tomatoes. Click on “Recipes.” In the box called “Sort the Recipes,” click “Main Ingredients.” Scroll down and click “Tomatoes.”

If you are interested in canning tomatoes, see “For more information, Canning” on page 13.

Tomatoes and tomato products can also be frozen or dehydrated.

## Tomatillos

### Cultivars

Tomatillos (*Physalis ixocarpa*) are relatives of the tomato. They have been cultivated in Mexico and Central America for centuries. They are the stars of Mexican salsas and sauces.

**Table 4. Tomatillo cultivars and their characteristics**

Cultivar	Fruit color
Mexican strain	yellow
Pineapple (both ground cherry and tomatillo versions)	yellow
Toma Verde	green
Miltomate	green
Purple	purple

### Pollination and time to maturity

You might need two or more types of tomatillos to get good pollination and fruit set. Once they start fruiting (75 days or more after transplanting), they will continue until fall rains or frosts.

### Growth habit

Tomatillos are multi-branched and bushy. They grow 2 to 4 feet tall and just as wide, so they do need space. They can sprawl without any support, but it's best to stake or cage them to improve air circulation and keep the fruit off the ground. They can also grow well in 5-gallon or larger pots (so they can be supported if needed).

### Sun and soil

Tomatillos may be a bit more drought tolerant than tomatoes. They do not like soggy, poorly drained soil, so they benefit from raised beds or rows both for drainage and the faster soil warming they provide.

### Planting in the garden

Most tomatillos are started in greenhouses, hardened off, and transplanted out, just like tomatoes. For several weeks, as the weather warms up, cover the transplants with plastic cloches or row



Photo by Mike LaPlante / CC BY-NC-SA 2.0

covers to improve their early growth and accelerate the time to first fruit. See “Extending the season,” page 6.

### Irrigation

Tomatillos need even irrigation and will use 1½ inches of water per week. Drip or soaker hoses work well on tomatillos.

### Training systems

Since the overall size or caliper of their stems is smaller than tomatoes, tomatillos do not weigh as much as tomato plants. So, tomatillo training systems can be somewhat less substantial than some used for tomatoes. The basket weave system suits tomatillos well.

### Harvest

Tomatillo fruit can be as small as ½ inch in diameter or up to 2 to 3 inches, depending on variety. Fully ripe fruit falls easily off the plant when picked.

Fruit color ranges from green through yellow and red to purple, depending on variety and ripeness. As the green varieties begin to turn

yellow-green, they lose some of their acidity and may have a bit less flavor than those harvested a little earlier. The red and purple ones tend to be a bit sweeter.

Tomatillos (and their ground cherry relatives) produce their fruit inside a papery husk. Be sure to remove the husk before eating or cooking them.



Photo by Maggie Hoffman / CC BY 2.0

## For more information

### **OSU Extension Service publications**

You can find these and many other gardening publications in the OSU Extension Catalog at <http://extension.oregonstate.edu/catalog/>

#### **GARDEN SOIL**

*Fertilizing Your Garden: Vegetables, Fruits, and Ornamentals* (EC 1503)

*Improving Garden Soils with Organic Matter* (EC 1561)

*Soil Fertility in Organic Systems: A Guide for Gardeners and Small Acreage Farmers* (PNW 646)

#### **PEST MANAGEMENT**

*PNW Insect Management Handbook*

*PNW Plant Disease Management Handbook*

#### **CANNING**

*Canning Tomatoes and Tomato Products* (PNW 300)

*Recetas para el Envasado de Salsas* (PNW 395-S)

*Salsa Recipes for Canning* (PNW 395)

### **National eXtension publication**

*Training Systems and Pruning in Organic Tomato Production*

### **Other Oregon State University resources**

**OSU EXTENSION OFFICE FINDER**

<http://extension.oregonstate.edu/find-us>

**OSU'S HEALTHY RECIPE WEBSITE**

[www.foodhero.org](http://www.foodhero.org)