

# Vegetables (tomatoes, bell peppers, and zucchini squash)

## Overview

**Tomatoes and bell peppers:** You can choose from varieties that mature early, midseason, and late. The early varieties have the capability of setting fruit at cooler temperatures, a plus in our region.

Another consideration is whether a tomato is determinate or indeterminate:

- **Determinate** — A plant growth habit in which tomato stems stop growing at a certain height and produce a flower cluster at the tip. Determinate tomato plants tend to be compact, early-fruiting, have concentrated fruit set, and do not require staking.
- **Indeterminate** — A plant growth habit in which the tomato stems continue growing in length indefinitely. Indeterminate tomatoes are tall, yield over a long season, and require staking for improved yield.

**Bell peppers:** As with tomatoes, you can choose from varieties that mature early, midseason, and late.

Most bell peppers start off as dark green to yellow-green and most turn red when fully ripe, although some turn yellow, purple, orange, or brown. A few start out white and never change color.

**Zucchini squash:** Seeds germinate rapidly and do not require transplanting so you can either sow seeds directly into the garden or put in transplants.

## Planting

### 1. Selecting a garden site

- Select a level area that has loose, well drained soil and receives at least 8 hours of sun per day, 12 hours is better yet.
- On sloped sites use contour rows or terraces. South facing slopes are warmer and less subject to damaging frost.
- Avoid low spots at the base of a hill or at the lower part of a slope bordered by a fence.
- Avoid windy locations.
- Avoid planting near trees and shrubs because they may shade the garden site and their roots will compete for nutrients and water.

### 2. Planting Depth

- *Tomato transplants* can be set deep or, if the plant is spindly, it can be planted on its side in a long trench. Remove all leaves which will be below ground level.
- *Bell peppers and squash plants* are planted at the same depth as they are in the pots; generally 3 to 4 inches.

- *Squash seeds* are planted to a depth of 4 to 5 times the seed width in sandy soils or in soils high in organic matter. If soils are heavy with a high silt or clay content, cover the seeds only 2 to 3 times the seed width. Then, apply a band of sand, fine compost, or vermiculite 4" wide and ¼" thick over the seeds. These materials reduce crusting of the soil, and make it easier for seedlings to push through the soil surface, and help retain soil moisture.

### 3. Spacing

- *Tomato plants* can be set 1 to 3 feet apart. If plants are staked and pruned to one or two main stems they can be placed 12" to 18" apart.
- *Bell pepper plants* can be set as close as 12" by 12". This is an intensive gardening method and requires particular attention to fertilizing and adequate watering.
- *Zucchini squash* are planted in "hills." A hill is not a mound, but is a group of seeds or plants. Plant 4 to 5 seeds per hill and later thin to 3 or 4 sturdy seedlings. Hills can be placed as close as 48" by 48" using the intensive gardening method.

### 4. Planting time and temperature

- *Tomatoes* can be planted as soon as the soil is in good workable condition and the danger of frost is past. (In some areas that may be as early as May 1, in other areas late May.) Soil temperature for vegetative growth is 50-55F. Nighttime air temperatures for fruit set are minimum 55-56F, optimum 59-68F and maximum 72F.
- *Bell peppers* are very sensitive to cold temperatures. They require a soil temperature of at least 55-60F for vegetative growth. Some varieties will not grow or blossom even after the soil is warm if planted when the soil temperature is too cold. Air temperature required for growth is a minimum of 60F, optimum 70-80F and maximum 95-100F.
- *Zucchini squash* germination requires a minimum soil temperature of 60F, with the optimum range between 70 and 95F.

### 5. Plastic mulches

Tomatoes, bell peppers and zucchini squash respond well to plastic mulch. Plastic mulch conserves moisture, controls weeds, increases soil temperature, protects fruit from ground rot, enhances early fruiting, and increases yield and fruit quality. Black plastic is useful but red plastic has the advantage of enhancing growth and yield.

A cloche made from a bottomless 1-gallon plastic milk jug can protect young tomato plants early in the season by trapping heat and limiting evaporation.

## **Watering**

Vegetables need about 1" of water a week from April to September. During dry periods, add 1" to 2" of water every week (65-130 gallons per 100 square feet). The frequency of irrigation is determined, in part, by the weather and your soil.

Not all water in the soil is available to plants, particularly if the soil is heavy clay. Clay particles hold soil moisture tightly. If there is 4½" of water per foot of clay soil, as little as 1½" may be available for plants.

Amending your soil (mixing in at least 2 inches of compost) is the first step in improving moisture conditions; clayey soils will drain better even as sandy soils will hold moisture longer.

## **Fertilizing**

*Tomatoes:* Composted manure mixed into the soil adds both organic matter and fertilizer. To give young plants a good start place a handful (1 to 2 ounces) of a complete fertilizer (for example, 4-12-4, 5-10-5, or 5-10-10) in a circle 3" away from the plant and 3 to 4" deep. At about fruit set time, apply more nitrogen in a ring about one foot way from the plant to help sustain production.

*Bell peppers:* One pound of fertilizer (20-20-20 for example) for each 100 square feet is recommended before planting. One week after blossoming begins, side dress with 1½ ounces of ammonium sulfate for each 10 feet of row.

**Blossom end rot** is a physiological condition that affects tomatoes and bell peppers, but rarely zucchini squash. It causes the ends of the fruit to rot.

This is caused by a calcium deficiency in the plant. Calcium is either unavailable in the soil, or calcium

doesn't move to the end of the fruit because of inadequate or erratic watering.

Suggested remedies:

- Add lime to the soil every two to three years.
- Mulch with plastic or organic materials to help maintain moisture levels.
- Water so the soil is evenly moist. On average, water deeply every 7-10 days to a depth of 2 feet; check the soil to know for certain.
- Restrict cultivation to the top inch or two of soil to avoid damaging the roots.

## **Pollination**

Zucchini and summer squash are monoecious plants; that is, they bear separate male and female flowers on a single plant. A female flower always has a small undeveloped squash directly behind the flower. But sometimes the fruit rots rather than develops, this due to lack of pollination.

Only the female flowers can set and develop fruit. Fruit development is possible only if insects transfer pollen from male flowers to female flowers. If insects aren't active, hand pollinate by taking a male flower and dusting the pollen from the anther (central peg-like structure) onto the stigma (the top of the sticky peg-like structure in the center) of the female flower.

## **Diseases**

Various diseases can affect vegetables. It is important to know the cause so that the disease can be prevented. Call the Master Gardeners in your county for advice; see phone numbers below.

Powdery mildew is such a common problem with zucchini squash late in the season that almost all the plants get it. Warm daytime temperatures and late-day dew in summer favor disease development. Because it's typically late in the season, the usual treatment is to remove the affected leaves.

## **Additional Information**

Oregon State University publications are available at your county's OSU Extension Service office.

Some publications are available online at <http://extension.oregonstate.edu/gardening>

*Grow Your Own Peppers* (EC 1227)

*Grow Your Own Tomatoes* (EC 1333)

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

*Planning Your Home or Farm Vegetable Garden* (EC 871)

*Blossom End Rot of Tomatoes* (FS 139)

*Storing Pumpkin and Winter Squash at Home* (FS 230)

*To obtain more gardening information, contact your local OSU Extension Office  
Clackamas Co. 503-655-8631 Multnomah Co. 503-445-4608 Washington Co. 503-725-2300  
Or go to the OSU Extension's Gardening Encyclopedia at <http://extension.oregonstate.edu/gardening>  
Or visit Clackamas chapter website [www.clackamascountymastergardeners.org](http://www.clackamascountymastergardeners.org) for other  
10-Minute University™ handouts*