

# 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.

**Tomatoes:** Another consideration is whether a tomato is determinate or indeterminate.

- **Determinate** — A plant growth habit in which 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 stems continue growing in length indefinitely. Indeterminate tomatoes are tall, yield over a long season, and require staking for improved yield.

**Bell peppers:** 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 ideal.
- 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 since they compete for nutrients and water and may shade the garden site.

### 2. Planting Depth

- **Tomatoes** can be planted 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. Apply a band of sand, fine compost, or vermiculite 4" wide and ¼" thick over the seeds. These materials help retain soil moisture, reduce crusting, and make it easier for seedlings to push through the soil surface.

### 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 planted 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, late May in other areas.) Soil temperature for vegetative growth is 50-55°F. Nighttime air temperatures for fruit set are minimum 55-56°F, optimum 59-68°F and maximum 72°F.
- **Bell peppers** are very sensitive to cold temperatures. They require a soil temperature of at least 55-60°F 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 60°F, optimum 70-80°F and maximum 95-100°F.
- **Zucchini squash** germination requires a minimum soil temperature of 60°F, with the optimum range between 70 and 95°F.

### 5. Plastic mulches

Tomatoes, bell peppers and zucchini squash respond well to plastic mulch. This mulch should be black to eliminate weed growth underneath. Plastic mulch conserves moisture, controls weeds, increases soil temperature, protects fruit from ground rot, enhances early fruiting, and increases yield and fruit quality.

A cloche made from a bottomless 1-gallon plastic milk jug can be placed over tomatoes early in the season to trap solar radiation and limit evaporation.

### **Watering**

Vegetables need about 1" of water a week from April to September. During dry periods 1 to 2" of water is needed weekly (65-130 gallons per 100 square feet). 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. Adding organic matter is the first step in improving moisture conditions.

### **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 (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, sidedress 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 the same plant. A female flower always has a small undeveloped squash directly behind the flower. But sometimes they may not bear fruit 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, you will need to hand pollinate by taking a male flower and dusting the pollen on the stigma (the 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.

Powdery mildew is a common problem with zucchini squash late in the season. Warm daytime temperatures and late-day dew in summer favor disease development. 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 online at <http://eesc.orst.edu/>

*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)

*To obtain more gardening information, contact your local OSU Extension Office.*

*Or go to the OSU Extension's Gardening Encyclopedia at <http://extension.oregonstate.edu/gardening>.*

*Clackamas County Master Gardeners 503-655-8631*

*Washington County Master Gardeners 503-725-2300*

Also look for OSU Master Gardeners at Farmer's Markets and County Fairs.