



## Caneberries (Raspberries and Blackberries)

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**Ideal Growing Conditions:** are the same as for strawberries.

**Planting:** Caneberries should be planted in late fall or early summer, 1-2 feet apart in the row, with rows 8 feet apart.

**Training:** Semi-erect or erect raspberries should be grown between two rows of posts tilted wider at the tops than at the bottoms with two wires strung at about 3-5 feet high down the length of the row. The floracanes (second-year canes) should be secured to the wires. This allows room for the primocanes (first-year canes) to grow between the rows and makes for easier access to the fruit at the edges of the bed.

The fruiting canes of trailing raspberries and blackberries may be secured to a single wire or wound in coils between two wires down the length of the row. The first-year canes should be left loose but kept close to the base of the plants to avoid damage from being stepped on. The fruiting canes of semi-erect and erect blackberries should be secured to at least a single wire to support the weight of the fruit.

**Pests:** Two-spotted spider mites - Controls: predatory mites and insecticidal soaps.

Raspberry Crown Borer – Cut out infested canes June through August and look for larvae and/or clearwing moths. Destroy infested plants. Wild berry plants are hosts.

Raspberry Cane Maggots are tiny white, legless larvae; adults are small flies. Affected plants wilt and become discolored. Canes may also swell. Solution: Prune out and destroy infested shoots and canes. Keep plants properly irrigated and vigorous. Lightly infested canes can recover from cane maggot injury; no insecticides should be necessary.

**Diseases:** Virus Diseases (tomato ringspot, raspberry mosaic, tobacco streak, calico, and bushy dwarf virus) – cause weak, spindly canes. Leaves may cup downward and redden or yellow prematurely in fall. Plants become unproductive in 2-3 years. There is no cure. Remove infected plants immediately. Obtain virus-free plants from a nursery.

Phytophthora symptoms include stunted plants; dull green, yellow, red, or purplish leaves and, perhaps, small fruit. Darkened areas may develop in the bark around the crown and upper roots. Symptoms are often more pronounced on the previous season's growth. The most important factor in reducing the threat of Phytophthora rot is good water management. Avoid repeated and prolonged flooding of soil. Remove infected plants and provide good drainage. Avoid water runoff down drains. Some varieties may be resistant.

Verticillium wilt – leaves turn yellow, wither and fall, beginning at the base of the canes and progressing upward. Fruiting canes may take on a bluish-black cast and die as fruits are maturing. Groups of plants may be affected. This fungus will survive in soil and build up on other host plants. **Don't plant in soils formerly planted to other hosts of the fungus, such as tomatoes.** Some varieties may be resistant.

Botrytis produces flattened black masses of sclerotia on infested berry canes in late winter. These germinate in spring to form masses of spores. Infected berries left on the vines may become mummified. Those in storage may be covered with white mycelia. Improve air circulation by opening the canopy. Minimize nitrogen fertilizer applications, and control weeds. Some red raspberry cultivars are partially resistant. Pick

fruit during cool temperatures and refrigerate promptly. Remove fruit mummies and dead leaves before tying up fruit canes in the fall.

Crown Gall – caused by *Agrobacterium* is characterized by wart-like growths on roots, crown area or canes. Severely infected plants may be stunted. Remove and destroy severely infected plants. Be careful not to injure plants while planting, trellising, cultivating, or harvesting. Avoid planting susceptible varieties.

Redberry Mite – which is invisible to the naked eye affects primarily blackberries, causing the fruit to remain red, harden, taste sour and remain on old canes through winter. All or only part of the berry may be affected. Control: lime sulfur or four applications of horticultural oil, beginning at the green fruit stage. Plant only the least susceptible varieties.

Orange Rust – This fungus causes infected plants to have orange, blister-like pustules on the undersides of leaves in the spring. Diseased shoots may recover by midsummer, but developing canes are smaller than normal and bear no fruit the following year. Red raspberries are not affected. Solution: Remove and destroy infected plants, including the roots.

Yellow Rust – occurs mostly on boysenberries and blackberries. Small, yellow, blister-like pustules appear in spring, first on fruiting canes and then on leaves. Canes dry out and crack, which prevents proper ripening of fruit. Solutions: Avoid overhead watering; prune out and destroy diseased canes before rain falls, and apply fixed copper fungicide in spring when new laterals are leafing out & again when flowers start to open.

Anthracnose – *Elsinoe spp.* – causes spots on canes which have purplish margins on young leaves, the spots are yellow and have a narrow, purplish margin. The centers often fall out as leaves expand. Stems and canes may crack and die. Solutions: Remove and destroy infected canes, stems and leaves as symptoms appear. Keep plants pruned. Treat with Bordeaux or lime sulfur during the dormant season just before buds break. To protect new growth, a fungicide of lime sulfur can also be applied in early spring.

Leaf Spot – *Mycosphaerella (Septoria) rubi* can cause 0.12-inch circular lesions on leaves. These have a brown or purple margin and, usually, a whitish center. Lesions on canes and petioles are similar to those on leaves but more elongate. Solutions: Avoid overhead sprinklers; prune to provide good air circulation. Reduce humidity by controlling weeds. After harvest and before fall rains, prune out and destroy old wood and apply a Bordeaux or fixed copper fungicide. Spray again when new laterals are leafing out in spring and again when flowers begin to open. Avoid susceptible varieties. Use an alternate-year fruiting plan where canes are trained up as they grow.

Cane Blight – *Leptosphaeria coniothyrium* causes infected canes to wilt and turn black or brown. Dead leaves and fruit cling to branches. The entire affected cane may be encircled. The spores are spread by wind, and plants can be infected through pruning wounds, growth cracks, or injured roots. Solutions: Avoid injury to plant; prune during dry weather; remove and destroy severely infected plants. A dormant-season application of lime sulfur at the cane base may help reduce the incidence of this disease.

**Notes for all berries:** Handle fruit with care; use solid-bottom containers (not baskets). Store with 90-95 percent humidity. White drupelets (the individual cells) of raspberries are indications of a physiological problem caused by sun and heat. Provide shade during hot days. Strive for heavy foliated plants to assist with shading. To ensure the best possible success with your berry growing experience, obtain your plants only from a nursery which supplies certified virus-free stock.

**References:** “Identification and Control of Insects and Diseases of Berry Crops in the Home Garden”, by **Mark Bolda**, UCCE Farm Advisor, Santa Cruz, Monterey and San Benito Counties presented at the 2006 Statewide, UCCE Master Gardener Conference. **Manuel Jimenez**, UCCE Farm Advisor, Tulare County. **UC IPM Online** Statewide Integrated Pest Management Program.