

FOLIAR AND FRUIT DISEASES OF AVOCADO IN CALIFORNIA

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Phytophthora Fruit Rot

In California, *Phytophthora* fruit rot is caused by *Phytophthora citricola* it causes lesions on fruit of all stages of development. Since the fungus is disseminated to fruit by splashing water, the disease is most prevalent on fruit that are located within three feet of the soil surface. Diseased fruit have a distinct circular black area that usually occurs at the lowest portion of the fruit where water may accumulate before dripping off. The fungus causes a dark colored rot that extends into the flesh. Control is achieved through pruning the lower limbs so that the canopy is at least 24 inches from the ground to help reduce the amount of splashing onto fruit. Infected fruit, whether on the ground or on the tree should be removed since they become a source of fungal inoculum. There are no chemicals labeled for control of this disease on avocado in California.

Anthracnose

Anthracnose, caused by *Colletotrichum gloeosporioides*, is primarily a problem following periods of extended rainfall. Although this is an important disease in South Africa where it causes losses of up to 37% on fresh fruit whereas, in California, anthracnose is not usually a problem except during years with excessive rainfall. The fungus infects leaves causing large, brown, necrotic areas on the margins of leaves and between the major leaf veins. The fungus sporulates in the lesions. Inoculum is disseminated by water splashing to new leaves or fruit. Fruit infections appear as black spots surrounding the lenticels. These infections remain dormant until the fruit begins to ripen. Upon ripening, the individual infection sites will coalesce causing a rot of the skin and flesh. There are no fungicides registered in California for control of this disease. Infected leaves will drop and the tree will recover. If another wet period occurs, however, symptoms may develop again. There are cultural practices that can be done to help control or reduce the amount of disease. These practices include increasing air movement by pruning lower limbs so that the canopy is at least 20 inches above the ground, pruning dead twigs and branches before flowering (fungus survives on dead twigs); remove dead leaves entangled in the tree canopy; and control insect pests which damage the fruit. Temperature is critical to postharvest anthracnose development. Once the fruit starts to ripen, temperatures of 75F and above will accelerate development of anthracnose, while temperatures below 59F will retard development. For optimal control, once fruit are harvested the fruit should be cooled to 41F as soon as possible. Delays in cooling fruit will result in increased postharvest fruit decay. Fruit should never be cooled below 41F because chilling injury may occur.

Bacterial Canker

Bacterial canker is caused by *Xanthomonas campestris*. The bacterium causes initial symptoms that are dark, slightly sunken area on the bark with watery, necrotic pocket under the surface of the bark. As the canker develops, the bark splits, usually at one side of the canker, and the watery fluid oozes out. As the fluid dries a white powdery residue remains on and around the lesion. Cankers are from 0.75 to 4 inches in diameter and often are first

seen at the base of the tree. The bacterium tends to spread upward in a straight line and therefore, bacterial canker can be limited to one side of the trunk or branch. The bacterium also causes necrotic streaks in the xylem of the wood both above and below the initial canker. Severely infected trees may appear less vigorous and have a thin canopy on the affected branches. Leaves often have symptoms of boron deficiency (irregular holes scattered in the leaves). Infected young trees may become stunted. Bacteria need an open wound in order to infect and cause disease. Therefore, the best way to control this disease is by preventing injuries to the tree. In California, disease control is not generally necessary. Severely infected trees should be removed.

Dothiorella Canker

Dothiorella gregaria causes both a stem canker and a fruit rot. Symptoms of stem canker are generally characterized by a white powder that exudes from the bark in addition to a cracking and shedding of the outer bark. The affected branches or trunk will have a brownish discoloration on the bark that is shallow and flakes off easily. Infected trees may decline gradually and appear less vigorous. Severe infections may kill the tree. Not all avocado varieties are susceptible to this disease. Mexican varieties are much more resistant to this disease than are Guatemalan varieties. Although this disease is not uncommon, especially in wet years, it is not as severe as diseases caused by *Phytophthora* spp. The disease is favored by moist conditions. Where *Dothiorella* stem canker is a problem, do not let dead leaves and debris accumulate around the trunks of the trees, especially when Guatemalan rootstock is being used. In California, control measures are usually not needed. However, if lesions are abundant on the trunk, scraping the outer bark will remove some of the infection and encourage regeneration of vigorous bark.

Dothiorella Fruit Rot

Dothiorella fruit rot is caused by various species of *Dothiorella*. It can cause both a stem-end rot as well as a fruit rot. One characteristic of this disease is that it does not occur when the fruit is still on the tree but develops after the fruit is picked and starts to soften. Initial symptoms are small, superficial necrotic spots that resemble anthracnose on unharvested avocados. Small purplish brown spots may then appear on any part of the fruit, frequently often at the stem end. Necrosis is initially limited to the skin but can extend into the flesh with in 3 to 4 days at 77F. These spots gradually enlarge and may involve the entire fruit surface. The flesh is invaded by the fungus, becomes discolored, and develops an offensive odor. This disease is an occasional but minor postharvest problem of avocados in California. Postharvest handling instruction for anthracnose will also be effective in controlling *Dothiorella* fruit rot.

References

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