



AVRDC - The World Vegetable Center

Fact Sheet

Pepper Diseases

Anthracnose

Colletotrichum gloeosporioides, *C. capsici*, *C. acutatum*, and *C. coccodes*

Found worldwide

Symptoms

All growth stages may be affected, including post-harvest stages. Symptoms occur primarily on ripening fruit often where fruit is touching the soil or plant debris. On ripe fruit there are small, sunken circular depressions up to 30 mm in diameter. The center of the lesions becomes tan in color while the tissue beneath the lesion is lighter-colored and dotted with many dark-colored fruiting bodies of the fungus that form concentric rings in the lesion. The salmon-colored areas on the surface in the central portions of the lesions consist of large masses of fungus spores.

Green fruit may also be infected but symptoms will

not appear until the fruit ripens at harvest time. Such an infection is called latent. Young fruit infected by *C. acutatum* can have visible symptom development.

Foliage and stem symptoms appear as small, irregularly shaped gray-brown spots with dark brown edges.

Among the *Colletotrichum* spp. that affect pepper, *C. gloeosporioides* has the widest host range among solanaceous crops and various biotypes have been reported on hosts. *C. acutatum* has caused severe fruit and foliar damage to pepper in several tropical and



How to Identify Anthracnose



Water-soaked and sunken lesions, sometimes reaching 4 cm in diameter, develop on mature fruits. Note the dark concentric rings of fungal tissue.

regions. *C. coccodes* is the least aggressive species and is more commonly found in temperate regions. In general, disease symptoms caused by the various species of *Colletotrichum* are similar and microscopic analysis is necessary to identify species.

Conditions for Disease Development

These pathogens are seed-borne and may also persist on alternate hosts such as other solanaceous crops (tomato, potato, eggplant), cucumber, and many other cultivated crops and weeds. These pathogens will also readily persist in crop debris and in weeds, in some cases (e.g. *C. coccodes*) as resistant fungal structures called sclerotia. The pathogens will increase in number under continuous cultivation of pepper, tomato or potato. Secondary cycles of anthracnose development during the growing season arise from spores produced on diseased fruit or leaves.

Water-splash or wind-driven rain is required for dispersal of fungus spores or microsclerotia on soil particles. Wounds in fruit are not required for infection but wetness is needed for spore germination and infection.

The optimum temperature for fruit infection is 20–24°C with fruit surface wetness, although infection may occur from 10 to 30°C. However, the longer the period of fruit surface wetness the greater the anthracnose severity. Fruit that are at or near the soil surface are the most likely to become infected by rain-splash or direct soil contact. Overhead irrigation will favor development of anthracnose because of increased relative humidity and increased duration of dew periods.

Control

Select seed from anthracnose-free fruit or treat seeds with a fungicide. Hot water treatment is recommended

to destroy seed-borne fungi. Soak seed at 52°C for 30 minutes. Following treatment, plunge the hot seeds into cold water, dry on paper, and dust with thiram. Freshly harvested seed withstands heat treatment better than one or two-year-old seed.

Use healthy transplants. Sanitize flats if reusing them for transplant production. Broad-spectrum fumigants can be applied to soil in seedbeds to control the pathogens but annual re-application may be necessary if re-contamination of the soil by the fungus occurs.

Avoid potato, soybean, tomato, eggplant, and cucurbits as rotation crops. Rotate with non-solanaceous crops for three years. Mulch to reduce soil splash onto fruit and lower leaves. Minimize or avoid overhead irrigation to reduce periods of wetness on pepper fruit. Harvest fruit as soon as it ripens since anthracnose develops more readily as the fruit ages. Weed regularly and avoid injuring pepper fruit. Allow infested crop debris to decompose completely by deep plowing of crop residues before planting again. If only a few plants are affected by the disease, these can be removed from the field and disposed of. Avoid planting overlapping pepper crops nearby.

Apply protectant fungicides to plants starting when the first fruit are set. This will prevent or minimize the occurrence of infections. Control by fungicide application will depend upon proper dosage and good coverage of fruit. Some sources of resistance have been identified; check with your local extension agent for possible resistant cultivars.

For more information on the production of pepper and other vegetables, go to <www.avrdc.org>.