THE OHIO STATE UNIVERSITY EXTENSION

FACT SHEET

Agriculture and Natural Resources

HYG-3209-08

Anthracnose of Strawberry

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Anthracnose is an important disease of strawberry that can affect foliage, runners, crowns, and fruit. The disease is caused by several species of fungi in the genus *Colletotrichum: Colletotrichum acutatum, Colletotrichum fragariae,* and *Colletotrichum gloesporoides*. They all cause similar or nearly identical symptoms on strawberry. The two most destructive forms of the disease are crown rot, usually associated with *Colletotrichum fragariae,* and fruit rot, usually associated with *Colletotrichum acutatum*.

Historically, anthracnose has generally been restricted to the southern United States and was not common in the northern United States. It has generally been considered to be a "warm weather" or "southern disease" of strawberry. Epidemics of anthracnose fruit rot caused by *Colletotrichum acutatum* have occurred in Ohio, but the crown rot phase has been observed only a few times in the mid-1980s.

Over the past few years, the incidence of anthracnose fruit rot in northern production areas has increased, and there is a concern about the potential impact of this disease in northern, perennial-production systems. Although the disease occurs sporadically and is not common in most plantings in Ohio, when it does occur, it can be devastating, resulting in 100 percent loss of fruit.

Symptoms

The fungus can attack fruit, runners, petioles, and the crown of the plant. Dark elongated lesions develop on petioles and runner stems. Affected petioles and stems are sometimes girdled by lesions, causing individual leaves or entire daughter plants to wilt and die. Under warm, humid conditions, salmon-colored masses of spores may form on the lesion surface. If the crown tissue is infected, crown rot may develop and the entire plant may wilt and die. When infected crowns are sectioned, internal tissue is firm and reddish-brown to dark-brown in color (Figure 1). Crown tissue may be uniformly discolored or streaked with brown.

Whitish, tan, or light-brown water-soaked lesions up to 3 mm in diameter initially develop on fruit. The lesions eventually turn brown or dark-brown, are sunken, and enlarge within two to three days to cover most of the fruit (Figure 2). Lesions are covered with pale-orange or salmon-colored spore masses. Under moist conditions, the fungus may grow out around the edge of the lesion or through the lesion, giving a fuzzy appearance. Infected fruit eventually dry down to form hard, black, shriveled mummies. Fruit can be infected at any stage of development.

Figure 1. Strawberry crown infected with anthracnose.

Figure 2. Anthracnose fruit rot on strawberry.

Disease Development

Although anthracnose can be caused by several species of fungi in the genus *Colletotrichum, Colletotrichum acutatum* is the most common species causing fruit rot in Ohio. The disease is probably introduced into new plantings on infected plants. Recent research indicates that the fungus can grow and produce spores on the surface of apparently healthy leaves.

Once the disease is established in the field, the fungus can overwinter on infected plants and plant debris, such as old dead leaves and mummified fruit. Spore production, spore germination, and infection of strawberry fruits are favored by warm, humid weather and rainfall. In spring and early summer, spores are produced in abundance on previously infected plant debris. The spores are spread by splashing rain, wind-driven rain, and by people or equipment moving through the field. They are not airborne so they do not spread over long distances in the wind. Spores require free water on the plant surface in order to germinate and infect.

The optimum temperature for infection on both immature and mature fruit is between 77 and 86 degrees F. Under favorable conditions, the fungus produces secondary spores on infected fruit. These spores are spread by rain and result in new infections throughout the growing season. Disease development can occur very rapidly. Up to 90 percent of the fruit can be infected within a week or less. Both immature and mature fruit are susceptible to infection; however, the disease is most common on ripening or mature fruit.

Disease Management

1. **Use disease-free planting material.** The disease is introduced to the field with infected plant material. The best way to avoid the disease is to begin with disease-free planting material. Although there are no nurseries that can certify plants to be free of fungal and bacterial plant pathogens, inspection of plants for the disease before planting is recommended.
2. **Proper irrigation.** If the field was previously infected, or the disease is present in the field, minimize the amount of overhead irrigation used. The fungus is spread by splashing water. Avoid the use of overhead irrigation and use drip irrigation if possible.
3. **Mulching.** Plastic mulch increases the level of splash dispersal of the pathogen. Mulching with straw is recommended in perennial matted row plantings to reduce water splash and disease spread.
4. **Remove infected plant parts.** Infected plant parts serve as a source of inoculum for the disease. Remove as much old, infected plant debris as possible. Try to remove infected berries from the planting during harvest.
5. **Fungicide use.** Once anthracnose fruit rot is established in a planting, it is difficult to control with fungicides. Fungicides for control of anthracnose fruit rot should be used in a protectant or preventative program. In order to obtain effective disease control, fungicides should be applied before the disease develops.

For the most current spray recommendations, commercial growers are referred to Bulletin 506-B2, *Midwest Commercial Small Fruit and Grape Spray Guide,* and backyard growers are referred to Bulletin 780, *Controlling Diseases and Insects in Home Fruit Plantings*.

Printed copies of these publications can be obtained from your county Extension educator or the Extension Publications Office, The Ohio State University, 216 Kottman Hall, 2021 Coffey Road, Columbus, Ohio 43210-1044.

More information about plant diseases and online versions of Ohio State University Extension plant disease fact sheets and bulletins, with color figures, are available on the following web sites:

http://plantpath.osu.edu
http://ohioline.osu.edu