THE OHIO STATE UNIVERSITY EXTENSION

FACT SHEET

Agriculture and Natural Resources

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Botrytis Fruit Rot "Gray Mold" of Strawberry, Raspberry, and Blackberry

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Many fungi are capable of rotting mature or near-mature fruits of strawberry, raspberry, and blackberry. Under favorable environmental conditions for disease development, serious losses can occur. One of the most serious and common fruit rot diseases is gray mold. The gray mold fungus can affect petals, flower stalks (pedicels), fruit caps, and fruit. In wet, warm seasons, probably no other disease causes a greater loss of flowers and fruit. The disease is most severe during years with prolonged rainy and cloudy periods during bloom or during harvest.

Figure 1. Early stages of gray mold fruit rot on strawberry.

Symptoms

Young blossoms are usually very susceptible to infection. One or several blossoms in a cluster may show blasting (browning and drying) that may extend down the pedicel. Fruit infections usually appear as soft, light brown, rapidly enlarging areas on the fruit. If infected fruits remain on the plant, the berry usually dries up, "mummifies," and becomes covered with a gray, dusty powder, which gives the disease its name "gray mold." Fruit infection is most severe in well-protected areas of the plant, where the humidity is high and air movement is poor. On strawberry, berries resting on soil or touching another decayed berry or a dead leaf in dense foliage are most commonly affected. The disease may develop on young green fruits, but fruits become more susceptible as they mature. Usually, the disease is not detected until fruits are mature at harvest time. After picking, mature fruits are extremely susceptible to gray mold, especially if bruised. During picking, the handling of infected fruit will spread the fungus to healthy ones. Under favorable conditions for disease development, healthy berries may become a rotted mass within 48 hours after picking.

Causal Organism

Gray mold is caused by the fungus *Botrytis cinerea*. The fungus is capable of infecting a great number of different plants. The disease cycle is very similar for both

Figure 2. Later stages of gray mold fruit rot on strawberry. Note that the fruit is covered by a "gray" mass of fungus growth.

Figure 3. Gray mold fruit rot on raspberry.

strawberries and brambles. The fungus overwinters as minute, black, fungus bodies (sclerotia) or as mycelium in plant debris, such as dead strawberry or raspberry leaves. Recent research has shown that nearly all of the overwintering inoculum in strawberry plantings comes from mycelium in dead strawberry leaves within the row or planting. In early spring, the mycelium becomes active and produces large numbers of microscopic spores (conidia) on the surface of old plant (leaf) debris in the row. Spores are spread by wind throughout the planting where they are deposited on blossoms and fruits. They germinate when a film of moisture is present and infection can occur within a few hours. Temperatures between 70 and 80 degrees F (20 to 27 degrees C) and free moisture on the foliage from rain, dew, fog, or irrigation water are ideal conditions for disease development. The disease can develop at lower temperatures if foliage remains wet for long periods. Strawberries and raspberries are susceptible to *Botrytis* during bloom and again as fruits ripen. Recent research indicates that most fruit infection actually occurs during bloom; however, symptoms usually do not develop until close to harvest. During bloom, the fungus colonizes healthy or senescing flower parts, often turning the blossoms brown. These blossom infections establish the fungus within the receptacle of the young fruit as a "latent" or "quiescent" infection. The fungus generally remains latent in developing (green) fruit until the fruit starts to mature, at which time the fungus becomes active and symptoms (rot) appear. Thus, the most critical period for applying fungicides to control gray mold is during bloom. This is an important point to remember when considering fungicide applications for controlling this disease.

Control

Select a planting site with good soil drainage and air circulation. Plants should be exposed to direct sunlight. Plant rows with the direction of the prevailing wind to promote faster drying of foliage and fruit.

A good layer of straw mulch (or other material) between the rows or around the plants aids greatly in controlling fruit rots. The mulch acts as a barrier that reduces fruit contact with the soil.

Proper spacing of plants and timing of fertilizer applications are also important. Excessive applications of nitrogen fertilizer, especially in the spring before harvest, can produce excessive amounts of dense foliage. Shading of berries by thick foliage prevents rapid drying of the fruit during wet periods and creates ideal conditions for disease development.

Good weed control is very important. Weeds prevent air movement in the plant canopy. This slows drying time of flowers and fruits and increases the chances for infection. Pick fruit frequently and early in the day as soon as plants are dry. Cull out all diseased berries but do not leave them in the field. Handle berries with care to avoid bruising. Refrigerate fruit promptly at 32 to 50 degrees F (0 to 10 degrees C) to check gray mold.

Fungicides are an important disease management tool in commercial plantings, but are generally not effective unless they are timed properly and used in conjunction with the above mentioned cultural practices. Homeowners are encouraged to emphasize the use of cultural practices in order to avoid the use of fungicides.

For the most current fungicide recommendations and spray schedules, 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.*

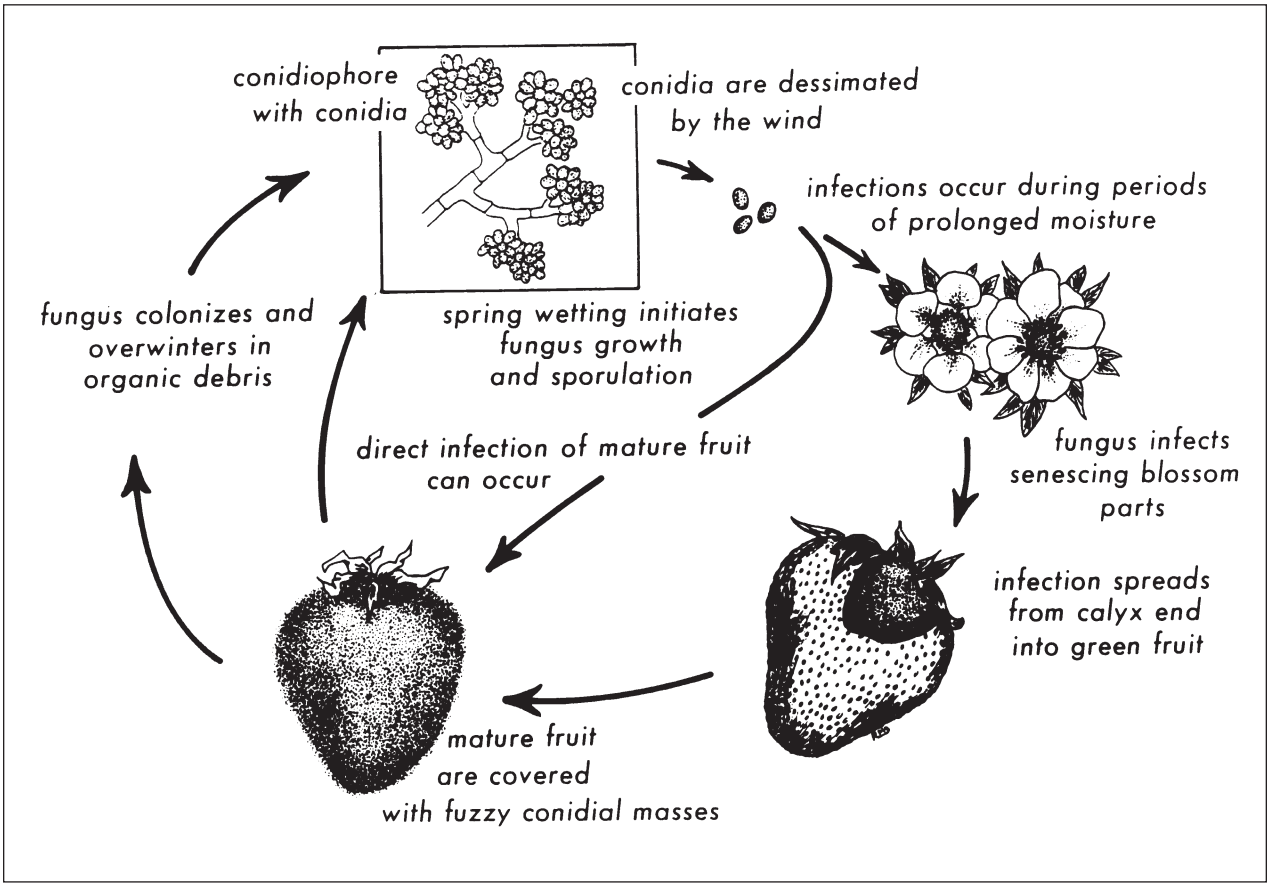

Figure 4. Disease cycle of gray mold on strawberry. We wish to thank the New York State Agricultural Experiment Station for use of this figure. It was taken from the Small Fruit IPM Disease Identification Sheet No. 1.