THE OHIO STATE UNIVERSITY EXTENSION

FACT SHEET

Agriculture and Natural Resources

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Grape Black Rot

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Black rot is one of the most damaging grape diseases in Ohio. All cultivated varieties of grapes are susceptible to infection by the black rot fungus. If not controlled, some or all of the grapes within a cluster will be rotted. The disease is favored by warm, humid weather as is found during the summer throughout most of Ohio. Before good control measures were devised, vineyards along the Ohio River often were hard hit. Grape growers commonly lost most of their crop, and the grape industry was literally driven out of the area.

Symptoms

Symptoms of black rot first appear as small yellowish spots on leaves. As the spots (lesions) enlarge, a dark border forms around the margins. The centers of the lesions become reddish brown. By the time the lesions reach 1/8 to 1/4 inch in diameter (approximately two weeks after infection), minute black dots appear. These are fungal fruiting bodies (pycnidia) and contain thousands of summer spores (conidia). Pycnidia are often arranged in a ring pattern, just inside the margin of the lesions. Lesions may also appear on young shoots, cluster stems, and tendrils. The lesions are purple to black, oval in outline, and sunken. Pycnidia also form in these lesions. Fruit symptoms often do not appear until the berries are about half grown. Small, round, light-brownish spots form on the fruit. The rotted tissue in the spot softens, and becomes sunken. The spot enlarges quickly, rotting the entire berry in a few days. The diseased fruit shrivels, becoming small, hard, black and wrinkled (mummies). Tiny black pycnidia are also formed on the fruit mummies. The mummies usually remain attached to the cluster.

Figure 1. Black rot lesions on grape leaf.

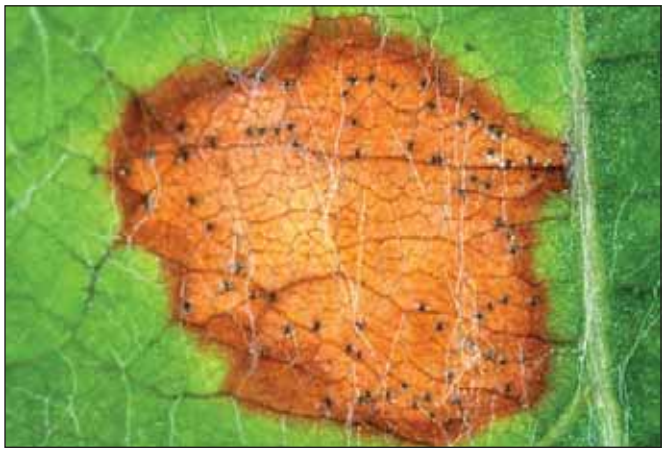

Figure 2. Close-up of black rot lesion on grape leaf. Note the tiny black dots (fungal fruiting bodies) in the lesion.

Causal Organism

Grape black rot is caused by the fungus, *Guignardia bidwellii*. Black rot survives the winter in cane and tendril lesions and fruit mummies. In the spring during wet weather, the pycnidia on infected tissues absorb water and conidia are squeezed out. Conidia are splashed about randomly by rain and can infect any young tissue in less than 12 hours at temperatures between 60-90 degrees F. A film of water on the vine surface is necessary for infection (Table 1). A second type of spore, an ascospore, may also be produced in overwintered fruit mummies. Ascospores are forcibly discharged into the air and can travel considerable distances. Research has shown that ascospores are an important source of primary infections in the spring.

Control

1. Sanitation is important. Destroy mummies, remove diseased tendrils from the wires, and select fruiting canes without lesions. It is very important not to leave mummies attached to the vine. Research has shown

Figure 3. Close-up of grape black rot mummies.

Figure 4. Grape berries infected with black rot. Note the shriveled mummies.

Table 1. Leaf wetness duration and temperature necessary for infection by the black rot fungus.

Temperature (degrees F)	Hours of leaf wetness required for infection
45	No infection
50	24
55	12
60	9
65	8
70	7
75	7
80	6
85	9
90	12

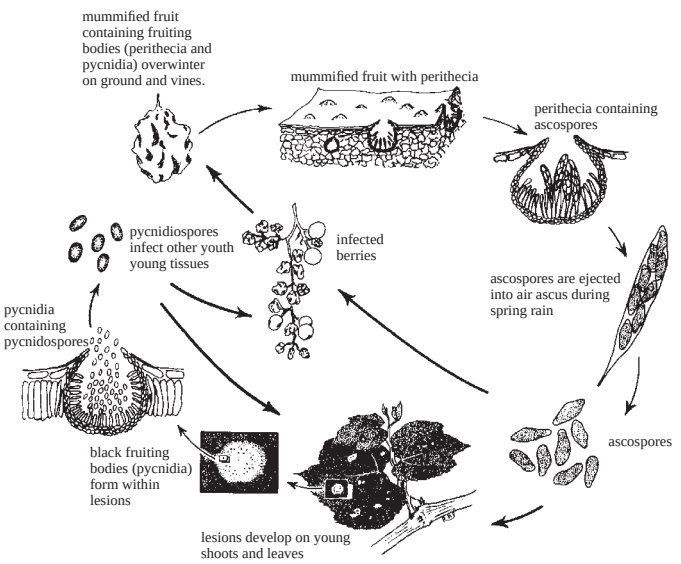

Figure 5. Disease cycle of grape black rot. We wish to thank the New York State Agricultural Experiment Station for use of this figure. Taken from Grape IPM Disease Identification Sheet No. 4.

that mummies on the ground release most or all of their ascospores before the end of bloom. Mummies left up in the trellis can produce ascospores and conidia throughout the growing season, thus making control of this disease much more difficult. If only a few leaf lesions appear in the spring, remove these infected leaves.

2. Plant grapes in sunny open areas that allow good air movement. Proper row orientation to prevailing winds and good weed control beneath the vines also enable plants to dry more quickly during wet weather.
3. A good fungicide spray program is extremely important. Early season control must be emphasized. The most critical period to control black rot with fungicides is during the period from early bloom through 3 to 4 weeks after bloom. 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.* 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.