

BITTER ROT OF GRAPE

Bitter rot, caused by the fungus *Greeneria uvicola* (Syn. *Melanconium fuligineum*), is a disease of ripe fruit. The name was derived from the bitter taste that develops in infected berries. If 10 percent of the berries used to make wine have bitter rot, the wine may be undrinkable. Bitter rot occurs in the eastern United States, but is more common in southern states. The disease has been reported from other grape growing areas of the world.

Symptoms

The pathogen usually invades a berry from the pedicel. Light-colored berries become brownish and often show concentric rings of spore-producing structures (acervuli) (Figure 1) before the entire berry is involved. On green berries, the surface may take on a roughened, sparkly appearance as the acervuli begin to develop. Within a couple of days, the berry is softened and is easily detached. At this stage, the bitter taste of the berry is most pronounced. Berries that do not shell continue to dry, become firmly attached, and are less obviously bitter in taste. When shriveled, the rotted berries look much like berries affected by black rot, ripe rot, or the fruit-infection stage of Phomopsis cane and leaf spot.

The pathogen may cause a girdling of shoots of cultivars of *Vitis vinifera*. On muscadine grapes, the pathogen causes flecking of young leaves, stems, and individual flower buds; olive brown lesions with acervuli on young green berries; and blight of pedicels. As berries approach maturity, the disease may spread rapidly, causing more berry infection.



Figure 1. Bitter rot of grape fruit.
(Courtesy APS, M. A. Ellis).

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Disease cycle

The pathogen can overwinter on senescent and fallen leaves and berries, on cold damaged shoots, and in necrotic bark layer of year-old shoots. The fungus can invade any injured tissue and produce acervuli. The pathogen usually does not move beyond the damaged areas into healthy green tissues.

Fruit infection starts after flowering. The pathogen invades the dead cells and remain latent until the berry reaches maturity. It then invades the pedicel and move into the berry. At this stage, plenty of conidia are produced and can rapidly spread and cause infection. Bird pecking, insect injury, or cracking of berries due to rain will permit conidial infection of berried. Infection occurs from 54 to 86°F.

Disease management

Most cultivars have moderate to good resistance against bitter rot disease. Susceptibility within any cultivar increases with fruit maturity, so fruit that remains on the vine past normal harvest is vulnerable to infection. Following practices have been recommended for management of bitter rot of grapes.

1. Promote good air circulation and light penetration by controlling weeds and suckers, proper pruning, and positioning or removing shoots for uniform leaf development. Where possible, rows should be planted in the direction of the prevailing wind. Good air circulation and light penetration will promote faster drying of plant parts and reduce disease incidence.
2. Prevent wounding of berries by controlling insects, birds, and other grape diseases.
3. It is important that growers and winemakers be able to distinguish between bitter rot and black rot. Because black rot infects only green berries, the fungicide sprays for controlling it are generally stopped when berries begin to change color. Stopping sprays at this time could be disastrous if bitter rot is present because it infects fruit only after the berries have changed color.
4. The fungicide spray program that is recommended for control of the more common grape diseases should be beneficial in controlling bitter rot. However, if the late-season or preharvest sprays are omitted, the potential for bitter rot development is greatly increased. For the update information on fungicide use for managing bitter rot of grapes, check the Midwest Fruit Pest Management Guide, University of Illinois Extension - ICSG (<https://ag.purdue.edu/hla/hort/documents/id-465.pdf>). This is an annually updated publication.