

# Ripe Rot of Grape

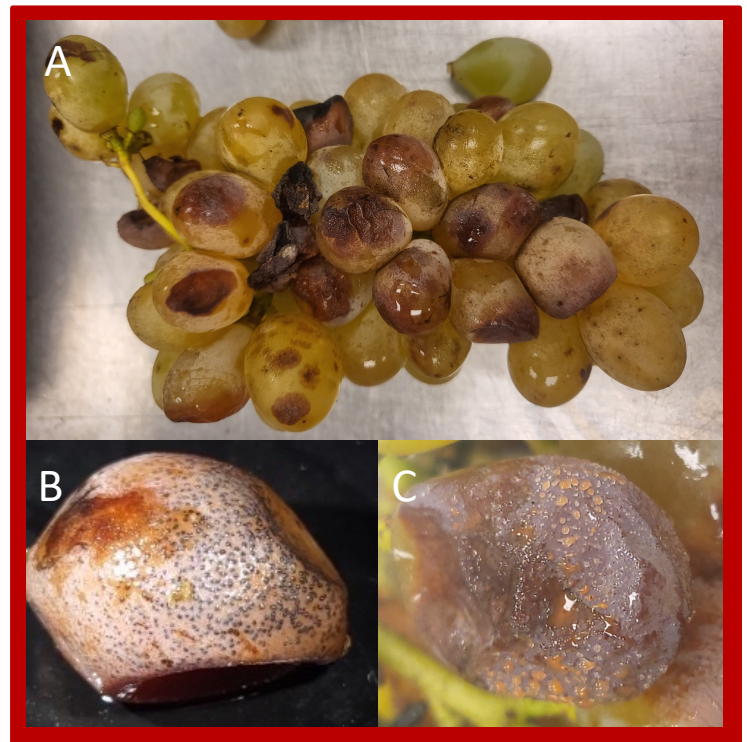
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Ripe rot is a late-season disease that primarily occurs in warm, moist, growing regions in the southeastern United States. However, outbreaks in Ohio and other states in the Midwest and Northeast occur when conditions are warm and wet during fruit maturation. The disease is caused by multiple species of the fungus *Colletotrichum*. Ripe rot reduces fruit yield and adversely affects the chemical composition and quality of grapes and wine, leading to undesirable flavors and color.

The fungus primarily overwinters on mummified berries and infected pedicels or peduncles, but also overwinters in woody tissues and dormant buds.

## Disease Development and Symptoms

Ripe rot is caused by multiple species of the fungus *Colletotrichum*. In the spring, warm (77–86 degrees Fahrenheit /25–30 degrees Celsius) rains initiate the production and release of spores from tissues infected the previous season. Berries are susceptible to infections from bloom through harvest, but symptoms first appear just after veraison (the onset of ripening) and close-to-fruit maturity. Symptoms on berries of white-fruited cultivars first appear as reddish-brown circular lesions (Figure 1A) that can be mistaken for sunburn or chemical injury. The lesions expand in concentric circles until they cover the entire berry. As the berries rot, they become covered with black spots (fungal fruiting bodies or acervuli). During wet weather, the berries become covered with salmon-colored spore (conidia) masses (Figure 1B and 1C). Symptoms on red-fruited berries can be difficult to discern without the presence of spores and can be confused with sour rot (see [PLPATH-FRU-50 Sour Rot Disorder of Grape](#)). Rain spreads spores to other berries and clusters. The berries eventually shrivel into hard raisin-like structures called mummies, which usually remain attached to the berry cluster. Disease symptoms on the leaves, shoots, peduncles (cluster stems), or pedicels (berry stems) are not common.



**Figure 1.** Ripe rot of white-fruited grape. Reddish-brown circular lesions on berries are the first symptoms of ripe rot (A). Berries covered in fruiting bodies of the ripe rot fungus (B). Salmon colored spores on the surface of a berry (C).

## Management

### Cultivar Selection

All cultivated grape (North American, *V. vinifera*, and interspecific hybrids of *V. vinifera*) varieties are susceptible to infection by the ripe rot fungus. However, some varieties appear to be more susceptible than others (Table 1). Susceptibility can vary from season to season.

Table 1. List of ripe rot susceptibility of common varieties grown in the Midwest and Northeastern United States<sup>1</sup>.

Resistant	Chardonel, Concord, Delaware, Ontario, Syrah
Susceptible	Chambourcin, Chardonnay, Marquette, Merlot, Niagara, Neptune, Sauvignon Blanc, Seyval
Highly Susceptible	Cabernet Franc, Cabernet Sauvignon, Carlos, Flame Muscat, Golden Muscat, Petit Verdot, Vidal Blanc

<sup>1</sup>Data from Shiraishi et al. 2007

### Cultural Practices

Dormant season pruning to remove mummies can reduce the number of spores produced and released in the spring. Pruning debris should be removed from the vineyard before bud break, especially vineyards with a history of ripe rot.

### Chemical Control

Fungicides applied early in the season, from bloom to three to four weeks after bloom, are effective at preventing infections and limiting late-season rot. If weather conditions favor disease development close to harvest (i.e., warm, wet, high humidity), additional fungicide applications are recommended. For late-season fungicide applications, always check the pre-harvest interval (PHI) of the fungicide to confirm that it can be used close to harvest.

Commercial growers can consult the *Midwest Fruit Pest Management Guide* (Bulletin 506) and/or *Developing an Effective Fungicide Spray Program for Wine Grapes in Ohio* (Plant Pathology Series No. 147) for current fungicide recommendations.

Backyard growers should integrate early-season fungicide application with cultural practices to control ripe rot disease. Ripe rot disease can be confused with other fruit rots, such as sour rot or black rot. Backyard growers are encouraged to

contact the C. Wayne Ellett Plant and Pest Diagnostic Clinic ([ppdc.osu.edu](http://ppdc.osu.edu) or 330-263-3721) for disease confirmation before making late-season fungicide applications.

### Post-harvest Storage Practices

Grape clusters with ripe rot can negatively affect the quality and color of wine or juice. Fruit infected with ripe rot fungus that have not developed symptoms may develop symptoms during storage. To prevent rotting while in storage, sort out cracked, discolored, and rotting berries; place the berries in a breathable container; and store them at 30–32 F (-1–0 C).

### Useful Resources

To learn more, check out Ohio State University Extension resources on ripe rot of grapes and related topics:

*Developing an Effective Fungicide Spray Program for Wine Grapes in Ohio* from *Fruit Pathology Laboratory* website from Ohio State University Extension at [u.osu.edu/fruitpathology](http://u.osu.edu/fruitpathology).

*Sour Rot Disorder of Grape*, (2021) from Ohio State University Extension's *Ohioline*, at [ohioline.osu.edu/factsheet/plpath-fru-50](http://ohioline.osu.edu/factsheet/plpath-fru-50).

Midwest Fruit Pest Management Guide (OSU Bulletin 506) from Purdue Extension Education Store at [ag.purdue.edu/department/hla/extension/sfg-sprayguide](http://ag.purdue.edu/department/hla/extension/sfg-sprayguide).

### Reference

Shiraishi, M., Koide, M., Itamura, H., Yamada, M., Mitani, N., Ueno, T., Nakaune, R., and Nakano, M. 2007. Screening for resistance to ripe rot caused by *Colletotrichum acutatum* in grape germplasm. *Vitis* 46:196-200



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