Plant Disease and Insect Advisory

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Be proactive about managing black rot on your grapes

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In Oklahoma, black rot, caused by the fungus *Guignardia bidwellii*, is the most important foliar disease of grapes. Black rot can be managed using cultural practices and chemical control. However, last season's abnormally large amount of rainfall and mild temperatures made for a challenging season for managing pathogens in the vineyard. This included black rot. Many growers found it difficult to get into the field to make fungicide applications, or they found that their "resistant" variety wasn't so resistant when the weather was continuously favorable for disease development. As a result, a significant level of disease was present in many vineyards. This has implications for this season too. All of last year's disease has resulted in the production of large quantities of primary inoculum available for production of new infections this season. As many varieties are beginning to approach cap fall, and flowering this season, it is important that growers continue to focus their attention on protecting their crop from infection by the black rot fungus.

Black rot will manifest on leaves (Fig. 1), petioles (Fig. 2), and canes initially, followed by secondary infections of fruit (Fig. 3). Most loss is a result of direct destruction of the fruit by the fungus. Genetic resistance is the easiest and most economical method of management for this disease. Most *Vitis vinifera* grapes are highly susceptible to *G. bidwellii,* while many French-American hybrids and American varieties have better resistance to the fungus that causes black rot.

Fungicides are available for managing the disease. Fungicides should be used preventatively when weather is predicted to be favorable for infection and disease development. Infections by the fungus are driven by a combination of continuous leaf wetness and specific temperatures (Table 1). Temperatures of 70˚F to 80˚F require the smallest duration of leaf wetness and are the most favorable temperatures for fungal infection. In Oklahoma, preventative applications of fungicides should begin when shoots are 3-10 inches in length and continue at regular intervals (Table 2). The most critical time for application of fungicides is just prior to bloom until at least 4-to-6 weeks post-bloom. Once veraison is initiated, natural resistance in the fruit exists and fungicides are not required. Growers should not forget about

the presence of other pathogens in their vineyard however. Chemical management of powdery mildew must continue until harvest and may even require an application of fungicide post-harvest. Spray intervals should also be shortened if extended periods of wet weather are forecasted. Fungal resistance to fungicides should also be considered. Fungicides should be rotated frequently to minimize the occurrence of fungicide resistant populations of pathogens in the vineyard. In addition to chemical management, growers should use good cultural practices in their vineyards to prevent black rot. Proper canopy management and sanitation, including removal of mummies from the canopy and cultivation or burial of debris can help limit damage caused by the black rot fungus.

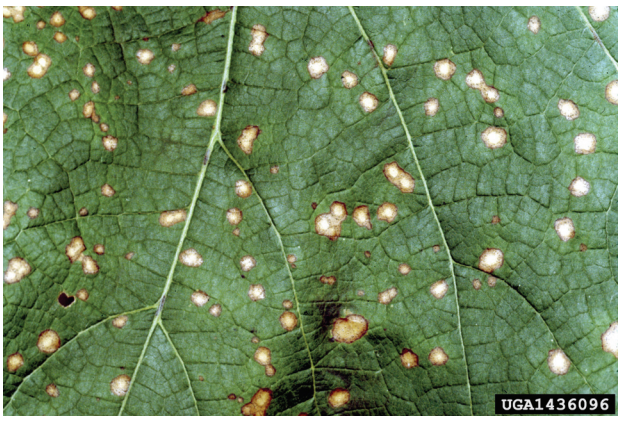

Fig 1. Leaf spot symptoms caused by the black rot fungus (Clemson University - USDA Cooperative Extension Slide Series, Bugwood.org).

Fig 2. Petiole lesion symptoms of black rot, with fruiting bodies of the black rot fungus in the lesion middles (Clemson University - USDA Cooperative Extension Slide Series, Bugwood.org).

Fig 3. Shriveled grapes as a result of infection by the fungus that causes black rot (Clemson University - USDA Cooperative Extension Slide Series, Bugwood.org).

Table 1. Hours of continuous leaf wetness required for an infection by the fungus that causes black rot at select temperatures.

Temperature (˚F)	Minimum hours of continuous leaf wetness
50	24
55	12
60	9
65	8
70	7
75	7
80	6
85	9
90	12

Spotts, R.A. 1977. Effect of leaf wetness duration and temperature on the infectivity of *Guignardia bidwellii* on grape leaves. Phytopathology 67:1378-1381

Table 2. A potential fungicide program for growers in Oklahoma concerned about black rot management, in addition to other select grape diseases**.**

Plant growth stage	Fungicide (active ingredient)	Labeled rates/acre	Spray interval (days)
3-10 inch shoots	Dithane DF Rainshield (mancozeb) +	3-4lb. +	10-14
	Quintec (quinoxyfen)[1]	3-4 fl. oz.	
Immediate pre-bloom/Early bloom	Nova 40WP (myclobutanil)[2]	3-5 oz.	7-10
Late Bloom	Elite 45DF (tebuconazole)[2]	4 oz.	7-10
Post Bloom	Abound (azoxystrobin)[2,3]	11-15.4 fl. oz.	10-14
First Cover	Elite 45DF (tebuconazole)[2]	4 oz.	7-10
Second Cover	Pristine (pyraclostrobin+boscalid)[2,3]	6-10.5 oz.	10-14

[1]Quintec should be tank mixed with Dithane for early season powdery mildew control
[2]These products also control powdery mildew
[3]DO NOT apply more than two consecutive sprays of strobilurin fungicides (MOA Class 11) and apply no more than 4 per season

Additional Notes:
Black rot focused control can end once fruit becomes resistant (fruit resistant 4-5 weeks after cap fall), however, MAINTAIN POWDERY MILDEW CONTROL UNTIL HARVEST
Pre-Harvest/Harvest: Some years Botrytis and other bunch rots will be a concern. Elevate 50 WG (fenheximide; pre-harvest interval (PHI) = 0 days; also can suppress powdery mildew) may be helpful in these situations. Growers could also use Pristine (PHI = 14 days) during this period if they have not made too many applications, or too many consecutive applications of strobilurin fungicides.
If downy mildew is a problem, Ridomil Gold (mefenoxam; PHI = 42 days) is an effective product; Abound is also effective, but fungicide resistance is a risk.

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