

Scouting for diseases in grapes

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Important grape diseases in the Midwest

- Powdery mildew (*Uncinula necator*)
- Downy mildew (*Plasmopara viticola*)
- Black rot (*Guignardia bidwellii*)
- Phomopsis cane and leaf spot (*Phomopsis viticola*)
- Botrytis bunch rot (*Botrytis cinerea*), Sour rot (yeast, etc.)
- Eutypa dieback (*Eutypa lata*)
- Anthracnose (*Elsinoe ampelina*)
- Crown gall (*Agrobacterium tumefaciens*)
- Viruses (various)

CHARACTERISTICS of DISEASES

- Scouting for symptoms, rather than the pathogen itself (sometimes fruiting bodies)
- Some are patchy in the vineyard; others are more widespread
- Pathogens overwinter on/in the vine, on the ground, or in the soil
- Diseases develop on different parts of the vine

CHARACTERISTICS of DISEASES

- Each disease has different requirements for wetness and temperature
- Understanding basic requirements can help predict disease outbreaks
- Grape cultivars differ greatly in susceptibility to diseases; know your grapes and/or use "indicator plants"

CHARACTERISTICS of DISEASES

- Infections may not show for a long time (latent infections):
e.g. Black rot, Phomopsis, Eutypa
- Protect vines when pathogen is active, and plant is susceptible; sometimes when you symptoms it is too late

Scouting for diseases in grapes

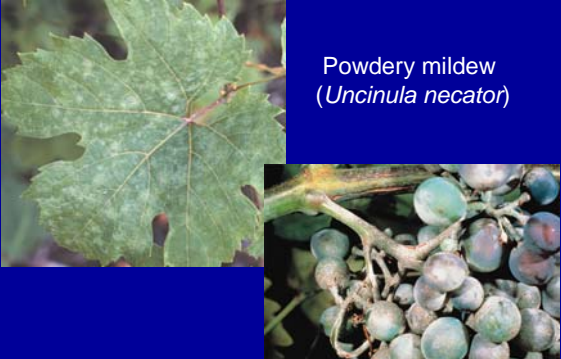
Vine growth stage	Bud swell	1-5" shoot	8-12" shoot	Pre-bloom	Bloom	Pea-sized	Berry touch	Bunch closing	Veraison	Pre-harvest	Harvest	Post-harvest
Insects												
Cutworm	+	+										
Rose chafer				+	+	+						
Grape berry moth				+	+	+	+	+	+	+	+	+
Grape leafhopper				+	+		+	+	+	+	+	
Potato leafhopper			+	+	+							
Japanese beetle								+	+	+		
Diseases												
Phomopsis		+	+	+	+	+	+	+	+	+	+	
Black rot		+	+	+	+	+	+	+	+	+		
Downy mildew		+	+	+	+	+	+	+	+	+	+	+
Powdery mildew		+	+	+	+	+	+	+	+	+	+	+
Botrytis bunch rot					+			+	+	+	+	

Usual time for monitoring and control.
 Lesser risk, but monitoring and control may still be required.
 + Potential period of insect activity or disease infection risk.

Developed by A. Schilder and R. Isaacs
Michigan State University

MONITORING AND CONTROL STRATEGIES

- Risk assessment based on previous year
- Go in at critical times to look for primary symptoms
- Prevent new infections
- Monitoring weather and growth stage



Powdery mildew
(*Ucinula necator*)



Greyish-white powder on surface

Infections at bloom can cause poor fruit set



Powdery mildew on berry

Infections can cause berry splitting



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Downy mildew (*Plasmopara viticola*)



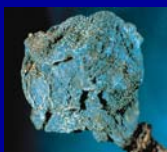
Sporulation



Black rot (*Guignardia bidwellii*)



Black rot (*Guignardia bidwellii*)



Requirements for infection by *Guignardia*

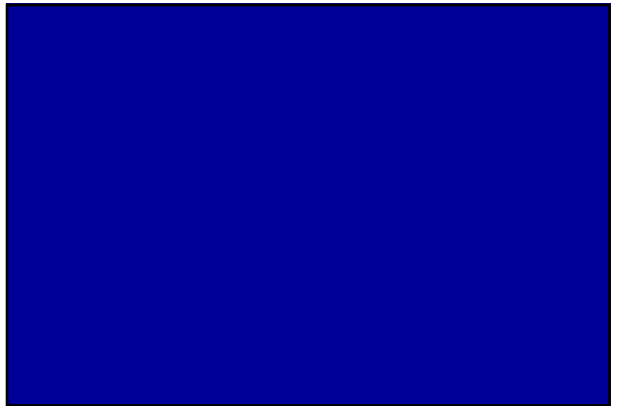
Temperature (°F)	Hours of leaf wetness
50	24
55	12
60	9
65	8
70	7
75	7
80	6
85	9
90	12

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Phomopsis cane and leaf spot (*Phomopsis viticola*)



This slide illustrates Phomopsis cane and leaf spot. It features three photographs: a close-up of a grape cane with characteristic longitudinal lesions, a leaf showing necrotic spots, and a magnified view of the lesions on a leaf surface.




Phomopsis fruit rot (*Phomopsis viticola*)



This slide illustrates Phomopsis fruit rot. It features three photographs: a hand holding a bunch of grapes with some rotting fruit, a magnified view of a single grape showing a dark, necrotic lesion, and a bunch of grapes on a vine with several rotting berries.

Bunch rots (*Botrytis*, yeasts, bacteria)



This slide illustrates bunch rots. It features three photographs: a bunch of green grapes with some rotting berries, a bunch of purple grapes with rotting berries, and a bunch of grapes on a vine with several rotting berries.

Anthracoze (*Elsinoe ampelina*)



This slide illustrates Anthracnose. It features two photographs: a leaf showing necrotic spots and a bunch of grapes with several rotting berries.



This slide illustrates Anthracnose on grapes. It features three photographs: a bunch of grapes with several rotting berries, a magnified view of a single grape showing a dark, necrotic lesion, and another magnified view of a single grape showing a dark, necrotic lesion.

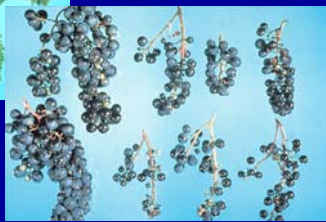
Eutypa dieback
(*Eutypa lata*)



Crown gall (*Agrobacterium vitis*)



Ringspot decline (tobacco/tomato ringspot virus)



Correct disease
diagnosis!