

# Disease Management in the Vineyard

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NORTHEAST OHIO WINTER GRAPE SCHOOL

FEBRUARY 2018

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# Drivers of Disease Management Programs in the Vineyard

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**Black Rot**



**Downy Mildew**



**Powdery Mildew**

# Integrated Disease Management

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- Scout fields regularly
  - Once a week
  - Flag problem spots
- Early and accurate diagnosis
  - Confirm the problem BEFORE you treat

- Black rot
- Crown gall
- Diaporthe dieback
- Downy mildew
- Phytophthora root rot
- Sunscald
- Herbicide injury



# Integrated Disease Management

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- Cultural Practices
  - Pruning and leaf removal to promote air flow
  - Hilling to reduce winter injury
    - Cover graft union
    - Avoid mechanical damage to trunk



# Integrated Disease Management

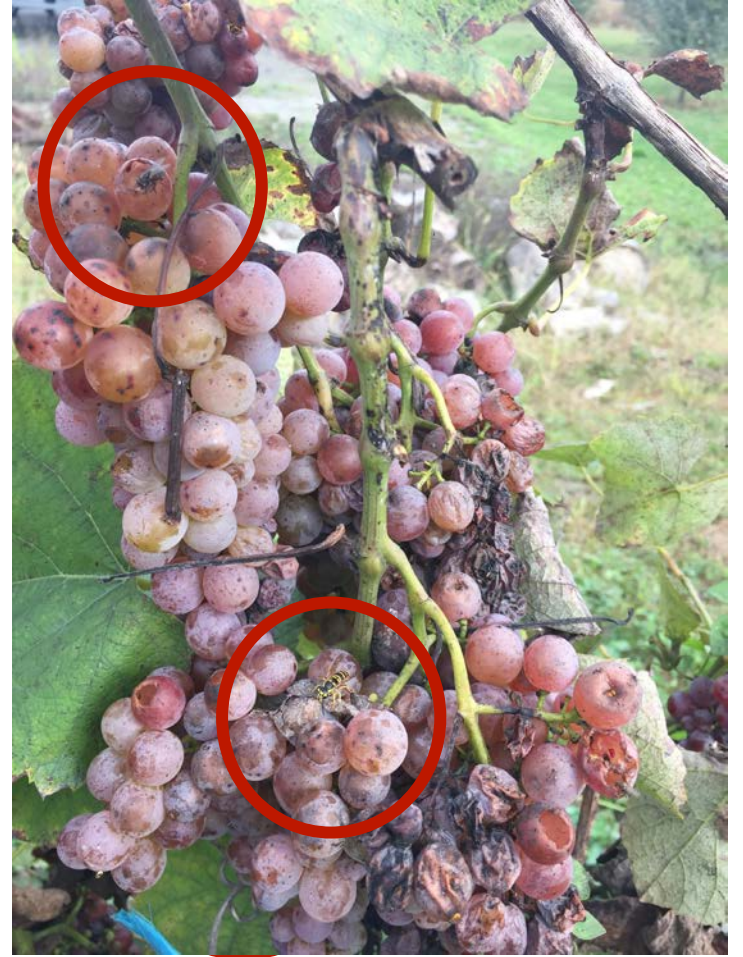
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- Sanitation Practices
  - Plant debris and mummy removal
  - Do not compost diseased plant material
  - DO NOT neglect old plantings



mummies





# Monitoring and Forecasting Tools

- Powdery mildew primary infection
- Phomopsis infection events
- Black rot infection events
- Downy mildew infection events
- Accumulated growing degree days

**NEWA Grape Forecast Models**

Select a disease or insect:  
Grape Diseases

State:  
Ohio

Weather station:  
Wooster

Ending Date:  
04/17/2017

Calculate

Map Results More info

**Grape Disease Infection Events for Wooster**

	Past Apr 15	Past Apr 16	Current Apr 17	Ensuing 5 Days				
				Apr 18	Apr 19	Apr 20	Apr 21	Apr 22
<b>Phomopsis</b>	No	No	No	No	Combined	Combined	Yes	No
<b>Powdery Mildew</b>	No	Yes	No	No	Yes	Yes	No	No
<b>Black Rot</b>	No	No	No	No	Combined	Combined	Yes	No

**Phomopsis** - calculates when weather conditions may allow spores to infect susceptible tissue.  
**Powdery Mildew** - calculates primary infection when weather conditions may allow overwintered, primary spores (ascospores) to infect susceptible tissue; runs from bud break until pre-bloom. Once primary infections have occurred, secondary infections (disease spread) are possible every day. The threat is greatest when temperatures are between 65 to 90 degrees F and is particularly high when conditions are cloudy.  
**Black Rot** - calculates when weather conditions may allow spores to infect susceptible tissue.

Phenological stage: Preseason

Choose the phenology stage for the grape variety of interest to display management messages. Concord grape phenology is estimated by the model from historical records for this variety.

Disease	Disease Management
Phomopsis	In vineyards with heavy inoculum pressure (hedged vines, dead canes, pruning stubs), prepare to apply protective sprays as early as 1 inch shoot growth, ahead of infection events. Damage to shoots, leaves, clusters and fruit caused by Phomopsis is more prevalent when inoculum is allowed to build up on dead canes or pruning stubs in the vines and when early-season sprays for this disease are omitted.
	A lot of powdery mildew the previous year = More primary inoculum to cause infections this spring = A lot more secondary spores available when fruit are



# Integrated Disease Management

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- Fungicides
  - Proper timing
  - Good coverage
    - Sprayer calibration
  - Fungicide resistance management

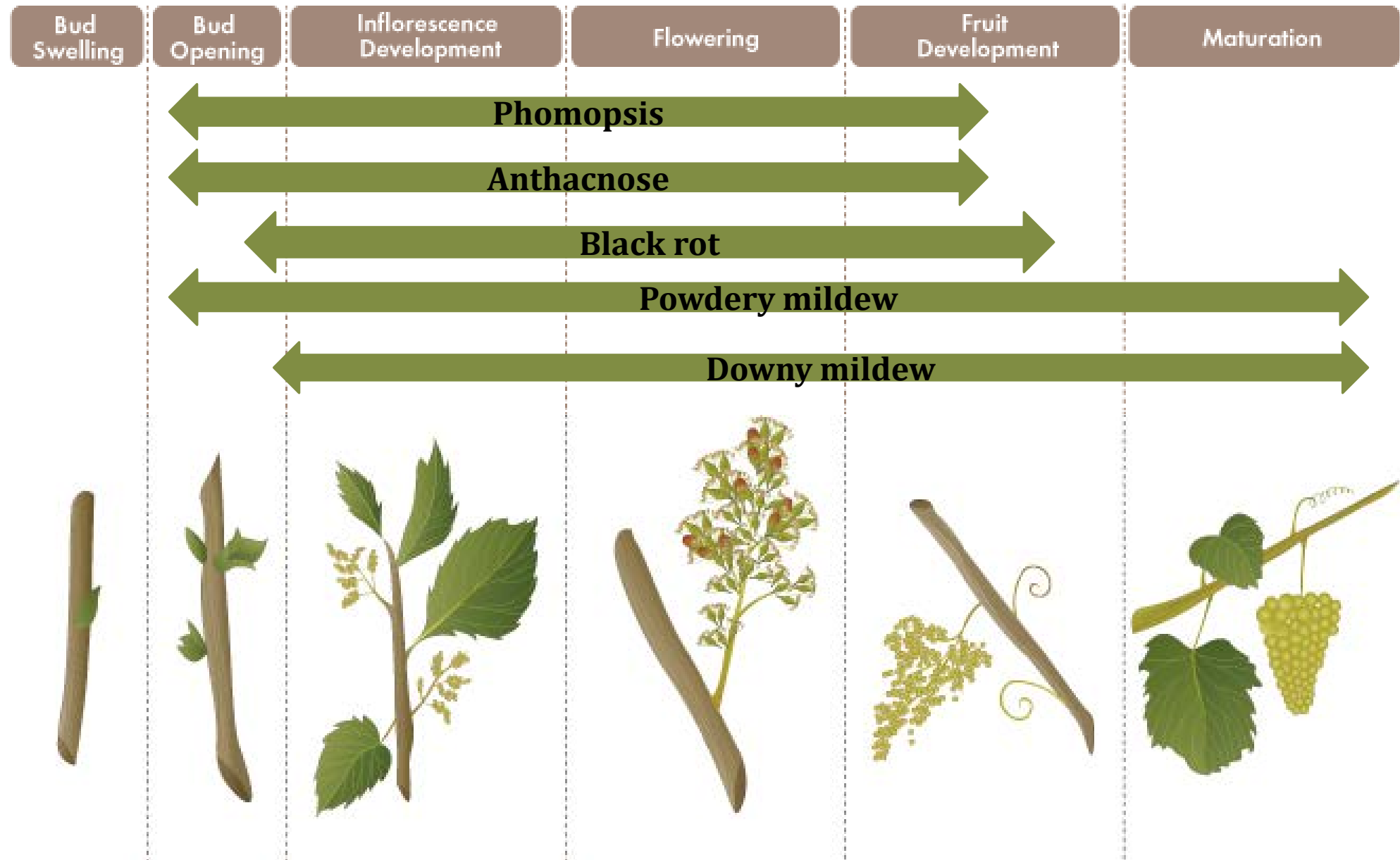




# Timing of Fungicide Applications

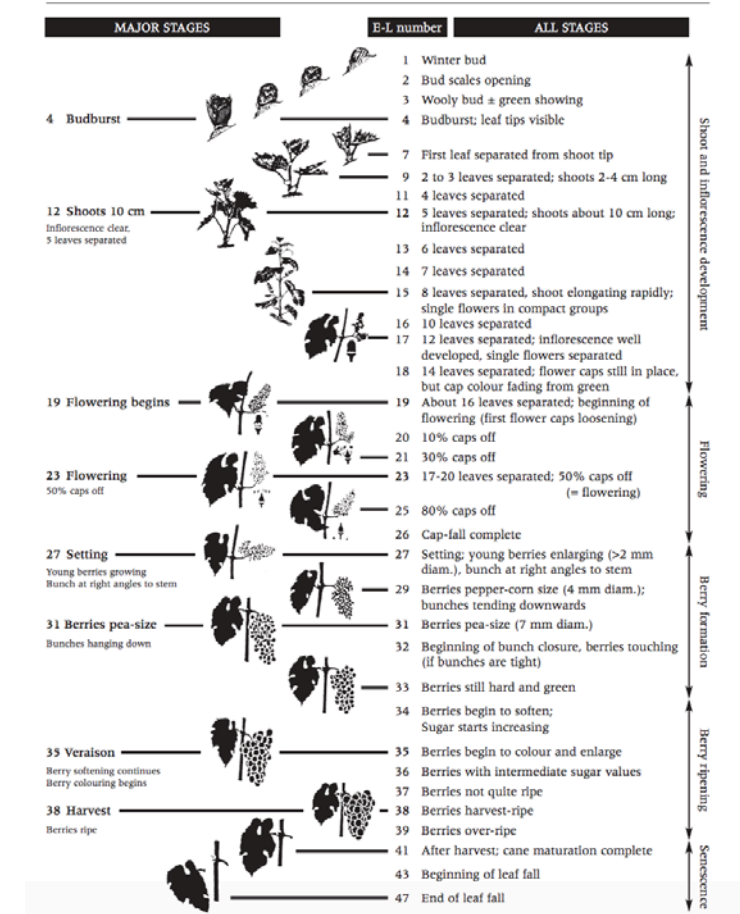
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Phase	Timing	Diseases
Early Season	Begin: 1-3 inches green growth End: 3-4 weeks post-bloom	Phomopsis Black rot Powdery mildew Downy mildew
Late Season	Begin: 3-4 weeks post-bloom End: Harvest	Powdery mildew Downy mildew



# Black Rot Efficacy Trial 2017

Treatment	Phenological Stages
mancozeb + Stylet oil	4, 7
mancozeb + Quintec	14, 28, 43
<b>Test Product</b>	21, 35, 49
mancozeb + Torino	56, 70





# Black Rot Efficacy Trial 2017

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Treatment	Rate/acre	FRAC No.	Percent Foliar Severity	Cluster severity
Revus Top-Mancozeb	7 fl oz	3+40	4.5 b	0.1 b
Revus Top-Captan	7 fl oz	3+40	4.0 b	0.1 b
Aprovia	10.5 fl oz	7	4.7 b	0.0 b
Kenja	22 fl oz	7	2.5 b	0.0 b
Luna Experience	8.6 fl oz	7+3	5.8 b	0.0 b
Immunex	22 fl oz	3	2.5 b	0.0 b
Non-treated	-	-	21.7 a	36.2 a

# Grape Fungicide Updates

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## New Labels

- **Luna Sensation** (FRAC 7+11): NOT CONCORD GRAPES
  - Powdery mildew, Botrytis, black rot, Phomopsis
- **Merivon** (FRAC 7+11)
  - Powdery mildew
- **Ridomil Gold SL** (FRAC 4)
  - Phytophthora root rot

# Grape Fungicide Updates

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## **Dropped Labels**

- Can be legally used if you still have the original label
- Presidio
- Quilt Excel
- Adamant
- Bayleton (fruit)
- Ferbam
- Orbit
- Tavano
- Tebuzol



# Grape Fungicide Updates

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## Pre-harvest Intervals (PHI)

- Time between last application and harvest
- Forum: 28 days to **14 days**
- Quintec: 14 days to **21 days**

# Grape Fungicide Updates

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## Reentry Intervals (REI)

- Time between application and worker reentry into the vineyard
- Abound                      12 hours to **4 hours**
- Captan                      72 hours to **48 hours**
- JM Stylet Oil              12 hours to **4 hours**
- Procure                    24 hours to **12 hours**

**DANGER PELIGRO**  
**PESTICIDES PESTICIDAS**



**KEEP OUT**  
**NO ENTRE**

THIS PROPERTY TREATED WITH  
on \_\_\_\_\_  
and all persons are warned to stay out  
until \_\_\_\_\_

# Pesticide Resistance Management

- Accurately diagnose the problem
- Only use pesticides registered for the target crop and pest
- Pay attention to the mode of action (FRAC number)

## Brand Name

FUNGICIDE

GROUP 7 FUNGICIDE

Suspension Concentrate

Active Ingredient	By Weight
Penthiopyrad	20.4%
Other Ingredients	79.6%
TOTAL	100.0%

Contains 1.67 pounds of penthiopyrad per gallon of product

EPA Reg. No. 352-834

EPA Est. No. \_\_\_\_\_

Nonrefillable Container

Net: \_\_\_\_\_

OR

Refillable Container

Net: \_\_\_\_\_

**KEEP OUT OF REACH OF CHILDREN**

**CAUTION**

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle.  
(If you do not understand the label, find someone to explain it to you in detail.)

### FIRST AID

**IF SWALLOWED:** Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told by a poison control center or doctor. Do not give anything to an unconscious person. Have the product container or label with you when calling a poison control center or doctor, or going for treatment. **For medical emergencies involving this product, call toll-free 1-800-441-3637.** See Label for Additional Precautions and Directions for Use.

### PRECAUTIONARY STATEMENTS

#### HAZARDS TO HUMANS AND DOMESTIC ANIMALS

#### CAUTION

Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. May be harmful if swallowed. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet.





# Pesticide Resistance Management

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- Avoid using one mode of action alone in a full season program
  - Alternate with fungicides with a different mode of action
  - Use the “2-spray” rule (unless label indicates otherwise or it is a low risk pesticide Apply pesticides according to the label
- Stay within the recommended rate range
- Apply at the correct growth stage
- Monitor effectiveness

# Resources

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- NCPN Grapes Program ([ncpngrapes.org](http://ncpngrapes.org))
- Midwest Grape Production Guide (OSU Bulletin 919)
- NEWA ([newa.cornell.edu](http://newa.cornell.edu))
- OSU Grape IPM website ([ohiograpeweb.cfaes.ohio-state.edu/ipm](http://ohiograpeweb.cfaes.ohio-state.edu/ipm))
- OSU Fruit Pathology website ([u.osu.edu/fruitpathology](http://u.osu.edu/fruitpathology))
- OSU Grape IPM Facebook Page  
([www.facebook.com/ohiograpeIPM](http://www.facebook.com/ohiograpeIPM))
- Midwest Fruit Pest Management Guide (OSU Bulletin 506)

# Contact Information

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