



Cold Climate Grape IPM News

Lorraine P. Berkett, IPM Specialist
May 23, 2006

Stage of Growth: *The cool weather has slowed growth beyond the 3"-5" shoot stage reported last week.*

Disease Management

As of this morning, there have been approximately 211 hours of leaf wetness since the rains began on May 11th based on weather equipment at the University of Vermont Horticultural Research Center (UVM HRC) in South Burlington — that is a lot of hours for potential fungal spore germination and infection !!!

As mentioned in the last issue, it is an important time in the growing season to manage **Phomopsis** and **angular leaf scorch**. Also, we are about to enter a key time to manage **black rot**, **downy mildew**, and **powdery mildew** particularly on very susceptible grape cultivars and if there was significant disease present last year. With the arrival of warmer weather, vine growth will accelerate and we will reach 8"-10 " shoot growth soon after.

Black Rot — It is considered one of the most serious diseases of grapes in eastern U.S. Last year in Vermont, it was particularly destructive (see pictures below). This means that



Black rot symptoms on leaves, stems, and fruit.

Black fruiting bodies in lesion from which spores are released during the growing season.





Stages of symptom development
in fruit infected with black rot.

there is a very high potential for infection this year because of the amount of overwintering inoculum in mummies on the vineyard floor or from those left in the vines and because of the wet weather we have had. Although we have had cool weather during the extended rainy period, you can see from the table below, leaf wetness criteria for infection have been met.

A fungicide application is warranted at this point in time if you had problems with black rot last year. On the next page is a chart from the [Midwest Grape Production Guide](#) which rates the various fungicides as to their efficacy against black rot and other diseases. A similar chart is also in the [2006 New York and Pennsylvania Pest Management Guidelines for Grapes](#). Please note that the chart gives relative effectiveness and assumes that resistance has not developed in the fungal populations to the materials. See the chart in the NY/PA Guide for more details.

Note that the mancozeb fungicides, such as Manzate, Dithane, Penncozeb, have activity against black rot and also against Phomopsis and downy mildew. Mancozeb's protect the

Table 1. Duration of continuous leaf wetness necessary for infection by the black rot fungus at different temperatures.

Temperature		Hours of Leaf Wetness
C	F	
7.0	45	No Infection
10.0	50	24
13.0	55	12
15.5	60	9
18.5	65	8
21.0	70	7
24.0	75	7
26.5	80	6
29.0	85	9
32.0	90	12

R. A. Spotts, Ohio State University.

Source: Cornell Dis. Identification
Sheet # 102GFSG-D4
written by W. Wilcox.

Table 15. Effectiveness of Fungicides for the Control of Grape Diseases.

Fungicide Phomopsis	Cane and Leaf Spot	Black Rot	Downy Mildew	Powdery Mildew	Botrytis Rot
Abound	+	+++	+++	+++	++
Bayleton	0	+++	0	+++	0
Captan	+++	+	+++	0	+
Elevate	0	0	0	0	+++
Elite	0	+++	0	+++	0
Endura	0	0	0	+++	++
Ferbam	+	+++	+	0	0
Fixed Copper and Lime	+	+	+++	++	+
Flint	+	+++	+	+++	++
JMS Styler Oil	0	0	0	+++	?
Mancozeb	+++	+++	+++	0	0
Nova	0	+++	0	+++	0
Phosphorous acid	0	0	+++	0	0
Potassium salts	0	0	0	++	0
Pristine	++	+++	+++	+++	++
Procure	0	+++	0	+++	0
Quintec	0	0	0	+++	0
Ridomil Gold MZ	+	++	+++	0	0
Ridomil Gold Copper	+	+	+++	0	0
Rovral	0	0	0	0	+++
Rubigan	0	++	0	+++	0
Scala	0	0	0	0	+++
Sovran	+	+++	++	+++	++
Sulfur	+	0	0	+++	0
Vangard	0	0	0	0	+++
Ziram	++	+++	++	0	0

+++ = highly effective, ++ = moderately effective, + = slightly effective, 0 = not effective, ? = activity unknown.

surface of the plant from infection and have a low risk for resistance developing in the fungal population to them. Unfortunately, there are no very effective organic fungicides for this disease and thus, sanitation (removal/burying) of mummies is critical.

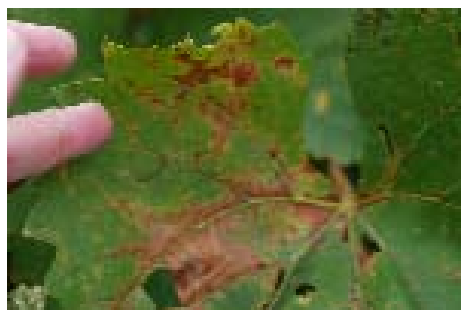
Please see the following website for further information about this disease:
http://www.nysipm.cornell.edu/factsheets/grapes/diseases/grape_br.pdf

Downy mildew - Downy mildew can be severe on certain wine grape cultivars planted in Vermont (see pictures below). Fortunately, observations over the last two years indicate that *some* of the Minnesota and Swenson cultivars have resistance to the disease. [Note: Observations on resistance/susceptibility of various wine grape cultivars in Vermont will be summarized in a future newsletter.]

The downy mildew fungus overwinters as dormant spores in leaves on the vineyard floor that were infected last year. Again, sanitation is important to reduce overwintering inoculum. When vines reach the 8"- 12" shoot stage, a fungicide is warranted on highly susceptible cultivars or in vineyards which had significant downy mildew last year. Rainy weather will release spores and splash them onto the plant. On the wet surfaces of the grape vine, the spores (zoospores) which have "tails" will "swim" to the stomata (the tiny pores on the surface of the plant) where they will germinate and invade the inner tissue of the plant through the pore. The fungus can infect all green, actively growing parts of the vine that have mature, functional stomata. As those who have witnessed bad downy mildew situations know, the disease can be "explosive" if infections are not prevented and if we experience warm humid weather with periodic showers during the growing season.

Please see the following website for further information about this disease:

http://www.nysipm.cornell.edu/factsheets/grapes/diseases/downy_mildew.pdf



Downy mildew symptoms

Powdery mildew - If not managed, this disease can reduce vine growth, yield, grape quality, and winter hardiness of susceptible grape cultivars. The fungus overwinters in tiny black round fruiting bodies (cleistothecia) on the bark of the vine. Spores (ascospores) are released from these structures from bud break until shortly after bloom when it rains at least 0.1" and temperatures average 50 F. The ascospores are carried by wind and, if they land on susceptible tissue, they can infect. Note: A wet surface is not required for infection. The fungus grows on the surface of the grape tissue and will produce white, powdery spores (conidia) which are the source of further infections. Conidia are wind-blown throughout the vineyard. These spores do not require rain for release or infection although humid conditions favor disease development.

Early season management is particularly important on highly susceptible cultivars and in vineyards which had significant powdery mildew last year.

Please see the following website for further information about this disease:

http://www.nysipm.cornell.edu/factsheets/grapes/diseases/grape_pm.pdf

As you can see in the Table that rates fungicide efficacy on page 3, there are a number of materials that are very effective against powdery mildew. However, many are prone to resistance development such as the sterol-inhibiting or the strobilurin fungicides. An "old" standard material is sulfur. Another option is JMS Stylet Oil. Important: Always read all pesticide labels carefully. Note that there are certain grape cultivars that are sensitive to sulfur applications and phytotoxicity can result. Also, there are compatibility issues with oil and sulfur or captan. Check label and the [2006 New York and Pennsylvania Pest Management Guidelines for Grapes](#) for details. For example, a sulfur application is not allowed within 14-21 days of a spray oil application. Be aware of all potential compatibility/phytotoxicity issues by reading the label carefully and consulting the NY/PA Guidelines.



Powdery mildew symptoms

Weed Management: Weed management involves balancing the positive and negative aspects of weed growth in a vineyard. Information on vineyard weed management can be found in the Cornell publication “Grape IPM in the Northeast” at:

[http://nysipm.cornell.edu/publications/grapeman/default.asp?metatags_Action=Find\('PID','13'\)](http://nysipm.cornell.edu/publications/grapeman/default.asp?metatags_Action=Find('PID','13'))



Contact Information

A Commitment to Excellence and Service:

Lorraine P. Berkett
Plant Pathologist and IPM Specialist
Dept. of Plant & Soil Science
105 Carrigan Drive, UVM
Burlington, VT 05405
Phone: 802/656-0972
Fax: 802/656-4656
E-mail: lorraine.berkett@uvm.edu

Where trade names or commercial products are used for identification, no discrimination is intended and no endorsement is implied. Always read the label before using any pesticide.

The label is the legal document for the product use. Disregard any information in this newsletter if it is in conflict with the label.

The Vermont Agricultural Experiment Station, University of Vermont Extension, and U.S. Department of Agriculture, cooperating, offer education and employment to everyone without regard to race, color, national origin, sex, religion, age, disability, political beliefs, and marital or familial status.