The Many Faces of Downy Mildew

Patty McManus, UW-Madison and UW-Extension

All too often those of us involved in IPM and extension education give presentations and publish articles in which we show “classic” symptoms associated with diseases or insects. This is done in an attempt to keep things short and simple. However, symptoms of a disease such as downy mildew can vary greatly depending on the time of year, variety, environmental conditions, and pesticide exposure. I recently came across downy mildew that did not resemble anything I have seen in a book or web site (Figure 1). The upper surfaces of leaves were normal looking, but the lower surfaces had diffuse, white growth more or less across the entire leaf surface. The lack of powdery growth on the upper surfaces suggested that this was not powdery mildew, and by microscopy I readily identified it as downy mildew. Unfortunately, I did not take note of the variety. The more classic appearance of downy mildew is distinct white patches of fluffy mold on the lower leaf surface (Figure 2). In both cases the downy mildew pathogen will overwinter on grape leaves in the vineyard. If you made the mistake of thinking that the disease in Figure 1 was powdery mildew, you’d set yourself up for trouble next year when choosing fungicides.

These are just two examples of the many faces of downy mildew. If you are in doubt about what is affecting your vines, you should submit a sample to the Plant Disease Diagnostic Clinic for diagnosis. Information about the clinic can be found at http://labs.russell.wisc.edu/pddc/.
Start Protective Measures Early to Keep Birds at Bay

Protecting your grape crop from the ravages of birds is similar to protecting the crop from disease. You need to start protecting the crop before the damage begins. Often birds begin feeding on grapes once veraison begins and damage will continue until the crop is completely lost or has been harvested. There are a number of ways to protect your crop from birds. The goal of any control option is to limit your loss.

In the variety trial in Door County, we have been netting the crop for the past 3 years. The first two years of grape production the vines were not netted and resulted in very little damage from birds. I remember the third production year very well. That was the season when we left on a Friday with the intention of harvesting on Monday. Over the weekend the birds moved into the vineyard and there was not one cluster to harvest come Monday morning. The decision to purchase and use bird netting was simple after that.

Besides using bird netting, growers should also consider implementing other strategies to protect their crop from birds. Propane cannons, sometimes called bird bangers can be used to repel birds. If using propane cannons, use one cannon for each five acres, move the cannon within the five acres to keep birds from acclimating to the location. The interval between blasts should be set greater than 3 minutes.

Another method to deter birds are electronic sound devices. These devices produce sounds that either interfere with birds sensory systems making them feel insecure or produce distress calls of specific birds. These electronic sound devices usually are not objectionable by neighbors living close to vineyards. Since birds quickly acclimate to uniform movements and sounds, using a electronic sound system and propane cannon together often is a good combination.

Visual repellents can also be employed to reduce bird damage. However, be advised that birds respond much more to sound than to visual movement. If using visual repellents, such as scare-eye balloons, reflective tapes or mirrors, be sure to use them in conjunction with sound devices.

Grape berries that are damaged by birds can result in other pest problems. Damaged berries are prone to infection from sour rots and other late season pathogens such as botrytis. Insect pests such as multicolored Asian lady beetles and yellow jackets are also attracted to bird damaged berries (Figure 1 and 2). Reducing damage from birds will reduce secondary pest problems.

Lastly, no matter what device(s) are used to reduce bird damage in the vineyard, the netting, propane cannon, electronic sound device, or visual repellent must be installed before the damage has begun to reduce crop loss. Once birds have begun feeding on grapes it is very difficult to eliminate them from the food source. To reduce loss from birds, integrate a number of devices.
What is lurking in the vineyards

A grower submitted a completely necrotic grape leaf (Figure 1) to me this week and I wondered if I could diagnose anything from the sample. I looked at the sample under the microscope and the underside of the leaf revealed downy mildew. I would suspect that some growers may be missing downy mildew on their scouting because the downy mildew this season is more diffuse as Patty McManus has pointed out on page 1 of this report. Time to take out the hand lens on those scouting adventures.

Figure 1. Necrotic grape leaf submitted this past week and offset magnified picture showing downy growth of downy mildew on underside of leaf.

Petite pearl (left) is showing some unknown disease problem at the variety trial at PARS. This same problem has also been reported by other growers. A sample will be submitted to the Plant Diagnostic Clinic for diagnosis. Please email me if you are seeing this same problem in Petite pearl.
Development of wine grapes in the grape variety trials at the Peninsular Agricultural Research Station (PARS) Sturgeon Bay, WI and West Madison Agricultural Research Station (WMARS), Madison, WI
Development of wine grapes in the grape variety trials at the Peninsular Agricultural Research Station (PARS) Sturgeon Bay, WI and West Madison Agricultural Research Station (WMARS), Madison, WI

La Crosse at WMARS 8.19.2013
La Cresent at PARS 8.19.2013
La Crosse at PARS 8.19.2013
La Cresent at WMARS 8.19.2013
Marquette at PARS 8.19.2013
Marquette at WMARS 8.19.2013
Grape progress update of other varieties in the grape variety trial located at the Peninsular Agricultural Research Station.

- NY76 at PARS 8.19.2013
- Frontenac gris at PARS 8.19.2013
- Leon Millot at PARS 8.19.2013
- Vignoles at PARS 8.19.2013
- Petite Pearl at PARS 8.19.2013
- Noiret at PARS 8.19.2013
Grape progress update of other varieties in the grape variety trial located at the Peninsular Agricultural Research Station.

MN 1189 at PARS 8.19.2013

MN 1200 at PARS 8.19.2013

MN 1220 at PARS 8.19.2013

MN 1235 at PARS 8.19.2013
Degree Day\(^1\) (base 50) Accumulation from April 1 to August 18, 2013 at Peninsular Agricultural Research Station in Sturgeon Bay, WI

<table>
<thead>
<tr>
<th>Date</th>
<th>2013</th>
<th>2012</th>
<th>5 Year Average(^2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4/1 to 8/18</td>
<td>1420</td>
<td>1843</td>
<td>1724</td>
</tr>
</tbody>
</table>

\(^1\)Modified method.
\(^2\)Average from 2008 to 2012.

Degree Day\(^1\) (base 50) Accumulation from April 1 to August 18, 2013 at West Madison

<table>
<thead>
<tr>
<th>Date</th>
<th>2013</th>
<th>2012</th>
<th>5 Year Average(^2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4/1 to 8/18</td>
<td>1895</td>
<td>2324</td>
<td>2162</td>
</tr>
</tbody>
</table>

\(^1\)Modified method.
\(^2\)Average from 2008 to 2012.

Accumulated degree days\(^1\) (base 50) for the month of March in Sturgeon Bay and Madison, WI.

<table>
<thead>
<tr>
<th>Year</th>
<th>Madison WI</th>
<th>Sturgeon Bay WI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>GDD (base 50, ceiling 86)</td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>1(^2)</td>
<td>0</td>
</tr>
<tr>
<td>2012</td>
<td>252</td>
<td>106</td>
</tr>
<tr>
<td>2011</td>
<td>13</td>
<td>3</td>
</tr>
<tr>
<td>2010</td>
<td>72</td>
<td>38</td>
</tr>
<tr>
<td>2009</td>
<td>51</td>
<td>12</td>
</tr>
<tr>
<td>2008</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>2007</td>
<td>90</td>
<td>41</td>
</tr>
<tr>
<td>2006</td>
<td>22</td>
<td>7</td>
</tr>
<tr>
<td>2005</td>
<td>40</td>
<td>9</td>
</tr>
<tr>
<td>2004</td>
<td>49</td>
<td>11</td>
</tr>
</tbody>
</table>

\(^1\)Modified method.
\(^2\)Data from http://www.doa.state.wi.us/degreedays/

Please scout your vineyards on a regularly scheduled basis in an effort to manage problem pests. This report contains information on scouting reports from specific locations and may not reflect pest problems in your vineyard. If you would like more information on IPM in grapes, please contact Dean Volenberg at (920)746-2260 or dean.volenberg@ces.uwex.edu