Pesticides that Become Pests

Herbicides

There are a number of herbicides that affect the growth and development of grapes. The one herbicide that most people are familiar with that can cause injury to grapes is 2,4-D. If you are unfamiliar with the injury symptoms of 2,4-D on grapes, please visit the link listed at the bottom of the page. Chris Boerboom, the Extension Weed Scientist for the Department of Agronomy at UW-Madison, wrote a nice piece reminding crop producers of the potential of injury from 2,4-D to grapes. Vineyard managers should be good neighbors with all landowners surrounding their vineyard(s) and remind them of the sensitivity grapes have to 2,4-D.

Although most 2,4-D applied is used in agronomic crops, it is also ubiquitous in many weed killers sold to home owners. Most all liquid lawn sprays applied to control broadleaf weeds, such as dandelion, contain 2,4-D. In addition, be aware of herbicide products applied on road right-of-ways. Another potential source of 2,4-D and related growth regulator type herbicides are those used for invasive plant species control. Be aware of herbicide products containing the triclopyr, clopyralid, and picloram.

Row crop growers use 2,4-D for weed management in a number of different crops. In no-till or reduced tillage corn, often 2,4-D is used in combination with other herbicides to “burn down” weeds prior to planting corn. Depending on your vineyard location, these early spring burn down applications in corn are likely applied during a time when grape buds are breaking and very susceptible to 2,4-D injury. Besides corn, 2,4-D is used quite extensively in small grains (winter wheat, spring wheat, and oats) to control broadleaf weeds. You should become aware of the crops, and the cropping systems that are within a mile of your vineyard and contact growers and remind them of your vineyard location.

Another herbicide that can cause damage to grapes is glyphosate. Glyphosate is the active ingredient in the weed killer often referred to as Roundup. Glyphosate is off patent and is now labeled under a variety of names. Even though glyphosate is labeled for use in grapes, it can cause grape injury if it comes in contact with green foliage by spray drift or contacts suckers on the base of grape trunks.

Glyphosate is used extensively in row crops such as Roundup Ready corn and soybeans. Since the crops are resistant to the herbicide, the herbicide can be applied directly over the growing crops anytime during the growing season. Therefore, there is the potential for injury to grapes from Roundup drift for an extended period of time during the growing season.

One of the most damaging herbicide mixtures to grapes is Roundup plus 2,4-D. In one University study, the application of 1/100 the label specified use rate of glyphosate + 2,4-D to grapes resulted in leaves that were mottled and showed signs of interveinal chlorosis. In comparison, the application of 2,4-D alone at 1/100 the label use rate results in greater visible injury. The likely explanation for this observation is that in grapes, 2,4-D is more readily absorbed and translocated to the shoot apex than glyphosate. Glyphosate once absorbed into grape leaves is translocated both towards the shoot apex and downward in the plant. The application of glyphosate + 2,4-D resulted in reduced leaf area, reduced shoot length, and reduced internode length compared to 2,4-D alone.

Off Target Herbicide Movement

Spray drift can occur during or after application. During application, herbicides can move off target due to physical drift. Parameters that can influence physical drift are spray droplet size, the distance between the spray nozzle and the target, humidity, and wind speed. All these parameters can play a role in how far a herbicide will drift. Some herbicides are prone to vapor drift—the conversion of the herbicide to a gaseous form that moves off target in wind currents. Vapor drift can occur during and after herbicide applications. The risk of vapor drift increases as temperatures increase for herbicides that are volatile. Volatility of some herbicides can be reduced by using different formulations.

Growth regulator herbicides that are formulated as esters have the greatest potential for moving off target. Esters of phenoxy type herbicides more readily vaporize compared to phenoxy type herbicides formulated as amines. Ester formulations are used in agriculture because they can penetrate the waxy cuticle of plants more readily than amine formulations. Ester formulations are often used in the spring and fall when temperatures are cooler, reducing the potential for herbicide drift by vaporization.

Growth Regulator Herbicides Use May Increase

In Wisconsin as crop systems change, growth regulator type herbicides could increase in use. Take for instance winter wheat, where in 1978 there was only 35,000 acres in the state, but 30 years latter, there is 10 times that acreage or 350,000 acres. Winter wheat is not the only crop that has growth regulator type herbicides applied for weed control. In 2013, dicamba resistant soybeans will be introduced into the soybean seed market. Dicamba is a growth regulator type herbicide that also has the potential to drift and cause damage to grapes. If dicamba resistant soybeans are adopted by Wisconsin soybean growers, more than a million acres could be sprayed with herbicides containing dicamba.

Products Containing Growth Regulator Type Herbicides

For information on products that are registered in Wisconsin and contain the active ingredient 2,4-D, dicamba, or glyphosate, please see the following website at the Department of Agriculture Trade and Consumer Protection. The website allows you to search for pesticides by common name, product name, pesticide type, and active ingredient. For example, searching under active ingredient, 2,4-D, reveals 130 products registered in Wisconsin contain 2,4-D.

http://www.datcp.state.wi.us/arm/agriculture/pest-fert/pesticides/data/index.jsp
What’s lurking in or near the vineyards this week?

Scouting of vineyards and wild grapes throughout Door County revealed very little pest activity this week. Weather conditions have been supportive of the development of powdery mildew, but at this point the disease is not apparent. The Grape Plume Moth larvae have been active on wild grapes for two weeks, however this pest is seldom a problem in commercial vineyards.
How are well established mature grapevines developing in Sturgeon, Bay Wisconsin?

Foch June 14, 2009
Shoots 10 to 14 inches

La Crosse June 14, 2009
Shoots 6 to 8 inches

How are well established mature grapevines developing in Vernon County Wisconsin?

Foch June 15, 2009
Flowering
Shoots 34 inches

La Crosse June 15, 2009
Shoots 25 inches

Second year Foch and La Crosse grapevines at Spooner Agricultural Research Station.

Foch June 15, 2009

La Crosse June 15, 2009
What stage are the second year grapevines at West Madison Agricultural Research Station?

- **Foch West Madison ARS June 15, 2009**
  - Flowering

- **La Crescent West Madison ARS June 15, 2009**
  - Flowering

What stage are the second year grapevines at Peninsular Agricultural Research Station?

- **Foch Peninsular ARS June 14, 2009**
  - Shoots 4 to 6 inches

- **La Crescent Peninsular ARS June 14, 2009**
  - Shoots 4 to 6 inches

### Growing Degree Days from April 1 to June 14

<table>
<thead>
<tr>
<th>Location</th>
<th>2009</th>
<th>2008</th>
<th>5 Yr. average</th>
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<tr>
<td>Peninsular ARS</td>
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<td>490</td>
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<tr>
<td>W. Madison ARS</td>
<td>573</td>
<td>609</td>
<td>697²</td>
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</tbody>
</table>

¹Modified method
²3 year average for West Madison ARS.

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