



Vinews Viticulture Information News, Week of 14 September 2015 Columbia, MO



Powdery Mildew

The last few weeks of dry weather have resulted in powdery mildew infections. Although the grape berries are resistant to infection by powdery mildew, other green plant tissues remain susceptible. A severe infection of powdery mildew can reduce photosynthesis resulting in delaying the accumulation of sugars in the grape berries. Don't jump the gun here and run to your spray rig just yet if you find some powdery mildew. If you are hanging a big crop and powdery mildew is severe then the crop may be delayed. The current forecast calls for warm sunny weather which



Powdery mildew *Uncinula necator* on Chambourcin grape leaves. Photo credit: D. Volenberg 9.11.2015.

will help mature the crop even if some powdery mildew is present. However take some time and evaluate and scout Chambourcin which is highly susceptible to powdery mildew and has a propensity to over-crop if shoot thinning or cluster thinning was not part of your management.

The bottom line: If you are hanging a lot of fruit on a cultivar such as Chambourcin and powdery mildew is taking hold. You need evaluate the grape quality on a more persistent basis to be sure sugars are rising. A large crop load combined with a severe powdery mildew infection puts your crop and canopy out of balance and so you need to maximize the efficiency of every leaf going forward.

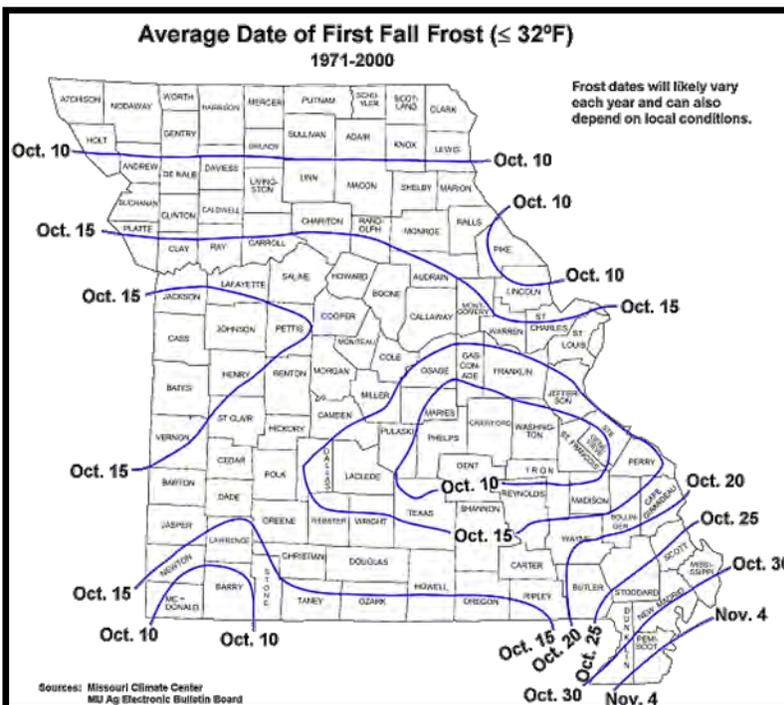
The long range forecast predicts temperatures that are ideal for powdery mildew growth and development. Temperatures in the mid-60's to mid-80's result in powdery mildew forming a new generation of fungus every 7- to 5 - days, respectively. Repeating infection cycles can quickly cascade making management very difficult.



Powdery mildew can form colonies on both the top (left) and bottom (right) surface of leaves. Remember Downy mildew will only form sporulating colonies on the bottom surface of leaves.

Keep Vines Healthy After Harvest

The early warm and wet growing season resulted in some struggles managing pathogens. In addition, the extended wet periods resulted in some nutrient deficiencies appearing at veraison. Both of these factors can impact cold-hardiness as the dormant season approaches. Maintaining vine health after harvest has implications for next seasons grape crop. Now with harvest well underway it is time to think ahead to next season.



After harvest, it is very important to keep the vines healthy as the vines enter the first stage of the dormancy process. Once harvest is complete, vines begin the process of acclimation or the adjustment to the change in climate. The vines begin to respond to shortened day length and cooler temperatures. During this acclimation process, the vines need a period of cool temperatures before the first killing frost. The period between harvest and the first killing frost often varies based on cultivar maturity and year. The timing of the first fall frost ($\leq 32^{\circ}\text{F}$) varies by more than 30 days from north to south, but on average the first fall frost occurs near October 15 for most of the state (see figure above). Why is it important to know this? It comes down to knowing a bit of biology of the vine, the pathogens – especially downy mildew, and keeping your money in your pocketbook.

Grape cultivars and grape species have a range of cold hardiness that is influenced by their genetic background. French American grape cultivars are more cold hardy as compared to *Vitis vinifera* cultivars. The cultivar and species are also influenced by the environment and growing conditions. In an ideal world we could control the environment, but the best we currently can do is select a good vineyard site and select grape cultivars that are hardy within that site. However, what we can control is the culture of that specific cultivar. Cold-hardiness is reduced by over-cropping or early defoliation from plant stresses that could include; nutritional deficiencies, disease or other pests.

Once grapes are removed from the vine, carbohydrates produced by the leaves are directed to the vine. Much of the stored carbohydrates are in the form of starch but as dormancy approaches the starch is converted to sugars to protect the vine from cold temperatures. Keeping leaves healthy after harvest results in greater stored carbohydrate reserves protecting the vine from cold damage and also providing the energy source for next seasons early season growth.

The main pathogen of concern after harvest is downy mildew. As long as green tissue is available that has stomata and the environment stays conducive for infections, downy mildew will remain a threat. Downy mildew requires water films (free water) for infection. Infections can take place in 2 hours at 77 F and the process is slowed as temperatures decline. Early defoliation from downy mildew can result in decreased plant health and reduce cold-hardiness.

After this seasons harvest, your thoughts should be looking ahead to preserving next year's crop. If conditions stay dry and warm and your crop scouting determines that little or no downy mildew is present, then you may be able to eliminate cover sprays. As the dates for a killing frost get near and frost warnings are in the forecast weigh your options and your risk. If the grape leaves are going to be falling in a couple days from a killing frost, keep the fungicides in the shed and the money in your pocket-book.

Keep the following in mind if you had a problem managing downy mildew this growing season. Downy mildew takes up residence in the soil as a resting spore called an oospores. These oospores originate mainly from downy mildew infected leaves and berries. The more downy mildew infections that occurred this growing season will result in more oospores for next season. The first downy mildew infections next season, termed primary infections begin when oospores germinate with approximately 0.1 inch of rainfall and temperature of 52°F. Warmer and wetter conditions increase the probability of primary infections.

Cumulative Growing Degree Days for the Seven Grape Growing Regions of Missouri from April 1 to September 14, 2015.

Region	Location by County	Growing Degree Days ¹		
		2015	2014	30 Year Average
Augusta	St. Charles	3340	3220	3272
Hermann	Gasconade	3184	3010	3098
Ozark Highland	Phelps	3486	3348	3342
Ozark Mountain	Lawrence	3490	3323	3357
Southeast	Ste. Genevieve	3457	3305	3294
Central	Boone	3228	3048	3212
Western	Ray	3122	3084	3113

¹Growing degree days at base 50 from April 1 to September 14, 2015. Data compiled from Useful and Useable at <https://mygeohub.org/groups/u2u/tools>. Click on link below to determine growing degree days in your area.

To determine the number of growing degree days accumulated in your area since April 1, click this link [Search for GDD at your location using this tool](#).

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 573-882-0476 or volenbergd@missouri.edu