

# VineWS

## Viticulture Information News, Week of 18 April 2016

### Columbia, MO



### Quick Start To Season and Weather and Disease Outlook

Grapevines are growing and the season is off to a quick start. According to the Missouri Frost Freeze Probabilities Guide there is a 50% chance for  $\leq 32^{\circ}$  F will occur before or after the designated date on the map (Figure 1). The contour map below is based on historical data from 1981 to 2010. Will areas of Missouri experience a temperatures  $\leq 32^{\circ}$  F in the immediate future? Temperature forecasts through April 29 are for above normal temperatures (Figure 2). So as we approach May as far as temperatures are concerned everything is looking good. On the precipitation side, the forecast is for wet conditions through April 29 (Figure 2). What does all this mean for disease potential?

The main disease concerns now and through the end of April are black rot and Phomopsis.

First let's take a look at the potential for Black rot *Guignardia bidwellii* (Ellis). The main two factors that impact the potential for black rot infections are weather conditions and the amount of overwintering inoculum. Black rot mainly overwinters as mummy berries and these berries provide the inoculum for primary infections. Last year, a number of vineyards were spot picked or no fruit was removed because of poor fruit quality brought on by disease. Disease pressure last year was accelerated by the prolonged wet spring and early summer periods. Mummy berries left on the vine are the primary source of black rot inoculum for this growing season. Removing mummified clusters and rachises is a very good way to reduce black rot inoculum in your vineyard.

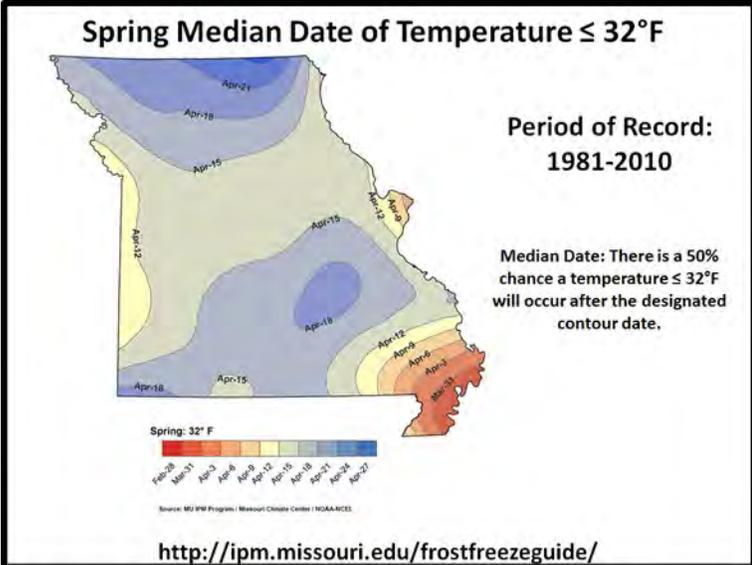


Figure 1. Contours delineate areas with a 50% chance for  $\leq 32^{\circ}$  F will occur before or after the designated date. Graphic credit: Pat Guinan UM.

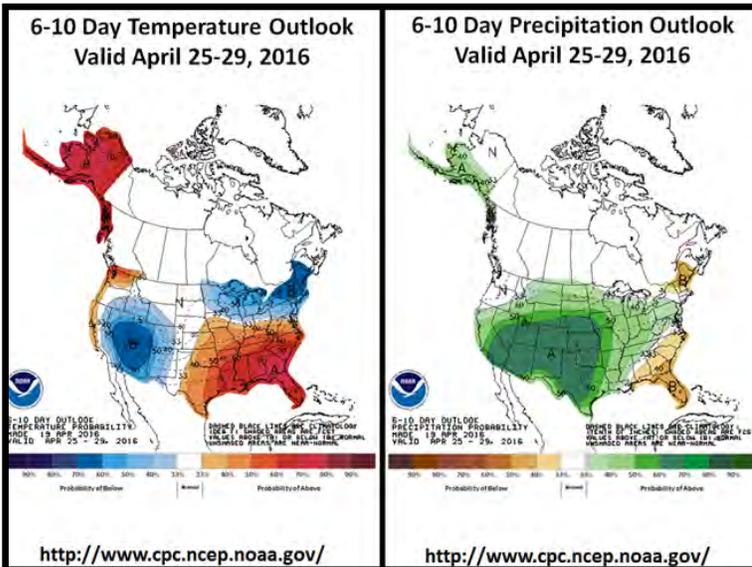


Figure 2. Temperature and Precipitation Outlook for April 25-29. Missouri will have above normal temperatures and above average precipitation through the end of April.

The mummy berries and rachises should have been removed during dormant pruning. Cane lesions as a result of a black rot infection can also be a source of inoculum, but far and above, mummy berries are the primary inoculum source of black rot. Besides having black rot inoculum present, two other factors play a role in the black rot infection process. Black rot needs moisture to release spores from the mummified berries. In addition, the spores require the grape tissue to be wet in order for infection to occur.

Forecasts for rainfall through the end of April suggest that Missouri will be experiencing wet conditions. These wet conditions can provide opportunities for black rot infections to occur. Black rot infections are also dependent on temperature. As temperatures increase, the time for a black rot infection to occur decreases. This is true, until temperature rise to approximately 85°F, then the time for a black rot infection to occur increases (Table 1). Temperatures are forecast to be above normal for the through the end of April (Figure 2).

What does all this mean? If your vineyard is experiencing prolonged dew periods or wet periods from rainfall then only 6 to 12 hours are needed for a black rot infection to take place. Make sure that you have a fungicide cover spray applied to protect your grape tissue from Black rot. This is most important in vineyards that had severe black rot infections last season.

Similar to Black rot, *Phomopsis viticola* (Sacc.) Sacc. needs the grapevine tissue to be wet for infection to occur. If *Phomopsis* was a problem last season in your vineyard, then there is a high probability that it may be a problem this season. Unless you pruned out all the dead wood and canes that were infected by *Phomopsis*. Dead wood such as arms, canes, and old pruning stubs are all potential sources of *Phomopsis*. Removing this dead wood is an important means in managing *Phomopsis*. *Phomopsis* often infects early in the growing season when shoots are 3 to 5" or less. Controlling *Phomopsis* early in the season reduces the potential of the berries and rachises becoming infected as pre-bloom arrives. Protecting your crop through bloom reduces the probability that your rachises or fruit will be infected. Once grapes are pea-sized most of the *Phomopsis* inoculum is spent.

Managing both of these disease requires that you have good spray coverage. At this point in the season, there is a limited amount of grape shoot tissue. This may tempt some of you to apply fungicides using alternate row covers. If you have been using alternate row covers and have had a difficult time controlling black rot and *Phomopsis*, consider changing. Once you have primary infections of a disease then you have to continually fight the problem through the season.

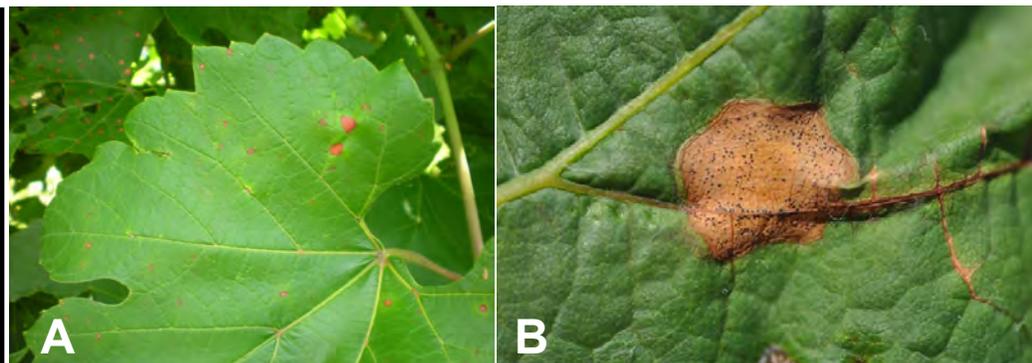
As a reminder, Black rot lesions will have black spots within the lesion. These black spots are the fruiting bodies called pycnidia (Figure 3B). *Phomopsis* lesions will form small chlorotic lesions that have a yellow halo. *Phomopsis* lesions will not have black spots.

Table 1. Temperature and leaf wetness duration that results in foliar Black rot infection<sup>1</sup>

Temperature	Minimum leaf wetness duration for light infection
°F	hour
50	24
55	12
60	9
65	8
70	7
75	7
80	6
85	9
90	12

<sup>1</sup>Adapted from Spotts, R. A. 1977. Effect of leaf wetness duration and temperature on the infectivity of *Guignardia bidwellii* on grape leaves.

Figure 3. Black rot lesions on a leaf (A) and close up of Black rot lesion showing pycnidia (fruiting bodies) within the lesion (B).



## Leaf Indexing and Herbicide Drift

In the immediate future grape vineyards will likely be exposed to a very toxic combination of herbicides. Both Monsanto and Dow AgroSciences will be re-releasing corn and soybeans that are resistant to both Roundup (a.i. glyphosate) and phenoxy herbicides. The phenoxy herbicide resistance will be to dicamba in Monsanto's Xtend products and 2,4-D in Dow AgroSciences Enlist products. Damage to grapes from phenoxy herbicide drift is not new (Figure 4). Most grape growers are very familiar with symptomology caused by phenoxy herbicides.

Injury to grapes exposed to herbicide drift occurs in Missouri every year. The period between when the crop was exposed to a herbicide and when the symptoms appear occurs over a period of time. During this period there can be a number of other pesticide applications in your area. What you may not realize is that determining when the drift incident occurred is very difficult. Knowing the approximate time when the symptoms occurred can help state pesticide investigators determine when the herbicide drift occurred. You can help by using a system called leaf indexing. I learned about leaf indexing from Washington State –Pesticide Management Division. To learn more learn more about [leaf indexing and drift monitoring](#) Listed below are the basic steps for leaf indexing.



Figure 4. Damage to the grape cultivar "La Crosse" from 2,4-D just prior to bloom. Photo credit: D. Volenberg 2009.

- 1) Select at least three shoots to observe throughout the growing season. Use flagging tape to easily identify the shoots. Apply flagging tape to the spur or cordon and not directly to the shoot being observed. These shoots are not pruned during the growing season.
- 2) Observe the shoots weekly recording the number of leaves that unfurled and any other observations. Only count leaves that are unfurled. A leaf that has expanded is counted. The first leaf at the base of a shoot is designated leaf 1 and the next leaf 2...etc. Once leaves have fully expanded and the cutin wax layer has developed write the leaf number on the leaf with a "Sharpie" marker.
- 3) Observe the shoots on a regular weekly schedule i.e. every Monday or every Tuesday etc. Take pictures of symptoms that are irregular.
- 4) Take pictures to document your vines progress and symptomology. When taking pictures, be sure to have a label present in the pictures that shows the calendar date.

## Phenology



Young Norton vine at South Farm Agricultural Center at Einhorn-Lorenz (EL) stages 4 to 7 with the majority of vines being at EL 7. Photo credit: Timothy Weber 4.22.2016



Chardonnay vine at South Farm Agricultural Center at Einhorn-Lorenz (EL) stages 4 to 7 with the majority of vines being at EL 4. Photo credit: Timothy Weber 4.22.2016



Chambourcin vine at South West Research Center at Einhorn-Lorenz (EL) stages 7 to 9 with the majority of vines being at EL 9. Photo credit: David Cope 4.19.2016

## Cumulative Growing Degree Days for the Seven Grape Growing Regions of Missouri from April 1 to April 18, 2016.

Region	Location by County	Growing Degree Days <sup>1</sup>		
		2016	2015	30 Year Average
Augusta	St. Charles	109	196	133
Hermann	Gasconade	123	189	137
Ozark Highland	Phelps	139	216	145
Ozark Mountain	Lawrence	230	274	219
Southeast	Ste. Genevieve	132	200	145
Central	Boone	114	180	127
Western	Ray	125	166	122

<sup>1</sup>Growing degree days at base 50 from April 1 to April 18, 2016. 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](mailto:volenbergd@missouri.edu)