

## Vinews Viticulture Information News, Week of 15 August 2016 Columbia, MO



### Sour Rot

With the forecast calling for rain over the weekend and a good potential for rain latter next week, the potential for Sour rot continues. A lot of grapes have been harvested the past couple of weeks, but with rain forecast it becomes more of a gamble on what to do. This decision of course can result in many sleepless nights. For those experiencing Sour rot what follows below will provide you with a plan for keeping Sour rot under control and how to implement some management for next season.



First, you need to understand a little bit about the Sour rot complex. Sour rot is the result of compromised berries being infected by wild strains of yeast that results in fermentation. Next the ethanol produced from fermentation is used by bacterial strains (Acetobacter and Gluconobacter) to produce acetic acid. A third organism, spotted wing drosophila (SWD) as well as other vinegar fruit flies have been implicated in increasing the spread of the wild yeast and bacteria resulting in the spread of Sour rot. Some research work out of Patty McManus's lab at UW-Madison demonstrated that SWD preferentially lay eggs in grape berries that have had the grape skin compromised. In these no-choice oviposition tests, adult female SWD preferentially laid eggs in grape berries in which the grape skin had been sliced through with a razor blade. As many of you are aware, female SWD have a serrated ovipositor that can slice through fruit skins. However, the adult females in these studies prefer to select grape berries already compromised instead of doing the work themselves. Going a bit further, Megan Hall from Cornell has shown that vinegar fruit flies play an important role in potentially introducing bacteria that cause the transformation of ethanol to acetic acid. This suggests that adult vinegar fruit flies play a passive role in vectoring Sour-rot organisms. Since vinegar fruit flies are attracted to both ethanol and acetic acid, the spread of Sour rot can be reduced by controlling vinegar fruit fly populations.

A number of factors can be responsible for compromising the grape berry. These include, Grape berry moth, powdery mildew, hail, bird damage, and berry cracking/splitting. In tight clustered grape cultivars such as Vignoles, berries are prone to splitting from the compactness of the clusters. Although Sour rot has been implicated in infecting compromised grape berries, Wendy McFadden-Smith in Ontario has also observed Sour-rot infecting berries on shoulders and tips that are not under pressure constraints. This suggests, that Sour rot likely has other entry points into grape berries that are not compromised. Potentially this may be the result of SWD ovipositing and introducing the causal organisms of Sour rot passively.

If Sour rot is a perennial problem in your vineyard, knowing when to apply management strategies is key. In the past this has relied on scouting and seeing that Sour-rot has indeed developed. In addition, you may have relied on veraison and weather forecasts that are predicting rain. A better alternative is to monitor brix and air temperature according to research results from Wendy McFadden-Smith. In her research, Wendy found that Sour rot began at 15° brix with temperatures between 68 and 77°F. By monitoring your brix levels and watching temperature forecasts, you should have a better window in which to apply controls. So when to apply treatments? Research results from Wayne Wilcox show that treatments need be applied prior to symptoms. In Wayne's trials antimicrobials and insecticides were applied starting at 15° brix. Oxidate applied with Mustang Max weekly was very effective. The 2015 trial results clearly showed that insecticide applications are effective in reducing Sour rot.

There is no recipe for success in managing Sour rot. The main thing is to be prepared, especially if you have had a continuous Sour rot problem in your vineyard. Consider monitoring the brix next season and putting on an antimicrobial (Oxidate) starting at 15° brix. Especially if wet weather is forecast when the grapes attain 15° brix. If you miss the 15° brix application and Sour rot takes hold, then get an antimicrobial applied ASAP. Consider adding an insecticide if vinegar fruit flies are very apparent.

One last thing to consider is your training system and Sour rot. A vertical shoot positioned Vignoles vineyard had significantly less Sour rot than a high-wire trained Vignoles vineyard in New York. The clusters of the Vignoles in a VSP system are readily exposed to sunlight and increased air flow compared to high-wire trained vineyard. No data has been presented whether VSP vineyards have reduced berry cracking compared to high wire trained vineyards. This certainly would be of interest to growers. Since berry cracking can be reduced by decreasing the humidity around clusters (hastening dry down after a wet period). In Missouri, this may be something that needs further evaluation, especially since Sour-rot continues to be a perennial problem.

## References

- McFadden-Smith, Wendy. 2012. [What we've learned about sour rot: An update on research](#).  
Bowcher, Annabel. [Fruit splitting of wine grape berries](#).  
Wilcox, Wayne. 2016. [Grape Disease Control, 2106](#).

## A Few Things Showing Up



Vidal with shot berries. Both Zinc and Boron were adequate from a recent petiole sample result. However, Boron was on the low end of the range at 32 and 41 ppm. A number of factors besides Boron and Zinc can cause shot berries including low nitrogen or an imbalance in the carbon to nitrogen ratio. Weather conditions at bloom including cool wet conditions can also result in shot berries.

Crimson Cabernet displaying red leaves in a new planting. The grower reported 50% vine death. A number of factors can cause red leaves including; nutrient deficiencies, Red blotch virus, Leaf roll virus, Crown gall, Rootstock combinations. Still waiting for samples to confirm problem. Any growers of Crimson Cabernet experiencing a similar problem, please contact me.



## Cumulative Growing Degree Days for the Seven Grape Growing Regions of Missouri from April 1 to August 15, 2016.

Region	Location by County	Growing Degree Days <sup>1</sup>		
		2016	2015	30 Year Average
Augusta	St. Charles	2741	2710	2617
Hermann	Gasconade	2611	2591	2477
Ozark Highland	Phelps	2829	2816	2664
Ozark Mountain	Lawrence	2798	2755	2602
Southeast	Ste. Genevieve	2766	2812	2638
Central	Boone	2681	2603	2543
Western	Ray	2556	2523	2479

<sup>1</sup>Growing degree days at base 50 from April 1 to August 15, 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)



This week I had the opportunity to represent the Grape and Wine Institute at the Missouri State Fair. This was a great opportunity to reach out to some prospective students as well as others interested in the Missouri Grape and Wine Industry.