Oregon Wine Research Institute

Vine to Wine Update

Oregon Wine Research Institute
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Red Blotch and Wine Quality

James Osborne, Enology Extension Specialist, Oregon Wine Research Institute

The impact of *Grapevine red blotch associated virus* (GRBaV, commonly referred to as red blotch) on wine quality is largely unknown, with most of the information available focused on fruit composition. A recent study on how GRBaV interferes with grape ripening at the molecular level (Blanco-Ulate et al., 2017) has been published, which may provide insights on how to mitigate the impact of the virus on fruit development in the vineyard. There are very few peer reviewed publications that have reported on winegrape compositional changes due to red blotch and most information regarding the impact on wine quality is anecdotal. A number of studies are currently being conducted in the US to determine the impact of red blotch on wine composition but results from these experiments have not yet been published. Early data from other studies suggest that the impact of red blotch is affected by site and year more than cultivar by cultivar, indicating that impact needs to be evaluated over multiple growing seasons. Based on the few published reports the two main effects on fruit quality have been:

- A decrease in sugar accumulation leading to reduced Brix levels in grapes at harvest compared to grapes from non-infected vines. The reduction in Brix has been reported to range from 1 to as high as 5 with some varietal differences being noted (Poojari et al 2013), though in this publication the vines were co-infected with *Grapevine fanleaf virus*. To date the sample size is too small to make any conclusive statements about consistent differences between varietals but early reports indicate this may be the case. Other anecdotal information suggests site and season are more important than cultivar in the degree of impact GRBaV has on grape quality.

- Lower anthocyanin concentration in grapes from red blotch infected fruit (Poojari et al 2013). Early results from studies being performed in Washington State and California also indicate lower Brix in fruit from red blotch infected vines as well as higher titratable acidity and lower anthocyanins.

While it would be expected that lower Brix will lead to wines with lower alcohol, the impact on other wine parameters such as flavor, aroma, mouthfeel, color, and sensory is relatively unknown. An upcoming presentation by Anita Oberholster (UC Davis) at the OWRI Grape Day will discuss results from some of the trials she has been conducting in California. This includes data regarding changes in wine anthocyanins and tannins as well as sensory attributes. This type of information will be vital for the development of strategies to manage this issue in the winery. If the only significant impact of GRBaV is lower Brix and higher acidity then that can be amended in the winery. However, if red blotch significantly impacts concentrations of tannins and flavor and aroma compounds then red blotch fruit will be more challenging to manage in the winery. Sensory studies also need to be conducted to determine the specific sensory impact across different wines as well as what percentage of red blotch fruit can be used before sensory impacts become noticeable. It is likely that the percentage of red blotch fruit needed before sensory differences are noted will vary between different red wines as is seen with other taints/faults such as *Brettanomyces* taint where higher concentrations of volatile phenols are required in a Cab. sauvignon compared to a Pinot noir to be noticeable. We are really only at the

very starting line when it comes to understanding both the specific effects of red blotch on wine quality and how these could be managed at the winery.

Literature cited:

Blanco-Ulate, B., Hopfer, H., Figueroa-Balderas, R., Ye, Z., Rivero, R.M., Albacete, A., Perez-Alocea, F., Koyama, R., Anderson, M.M., Smith, R.J., Ebeler, S.E. and Cantu, D. 2017. Red blotch disease alters grape berry development and metabolism by interfering with the transcriptional and hormonal regulation of ripening. J. Exp. Bot. 68:1225-1238. doi:10.1093/jxb/erw506

Poojari, S., Alabi, O.J., Fofanov, V.Y., and Naidu, R.A. 2016. A leafhopper-transmissible DNA virus with novel evolutionary lineage in the family *Geminiviridae* implicated in grapevine redleaf disease by next generation sequencing. *Plos One*. 8(6): e64194. doi:10.1371/journal.pone.0064194

EVENTS

2017 Grape Day

Management of trunk disease, grapevine viruses and fungicide resistance

The LaSells Stewart Center, OSU Campus, Thursday, April 6

Register here

Enology Extension Workshop

Sulfides in Winemaking

Speaker: Dr. James Osborne, OSU Department of Food Science & Technology

Event Flyer

Dates and Locations

April 27th - Northwest Wine Studies Center, Chemeketa Eola, Salem

May 3rd - So. Oregon Research & Extension Cntr (SOREC), Central Point

Time: 8:30 am - 1:00 pm, each location

Registration fee: $45/person, each location.

Submit a registration form at: oregonstate.edu/foodsci/sulfides-winemaking

About this workshop...

This half day workshop will explore the many factors influencing sulfide production during winemaking and ways to reduce their formation. Dr James Osborne will discuss some of the latest research regarding this complex problem including recent work conducted at OWRI that investigated formation of sulfur compounds post-alcoholic fermentation.

Specifically we will discuss:

- Vineyard influences - Nitrogen and elemental sulfur
- Formation during alcoholic fermentation
- Formation post-alcoholic fermentation
- Methods to minimize formation and tools for treatment

A tasting will also be conducted highlighting how sulfides can impact wine.

Please contact James Osborne at james.osborne@oregonstate.edu for further details.

Denise L. Dewey
Oregon Wine Research Institute
541-737-3620
denise.dewey@oregonstate.edu

Oregon State University
College of Agricultural Sciences

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