FACT SHEET

National Clean Plant Network

Start clean, stay clean.

Grapevine Red Blotch Disease

What is red blotch?

Grapevine red blotch-associated virus (GRBaV), is the latest addition to the list of more than 75 graft-transmissible agents that have been identified in grapevines. This recently reported virus is associated with the emerging red blotch disease that was described for the first time on Cabernet Sauvignon in Napa Valley in 2008. There is a very good correlation between the presence of GRBaV and red blotch symptoms, but this correlation does not prove causality.

What are the symptoms of red blotch?

Vines with red blotch disease show symptoms much like leafroll disease. Like leafroll, leaves turn red in early fall primarily at the base of the shoots. Unlike leafroll, vines with red blotch disease show pink/red veins on the leaf undersides and no rolling.

How serious is it?

Red blotch disease can result in a significant reduction in sugar accumulation - up to 5 °Brix. Much is still unknown about effect on yield and possible differences in cultivars and rootstocks.

Where has it been found?

Findings suggest a wide geographic distribution, as well as a widespread occurrence in red and white vinifera cultivars. Infected vines have been identified in California, New York, Virginia, Maryland, Pennsylvania, Texas and Washington. GRBaV was found both in young (first leaf) and mature (5-20-yr old) vineyards. The sequence of a virus nearly identical to GRBaV was also obtained in Canada. GRBaV has been detected in Cabernet franc, Cabernet Sauvignon, Chardonnay, Malbec, Merlot, Mourvèdre, Petite Syrah, Petit Verdot, Pinot noir, Riesling and Zinfandel.

Red blotch vs. **Leafroll**
in Cabernet franc.

Red blotch has flat margins.

Leafroll has leaf margins that roll downward.

Red blotch has pink veins.

Leafroll has green veins.

Photos: M. R. Sudarshana, USDA-ARS Davis, CA

When was it found?

Investigations into what appeared to be a new disease began in 2009. Grapevine red blotch-associated virus was reported in independent studies in California and New York in 2012.

How does it spread?

Based on the wide host and geographic distribution of GRBaV and the fact that the virus is transmitted by grafting, it is likely that spread primarily occurs through propagation material. Also, an increased incidence of GRBaV over time in young, healthy vineyards that are adjacent to old, infected vineyards suggests the existence of a vector.

How is it treated?

Like other viruses, once it is present in a vineyard there is no cure. However, evidence suggests that GRBaV can be eliminated using microshoot tip culture, the same method used to eliminate other viruses, to establish clean Foundation vines.

What kind of virus is it?

Analysis of the genomic nucleotide sequence indicates a new circular, monopartite DNA virus that is tentatively assigned to the family *Geminiviridae*.

How is it detected? How can I get my vines tested?

GRBaV can be detected by a PCR test. Several labs offer a test for GRBaV.

What is the status of vines at Foundation Plant Services at Davis?

All of the vines planted at the new Russell Ranch Foundation vineyard have been tested for red blotch and none of them are infected. The Classic Foundation Vineyard has been partially tested and the incidence of GRBaV is very low. Test records are available on the Foundation Plant Services website http://fps.ucdavis.edu

What is being done?

Studies are ongoing to investigate the role of GRBaV in red blotch disease, monitor incidence and spread, improve detection techniques, and evaluate the efficacy of microshoot tip culture for virus elimination.

For the latest information see:

http://iv.ucdavis.edu

References:

Al Rwahnih, M., Dave, A., Anderson, M., Uyemoto, J. K., and Sudarshana, M. R. 2012. Association of a circular DNA virus in grapevines affected by red blotch disease in California. Proc. 17th Congress of the International Council for the Study of Virus and Virus-like Diseases of the Grapevine (ICVG), Davis, California, USA, October 7-14 2012, pp. 104-105.

Krenz, B., Thompson, J., Fuchs, M. and Perry, P. 2012. Complete genome sequence of a new circular DNA virus from grapevine. Journal of Virology 86:7715.

Red blotch in Cabernet franc.

Photo: Marc Fuchs, Cornell University, Geneva, NY

Leafroll in Cabernet franc.

Photo: Marc Fuchs, Cornell University, Geneva, NY