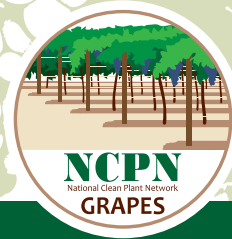


FACT SHEET

National Clean Plant Network



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Grapevine Red Blotch Disease

What is red blotch?

Grapevine red blotch virus (GRBV) is another addition to the list of more than 80 graft-transmissible agents that have been identified in grapevines. This virus has been shown to be the causal agent of red blotch disease that was described for the first time on Cabernet Sauvignon in Napa Valley in 2008.

What are the symptoms of red blotch?

Much like leafroll disease, leaves in GRBV-infected red cultivars turn red in late summer to early fall initially at the base of the shoots. In white cultivars leaf blades have marginal and interveinal chlorosis - regions of which may become necrotic. Symptom severity can be variable from year to year. Foliar red blotch disease symptoms are not always diagnostic. Vines should be tested by molecular techniques to confirm GRBV infection.

Delays in fruit ripening and poor berry color can also be indicative of GRBV presence.

How serious is it?

Red blotch disease consistently reduces sugar accumulation, increases malic acid and less consistently increases pH and titratable acidity. Cluster weight may be reduced and the effect on yield varies by cultivar and growing conditions. Pruning weight has also been shown to be reduced by 5% in infected Cabernet franc and Merlot vines.

Where has it been found?

Red blotch disease is widely distributed in the United States and has been identified in Canada, Mexico, South Korea and India. It occurs in red and white vinifera cultivars as well as interspecific hybrids, rootstocks and non-cultivated *Vitis* spp. growing near vineyards.

When was it found?

Investigations into what appeared to be a new disease began in 2008 in a symptom mapping block at the UC Oakville Research Station. GRBV was reported in independent studies in California and New York in 2012.

Red blotch was also confirmed in archival grape leaf tissue from the 1940s, indicating that the virus has been present in California since at least that time.

How does it spread?

Based on the wide geographic distribution of GRBV and the fact that the virus is transmitted by grafting, it is likely that spread has primarily occurred through propagation material. Also, an increased incidence of GRBV over time in vineyards suggests the existence of a vector. To date, only one insect vector, the three-cornered alfalfa hopper *Spissistilus festinus* (Hemiptera: Membracidae), has been confirmed to transmit GRBV to potted vines in lab studies.

Is there a cure?

Like other viruses, once it is present in a vineyard there is no cure. However, there is evidence that GRBV 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?

GRBV has a circular, monopartite DNA genome and is assigned to the genus *Glabovirus* in the plant virus family *Geminiviridae*.



Severe red blotch symptoms in Chardonnay.



Moderate red blotch symptoms in Chardonnay.



Red blotch symptoms in Merlot.



Red blotch symptoms in Malbec

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

GRBV can be detected by polymerase chain reaction test offered by several plant disease diagnostic labs. While further research is needed, evaluations of sampling techniques indicate that GRBV distribution in plant tissues is highly variable. Thus, sampling at least 6-8 old leaves (blades with attached petioles) or canes close to the trunk in fall, including 3-4 leaves or canes from each side of the trunk, is required per vine for greatest accuracy.

What is being done?

Current investigations focus on the ecology of the disease, field transmission of GRBV to healthy vines by the insect vector, transmission mode of GRBV, and disease management recommendations, as well as improved detection techniques.

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Adult three-cornered alfalfa hopper, *Spissistilus festinus*, on a petiole of a grapevine leaf.



Red leaf blade caused by three-cornered alfalfa hopper feeding damage in a red cultivar. Arrow indicates location of feeding site resulting in a girdle.



Red blotch in Cabernet franc.



Leafroll in Cabernet franc.



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