

SOREC Experts Expound

Why you don't want to see red vines in the fall

BY ACHALA N KC, PHD

As the fall season fades into memory, let us recall all the beautiful colors that adorned the Applegate Valley.

Yellow is one of my favorite fall colors when it comes to vineyards. Yellowish-greenish vines mean our vineyards are happily getting ready to rest until next season. However, red is another color increasingly apparent in vineyards, especially with red-fruited cultivars.

A vine will turn red for several reasons, including stress from mechanical damage, nutrient deficiency, mite infestation, insect girdling, fungal diseases, and viral diseases. While all stress-related problems are important, in this article I will focus on viral diseases.

Viral diseases in vineyards

As many as 65 viruses can infect grapevines, resulting in poor vine health, reduced yield and vigor, compromised fruit and juice quality, and sometimes vine mortality. The dominance of a specific virus depends on the susceptibility of a cultivar and changes in environmental conditions, which can be related to weather or to vineyard management practices that favor the virus species.

Almost a decade ago, Grapevine Leafroll-Associated Viruses (GLRaV) were a major concern (and still are) in all grape-production regions of the world. To date, five species of GLRaV have been reported, including GLRaV-1, -2, -3, -4, and -7. Among these, GLRaV-3 is the most widespread worldwide, including in the Pacific Northwest. Contaminated planting materials are the initial source of the virus in a new vineyard, and mealybug vectors spread GLRaV within the vineyard.

Red-fruited cultivars infected with GLRaV exhibit a reddening between veins and backward cupping of leaf margins. Infected white-fruited cultivars exhibit similar symptoms of backward cupping of leaves, but the areas between veins turn slightly yellow. In spring, bud break and shoot development are often delayed and short-lived, lasting for only a few weeks in GLRaV-infected vines.

The leaf symptoms are evident in early to mid-summer and become severe as the season progresses.

In 2008 an eight-year-old cabernet sauvignon vineyard in California exhibited symptoms resembling GLRaV, but tested negative for the disease. Similar cases were noticed in other grape-growing regions of the US, including southern Oregon. Since then, studies on understanding the new virus and its disease-causing ability resulted in a confirmed report in 2012 of a new virus, now called Grapevine Red Blotch Virus (GRBV). Six years later, the disease is reported in all major grape-growing regions of the US, Canada, South Korea, Mexico, and India.

GRBV symptoms first appear in basal leaves around veraison (when the fruit begins to change color). The initial symptoms on red-fruited cultivars appear as red spots or blotches that are sparsely distributed between veins. As the season progresses, more symptoms appear in the middle and top of the canopy. Later in the season, the blotches combine to form red stripes between the veins. On white-fruited cultivars the initial symptoms start as irregular chlorotic (yellowed or blanched) areas between the veins, which turn brown later in the season. These typical symptoms of red blotch disease distinguish it from other diseases causing stress-related redness.

GRBV reduces overall vineyard profitability by delaying fruit ripening and reducing fruit and juice quality. Regular monitoring of the vineyard around veraison and thereafter will reveal symptoms. Weeding out vines infected with GRBV or other diseases, followed by replanting, poses an additional burden to vineyard management. Once the disease is introduced into the vineyard, either by planting infected material or by insect vectors transmitting the disease, the virus can spread rapidly.

Sampling for viral diseases

Due to the subtle differences in symptomatology of viral diseases, it is



Symptoms of Grapevine Red Blotch Disease in pinot noir.



Symptoms of Grapevine Leafroll Disease in pinot noir.

always recommended to confirm the presence of the virus in suspected vines (test—don't guess). Depending on cultivar and growing season, infected vines often remain symptomless, adding another layer of uncertainty. Old and symptomatic leaves carry higher levels of virus, so testing for both grapevine leafroll-associated virus and grapevine red blotch virus is more reliable for them. The amount and type of samples needed depends on the requirements of the testing laboratory. It is always helpful

to check with the lab before you ship your samples.

So when next fall comes around, remember that there is a story behind the red vines that you might see in our beautiful local vineyards.

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