Grapevine Red Blotch Disease effects on yield and fruit composition

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The effect of red blotch disease on fruit composition and vine growth was evaluated for two years in vines that tested negative by qPCR assay for several grapevine viruses and positive for Grapevine red blotch-associated virus (GRBaV) which causes red blotch disease. Between 20 and 30 data vines of Cabernet Sauvignon, Merlot, Chardonnay and Zinfandel were monitored in four vineyards in Napa and Sonoma Counties. The Cabernet Sauvignon and Chardonnay vines were monitored for two years. Berry samples were collected during the season and at harvest, juice samples were analyzed at UC Davis. The chart below provides a comparison of the berry composition at harvest for GRBaV-positive and GRBaV-negative vines for the cultivars evaluated.

Yield was reduced in 2014 in Chardonnay vines that were infected with GRBaV compared to vines that were not infected. Cluster number, cluster weight and berry number per cluster were all significantly decreased in GRBaV infected Chardonnay vines. Average berry weights of GRBaV infected Chardonnay and Zinfandel vines tended to be greater while berry weights of Cabernet Sauvignon were not affected. Yields were not significantly different in the other cultivars; however yields were depressed in GRBaV infected Zinfandel vines.

The effect of crop reduction was evaluated utilizing the same GRBaV infected Cabernet Sauvignon and Chardonnay vines as in 2013 to determine if there was a carryover effect. Just after fruit set, when berry diameter was approximately 4 mm (EL stage 29) flower clusters were removed from shoots that had more than one cluster thus insuring all fruit bearing shoots carried only single clusters. Total soluble solids, pH and titratable acidity were not significantly different in juice samples from diseased vines regardless of total cluster number. These results indicate that dropping fruit to improve quality in vineyards with red blotch disease may not produce the desired effect.

Fruit quality parameters at harvest in fruit on GRBaV-Positive as compared to GRBaV-Negative vines in Sonoma and Napa, 2013 and 2014

Juice composition of berry samples	Cabernet Sauvignon 10-1-13 / 9-21-14		Merlot / Zinfandel 9-11-13 / 9-20-14		Chardonnay 9-15-2013 & 2014	
°Brix	↓	↓	↓	ns	↓	↓
pH	ns[a]	ns	ns	ns	↑	↑
Titratable Acidity	ns	ns	↑	ns	ns	ns
Malate	ns	↑	↑	ns	↑	↑

[a]ns: not significantly different, $p \leq 0.05$