

Supplemental vineyard inputs may partially mitigate negative effects of Grapevine Red Blotch Disease in Oregon Pinot noir

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Grapevine red blotch disease (GRBD) poses an increasing threat to winegrape production by altering vine physiology and reducing fruit quality. While progress has been made in understanding GRBD pathology and epidemiology, few pragmatic horticultural strategies have been identified to manage disease effects in the field. Consequently, two field experiments were initiated in a commercial vineyard to determine the potential of cultural practices to mitigate negative effects in Grapevine Red Blotch Virus-infected (GRBV+) Pinot noir grapevines. In experiment A, vines received factorial combinations of grower control (GC) and supplemental (SUPP; 2x GC) irrigation (I) and fertilization (F). In experiment B, vines grafted to Couderc 3309 (3309C) or Riparia Gloire (RG) rootstocks received factorial combinations of GC and SUPP irrigation (I; 2x GC) and crop thinning (T; one cluster/shoot). Across both experiments, SUPP-I significantly reduced disease severity (% red leaves per vine) at harvest, and increased yield compared to GC-I. SUPP-I reduced disease severity by 19.6% in experiment A, and by 15.2 and 10.0% in experiment B for 3309C and RG, respectively. Yields increased by 20-30% with SUPP-I across both experiments. SUPP-F or SUPP-T had no effects on disease severity and SUPP-F had no effects on yield. There were no effects on total soluble solids (TSS) at harvest across both experiments, though SUPP-F and SUPP-T significantly increased berry pH. SUPP-F increased pH by 0.09 pH units in experiment A, and by 0.22 and 0.13 pH units in experiment B for 3309C and RG, respectively. The first year's data suggests that increasing irrigation can significantly reduce disease severity and increase yield with no significant reduction in TSS in GRBV+ Pinot noir grapevines. In contrast, supplemental fertilization and crop thinning have no effects on disease severity and TSS but can increase berry pH. Ultimately, increasing vineyard inputs may partially mitigate negative effects of GRBD.