

Clopyralid Safety in Grape. P12604.19-CAP24. Seth Watkins and Bradley D. Hanson (Department of Plant Sciences, University of California, Davis, CA). A trial was conducted at the UC Davis Viticulture and Enology Research Station to evaluate the crop safety of clopyralid in wine grape.

The trial was initiated on April 26, 2019 in a 21-year-old “Grenache” wine grape vineyard (Table 1). The soil was a Yolo silt loam with a pH of 7.1 and an organic matter content of 2.05%. The trial design was a randomized complete block with four replications and 6 ft by 12 ft plots with two vines per plot. Herbicide treatments were applied with a CO2 pressurized backpack sprayer calibrated to deliver 30 GPA at 30 PSI through two Teejet AIXR11003 flat fan nozzles. A discharge calibration was performed before test substance application and a metronome was used to maintain travel speed. The herbicide treatments (Table 2) were applied to the soil surface in a 3’ band on both sides of the vine row. Treatments include two rates of clopyralid; 0.25 lb ae/acre applied two times at an approximate 30 day interval and 0.50 lb ae/acre applied once. Visual crop injury ratings were taken approximately 14 and 28 days after each application. Yield was evaluated by harvesting all fruit from one vine in each plot.

Foliar injury (leaf cupping) was observed from all herbicide treatments (Table 2). The injury was located on new growth, throughout the crop canopy. Fruit did not appear to have any injury symptoms. Because of the trellis height and cane length at application, herbicide uptake most likely was via roots; however trunk absorption could also have contributed.

Although crop yield was not statistically different among plots treated with herbicide and the untreated control, clopyralid at 0.25 lb ae/acre and 0.50 lb ae/acre (10.6 and 21.2 fl oz/A of Stinger) may cause visual injury that likely would be unacceptable to commercial growers in this region. This trial will be repeated in 2020 with the herbicide treatments applied to the same plots in both 2019 and 2020.

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**Table 1.** Herbicide application data.

Application date	April 26, 2019	May 30, 2019
Air temperature (F)	68	75.8
Soil temperature (F)	62	63
Relative humidity (%)	59	55
Wind (mph) and direction	5 north	5.4 south
Cloud cover (%)	10	0

**Table 2.** Visual injury ratings and fruit yield in a wine grape crop safety study near Davis, CA in 2019.

Treatment <sup>a</sup>	Rate lbs ae/A	5/10/19	5/30/19	6/12/19	6/27/19	9/20/19
		-----% injury <sup>b</sup> -----				lbs/plot
untreated	0	0	0 b	0 b	0 b	26.35 a
clopyralid <sup>c</sup>	0.25	0	7.5 a	20 a	25 a	18.20 a
clopyralid <sup>d</sup>	0.50	0	10 a	20 a	22.5 a	29.42 a

Means within a column followed by the same letter are not statistically different according to Tukey’s HSD (P=0.05).

<sup>a</sup>Nonionic surfactant (NIS) at .25% v/v added to herbicide treatments.

<sup>b</sup>Injury scale is 0-100 with 0 being no injury and 100 indicating complete kill.

<sup>c</sup>Treatment was applied two times at 34 day interval.

<sup>d</sup>Treatment was applied once at first application timing.



Grape leaf cupping 34 days after first application of clopyralid at 0.25 lb ae/A.



Grape leaf cupping 34 days after first application of clopyralid at 0.50 lb ae/A.



Grape leaf cupping 13 days after second application of clopyralid at 0.25 lb ae/A.





Grape leaf cupping 13 days after second application of clopyralid at 0.50 lb ae/A.



Grape leaf cupping 28 days after second application of clopyralid at 0.25 lb ae/A.



Grape leaf cupping 28 days after second application of clopyralid at 0.50 lb ae/A.