

Diquat Safety in Grape. P12220.19-CAP20. 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 diquat in wine grape.

The trial was initiated on July 16, 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 25 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 diquat applied three times at approximate 14 day intervals with the last application 36 days before harvest. Visual crop injury ratings were taken 14 to 22 days after each application. Yield was evaluated by harvesting all fruit from one vine in each plot.

No crop injury symptoms were observed from diquat at any rating interval (Table 2). Grape fresh weight was not statistically different among treatments (Table 2).

In this study, diquat at 0.5 and 1.0 lb ai/acre (2 and 4 pints of Reglone) appeared to be safe on grape and would likely be acceptable in commercial production.

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Table 1. Herbicide application data.

Application date	July 16, 2019	July 30, 2019	August 15, 2019
Air temperature (F)	69.4	63.6	86.8
Soil temperature (F)	73.1	69.5	73.3
Relative humidity (%)	73	76	39
Wind (mph) and direction	4.8 north	4.2 south	6.2 north
Cloud cover (%)	70	0	0

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

Treatment ^a	Rate lbs ai/A	7/30/19	8/15/19	9/6/19	9/20/19
		-----% injury ^b -----			lbs/plot
untreated	0	0	0	0	25.34 a
diquat	0.5	0	0	0	23.90 a
diquat	1.0	0	0	0	27.21 a

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

^aNonionic surfactant (NIS) at .25% v/v added to herbicide treatments.

^bInjury scale is 0-100 with 0 being no injury and 100 indicating complete kill.



Overview of a diquat crop safety trial in wine grape on 9/6/19 near Davis, CA.



Grape vine with healthy fruit 22 days after the third application of diquat at 0.5 lb ai/acre.