SUPPLEMENTARY DATA



Figure S1. Magnesium deficiency symptoms.

Magnesium deficiency symptoms observed at the experimental site near Milton-Freewater, Oregon, USA. (A) Interveinal chlorosis observed at bloom (7 June 2023). (B) Severe interveinal reddening and (C) poor fruit set observed after fruit set (27 June 2023).

Table S1. Soil cation concentration of Walla Walla vineyard soils.

Site	Soil type(s)	Year	Sampling depth (m)	Number of subsamples	K (ppm)	Ca (ppm)	Mg (ppm)	K:Mg
Experimental site	Freewater gravelly silt loam, onyx silt loam	2018	0.6	7	254	2,568	579	0.44
Site A	Freewater very cobbly loam	2018	N.D.	3	444	2,191	456	0.97
Site B	Freewater very cobbly loam	2023	0.3	8	1,063	3,260	669	1.59
		2024	0.3	8	956	3,037	662	1.44
Site C	Freewater very cobbly loam	2023	0.3	8	684	3,539	523	1.31
		2024	0.3	8	673	3,265	509	1.32
		Soil nutrient ranges		Moderate	100–220	600–1,800	120–240	0.30–0.45
				Excessive	> 240	> 2,000	> 250	> 0.45

Data represent soil samples collected from the present study's experimental site and other vineyards near Milton-Freewater, Oregon, in the Walla Walla Valley American Viticultural Area. The soil nutrient ranges are regional recommendations for vineyard soils (Moyer *et al.*, 2018). N.D. = no data. Soil types were accessed from the Web Soil Survey (USDA NRCS; https://websoilsurvey.nrcs.usda.gov/app/).