

Supplemental Data for:

Frost SC, Fox DJ, Keller M, Collins TS, and Harbertson JF. 2023. Freeze-killed leaf material causes atypical aromas and astringency in Cabernet Sauvignon. *Am J Enol Vitic* 74:5. DOI: 10.5344/ajev.2022.22012

Supplemental Table 1 Descriptive analysis mean square error results.

Factor	df	Artificial fruit	Astringent	Baking spices	Bitter	Black pepper	Citrus	Cooked veg
Judge	12	6552.3	3904.1	4341.9	9919.1	4475.2	5510.2	3411.3
Trt	3	3763.6	5797.7	42.5	216.5	1678.2	1306.8	327.2
senRep	2	559.5	420.2	75.9	362.3	10.6	434.0	217.1
Trt(fermRep)	8	336.6	319.7	78.4	345.5	154.3	130.5	93.9
Judge:Trt	36	849.5	645.2	206.3	195.1	291.4	731.9	150.1
Judge:senRep	24	412.2	639.1	102.1	340.3	172.1	250.6	329.0
Judge:Trt(fermRep)	96	222.9	241.6	78.4	211.9	155.5	121.2	88.2
senRep:Trt	6	128.9	313.5	129.3	309.8	256.4	212.5	148.4
senRep:Trt:fermRep	16	199.4	245.8	125.4	183.1	245.1	143.6	78.6
Residuals	264	292.1	314.5	109.6	170.8	162.1	160.4	100.4

	df	Dark fruit	Dried fruit	Floral	Floral aftertaste	Fresh green veg	Herbaceous straw	Hot
Judge	12	12209.1	6530.6	4261.5	5873.9	7031.6	7626.5	10699.6
Trt	3	3671.1	341.5	31784.5	25683.7	417.7	6808.4	241.2
senRep	2	471.5	442.8	266.8	205.7	35.5	38.5	32.1
Trt(fermRep)	8	124.8	266.9	686.6	321.8	122.2	154.8	224.3
Judge:Trt	36	779.0	494.9	1087.5	1081.5	282.1	1256.3	112.7
Judge:senRep	24	430.4	273.7	680.8	510.6	138.3	316.6	269.7
Judge:Trt(fermRep)	96	245.5	152.3	401.9	219.1	105.3	203.7	106.1
senRep:Trt	6	238.0	89.1	457.5	419.0	175.1	122.6	293.6
senRep:Trt:fermRep	16	510.7	119.4	357.0	239.0	172.5	147.0	188.5
Residuals	264	390.1	154.8	412.3	338.6	145.2	194.3	175.3

	df	Oxidized	Red fruit	Sour	Stone fruit	Sulfurous	Sweet	Tropical fruit
Judge	12	2476.8	14161.4	9004.4	5237.2	6596.0	5684.7	4832.7
Trt	3	90.5	488.7	266.4	2188.5	3348.7	191.9	4696.4
senRep	2	141.2	262.1	257.7	134.6	151.5	166.5	722.2
Trt(fermRep)	8	31.8	513.5	755.7	173.6	234.5	183.6	215.9
Judge:Trt	36	73.4	679.6	306.4	654.3	482.9	383.9	893.2
Judge:senRep	24	64.3	393.7	518.1	148.1	276.6	190.1	394.4
Judge:Trt(fermRep)	96	50.9	377.6	290.6	147.9	223.1	142.9	214.0
senRep:Trt	6	110.4	339.6	235.8	52.5	312.7	71.5	391.6
senRep:Trt:fermRep	16	72.1	584.9	573.0	143.4	76.2	167.6	219.8
Residuals	264	79.4	311.8	267.6	167.4	209.6	168.9	212.3

Supplemental Data for:

Frost SC, Fox DJ, Keller M, Collins TS, and Harbertson JF. 2023. Freeze-killed leaf material causes atypical aromas and astringency in Cabernet Sauvignon. *Am J Enol Vitic* 74:5. DOI: 10.5344/ajev.2022.22012

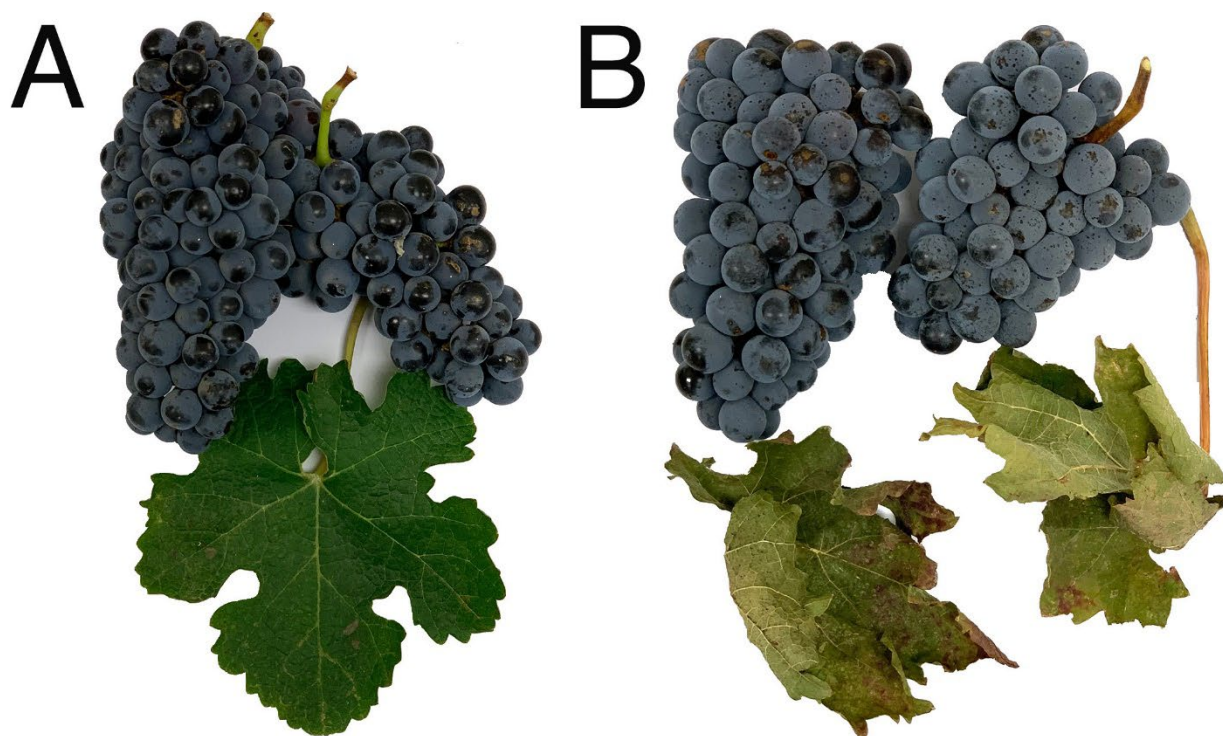
Supplemental Table 2 Polyphenolic measures, by fermentation replicate. CE, catechin equivalent; M3G, malvidin-3-glucoside equivalent; AU, absorbance unit.

Dose (g/kg FLKM)	Fermentation replicate	Tannin (mg/L CE)	Total phenolics (mg/L CE)	Anthocyanin (mg/L M3G)	Polymeric pigment (AU)
0.00	1.00	523 (15) ^a	1506 (34)	786 (6)	6.6 (0.0)
0.00	2.00	490 (7)	1460 (6)	874 (13)	6.6 (0.1)
0.00	3.00	539 (11)	1564 (9)	900 (11)	6.2 (0.1)
0.50	1.00	543 (17)	1464 (25)	834 (5)	7.4 (0.2)
0.50	2.00	536 (13)	1460 (50)	876 (11)	7.7 (0.2)
0.50	3.00	517 (11)	1460 (21)	888 (4)	7.4 (0.1)
2.00	1.00	367 (22)	1336 (9)	890 (34)	7.7 (0.1)
2.00	2.00	290 (3)	1236 (54)	919 (9)	7.5 (0.2)
2.00	3.00	268 (7)	1213 (36)	914 (3)	7.3 (0.1)
8.00	1.00	275 (3)	1203 (19)	700 (11)	6.8 (0.2)
8.00	2.00	313 (11)	1235 (32)	799 (19)	6.5 (0.1)
8.00	3.00	279 (17)	1162 (13)	861 (28)	6.6 (0.0)

^aStandard error found in parentheses.

Supplemental Data for:

Frost SC, Fox DJ, Keller M, Collins TS, and Harbertson JF. 2023. Freeze-killed leaf material causes atypical aromas and astringency in Cabernet Sauvignon. *Am J Enol Vitic* 74:5. DOI: 10.5344/ajev.2022.22012



Supplemental Figure 1 Cabernet Sauvignon clusters and leaves harvested from the same vineyard pre- (A) and post-frost (B) showing healthy and freeze-killed leaves.