Supplemental Data for:

Hickey CC, Kwasniewski MT and Wolf TK. 2018.

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Supplemental Table 1 Effect of leaf removal on fruit zone leaf layer number (LLN) and cluster exposure flux availability (CEFA) collected at E-L 27, 31, and 33 in Cabernet franc from 2012 to 2014.

	E-L 31		E-L 33	
2012 / treatment[a]	**LLN**	**CEFA**	**LLN**	**CEFA**
NO	1.88	0.24	1.97 a[b]	0.30 c
MED	1.88	0.3	1.36 b	0.50 b
HIGH	1.94	0.26	0.44 c	0.77 a
Significance[c]	ns	ns	<0.0001	<0.0001
	E-L 27		**E-L 33**	
2013 / treatment	**LLN**	**CEFA**	**LLN**	**CEFA**
NO	2.03 a	0.29 b	2.29 a	0.18 c
MED	n/a[d]	n/a	1.82 b	0.37 b
HIGH	n/a	n/a	0.09 c	0.69 a
P-B	0.10 b	0.85 a	0.24 c	0.68 a
Significance	<0.0001	<0.0001	<0.0001	<0.0001
	E-L 27		**E-L 33**	
2014 / treatment	**LLN**	**CEFA**	**LLN**	**CEFA**
NO	2.42 a	0.25 b	2.34 a	0.24 c
MED	n/a	n/a	1.22 b	0.47 b
HIGH	n/a	n/a	0.03 c	0.73 a
P-B	0.00 b	0.79	0.36 c	0.69 a
Significance	<0.0001	<0.0001	<0.0001	<0.0001

[a]NO: no leaf removal; MED: post-fruit set removal of leaves to medium extent; HIGH: post-fruit set removal of leaves to high extent; P-B: pre-bloom leaf removal of six basal leaves and laterals.

[b]Means in same treatment group (columns) not sharing the same letter are significantly different at $p = 0.05$ based on adjusted p-values using Student's t-test (only for E-L 27 in 2013 and 2014) or Tukey's honest significant difference.

[c]Significance of treatment effects ($p > F$; ns: not significant at $p = 0.05$).

[d]n/a: LLN and CEFA not measured in MED and HIGH plots, as leaves not yet removed from those treatments at E-L 27.

Supplemental Data for:

Hickey CC, Kwasniewski MT and Wolf TK. 2018.

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Supplemental Table 2 Effect of leaf removal on fruit zone leaf layer number (LLN) and cluster exposure flux availability (CEFA) collected at E-L 27, 31, and 33 in Petit Verdot from 2012 to 2014.

	E-L 31		E-L 33	
2012 / treatment[a]	**LLN**	**CEFA**	**LLN**	**CEFA**
NO	2.30	0.15	2.54 a[b]	0.09 c
MED	2.41	0.16	1.40 b	0.41 b
HIGH	2.53	0.13	0.54 c	0.67 a
Significance[c]	ns	ns	<0.0001	<0.0001
	E-L 27		**E-L 33**	
2013 / treatment	**LLN**	**CEFA**	**LLN**	**CEFA**
NO	2.13 a	0.21 b	2.35 a	0.14 c
MED	n/a[d]	n/a	1.25 b	0.38 b
HIGH	n/a	n/a	0.07 c	0.65 a
P-B	0.13 b	0.65 a	0.21 c	0.69 a
Significance	<0.0001	<0.0001	<0.0001	<0.0001
	E-L 27		**E-L 33**	
2014 / treatment	**LLN**	**CEFA**	**LLN**	**CEFA**
NO	2.36 a	0.22 b	2.43 a	0.15 c
MED	n/a	n/a	1.16 b	0.45 b
HIGH	n/a	n/a	0.01 c	0.72 a
P-B	0.00 b	0.78 a	0.11 c	0.69 a
Significance	<0.0001	<0.0001	<0.0001	<0.0001

[a]NO: no leaf removal; MED: post-fruit set removal of leaves to medium extent; HIGH: post-fruit set removal of leaves to high extent; P-B: pre-bloom leaf removal of six basal leaves and laterals.

[b]Means in same treatment group (columns) not sharing the same letter are significantly different at $p = 0.05$ based on adjusted p-values using Student's t-test (only for E-L 27 in 2013 and 2014) or Tukey's honest significant difference.

[c]Significance of treatment effects ($p > F$; ns: not significant at $p = 0.05$).

[d]n/a: LLN and CEFA not measured in MED and HIGH plots, as leaves not yet removed from those treatments at E-L 27.

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Supplemental Table 3 Linear relationship (R^2) between ambient air and berry temperature as a function of fruit-zone leaf removal, canopy side, and time of day in Cabernet franc and Petit Verdot in 2013 and 2014.

	East			West		
2013[a] / treatment[b]	**AM**	**NOON**	**PM**	**AM**	**NOON**	**PM**
Cabernet franc						
NO	0.899	0.964	0.964	0.942	0.964	0.866
MED	0.899	0.964	0.956	0.944	0.963	0.790
HIGH	0.877	0.968	0.925	0.947	0.949	0.825
P-B	0.876	0.961	0.926	0.948	0.951	0.809
Petit Verdot						
NO	0.920	0.965	0.935	0.915	0.950	0.806
MED	0.883	0.964	0.939	0.940	0.949	0.791
HIGH	0.882	0.952	0.927	0.943	0.916	0.717
P-B	0.907	0.967	0.933	0.955	0.926	0.774
2014[c] / treatment						
Cabernet franc						
NO	0.852	0.845	0.783	0.871	0.782	0.758
MED	0.833	0.853	0.792	0.874	0.787	0.717
HIGH	0.789	0.852	0.805	0.877	0.777	0.752
P-B	0.835	0.831	0.801	0.879	0.772	0.763
Petit Verdot						
NO	0.796	0.953	0.970	0.933	0.931	0.889
MED	0.779	0.946	0.940	0.926	0.923	0.867
HIGH	0.670	0.939	0.960	0.945	0.945	0.831
P-B	0.722	0.924	0.968	0.931	0.952	0.870

[a]Data collected on 15 July, 29 July, 12 Aug, 26 Aug, 10 Sept, and 23 Sept in 2013; berry temperature averaged by each experimental unit and ambient temperature averaged by each time of day; AM: ~0900 to 1030 hr, NOON: 1245 to 1415 hr; and PM: 1545 to 1715 hr.

[b]NO: no leaf removal; MED: post-fruit set removal of leaves to medium extent; HIGH: post-fruit set removal of leaves to high extent; P-B: pre-bloom leaf removal of six basal leaves and laterals.

[c]Data collected on 8 July, 21 July, 5 Aug, 19 Aug, 27 Aug, 8 Sept, 23 Sept, and 7 Oct in 2014; berry and ambient temperature averaged by each experimental unit; AM: ~0900 to 1030 hr; NOON: 1245 to 1415 hr; and PM: 1545 to 1715 hr.

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Supplemental Table 4 Effect of leaf removal treatment on the simple linear relationship (R^2) between ambient air temperature and Cabernet franc berry temperature over all times of day, and the estimated minimum ambient air temperature (T) required for berries to reach, and amount of time spent at, ≥30 and 35°C on eastern and western canopy sides, in the postveraison periods of 2013 and 2014.

		EAST-2013[a]			
		≥30°C		≥35°C	
Treatment[b]	R^2	Minimum air T (°C)	Time (hrs)	Minimum air T (°C)	Time (hr)
NO	0.932	30.1	37.4	36.2	0.0
MED	0.911	29.7	45.6	35.8	0.0
HIGH	0.887	28.9	60.7	34.9	0.0
P-B	0.886	29.1	56.8	35.2	0.0
		WEST-2013[a]			
		≥30°C		≥35°C	
Treatment	R^2	Minimum air T (°C)	Time (hrs)	Minimum air T (°C)	Time (hr)
NO	0.866	30.0	40.8	35.7	0.0
MED	0.821	29.5	49.9	35.3	0.0
HIGH	0.805	28.7	65.4	34.2	1.5
P-B	0.827	28.9	61.9	34.4	0.9
		EAST-2014[c]			
		≥30°C		≥35°C	
Treatment	R^2	Minimum air T (°C)	Time (hrs)	Minimum air T (°C)	Time (hr)
NO	0.814	30.2	14.5	35.8	0.0
MED	0.798	29.8	17.9	35.3	0.0
HIGH	0.757	29.4	22.5	34.9	0.0
P-B	0.788	29.6	20.3	35.2	0.0
		WEST-2014[c]			
		≥30°C		≥35°C	
Treatment	R^2	Minimum air T (°C)	Time (hrs)	Minimum air T (°C)	Time (hr)
NO	0.825	29.2	24.8	33.8	0.5
MED	0.811	28.9	30.0	33.3	0.9
HIGH	0.813	28.7	32.7	33.0	1.2
P-B	0.822	28.7	32.7	33.1	1.1

[a]Data collected on 15 July, 29 July, 12 Aug, 26 Aug, 10 Sept, and 23 Sept in 2013; berry temperature averaged by each experimental unit and ambient temperature averaged by each time of day.
[b]NO: no leaf removal; MED: post-fruit set removal of leaves to medium extent; HIGH: post-fruit set removal of leaves to high extent; P-B: pre-bloom leaf removal of six basal leaves and laterals.
[c]Data collected on 8 July, 21 July, 5 Aug, 19 Aug, 27 Aug, 8 Sept, 23 Sept, and 7 Oct in 2014; berry and ambient temperature averaged by each experimental unit.

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Supplemental Table 5 Effect of leaf removal treatment on the simple linear relationship (R^2) between ambient air temperature and Petit Verdot berry temperature over all dates and times of day, and the estimated minimum ambient air temperature (T) required for berries to reach, and amount of time spent at, ≥30 and 35°C on eastern and western canopy sides, during the postveraison periods in 2013 and 2014.

		EAST-2013[a]			
		≥30°C		≥35°C	
Treatment[b]	R^2	Minimum air T (°C)	Time (hrs)	Minimum air T (°C)	Time (hr)
NO	0.933	30.6	30.6	36.7	0.0
MED	0.899	29.9	42.9	36.1	0.0
HIGH	0.875	29.3	52.9	35.4	0.0
P-B	0.908	29.5	49.6	35.5	0.0
		WEST-2013[a]			
		≥30°C		≥35°C	
Treatment	R^2	Minimum air T (°C)	Time (hrs)	Minimum air T (°C)	Time (hr)
NO	0.850	30.4	32.8	36.5	0.0
MED	0.845	29.5	49.6	35.3	0.0
HIGH	0.774	28.8	61.7	34.5	0.7
P-B	0.811	29.1	57.5	34.7	0.4
		EAST-2014[c]			
		≥30°C		≥35°C	
Treatment	R^2	Minimum air T (°C)	Time (hrs)	Minimum air T (°C)	Time (hr)
NO	0.897	30.6	0.9	36.9	0.0
MED	0.875	30.3	1.0	36.6	0.0
HIGH	0.827	30.2	1.0	36.9	0.0
P-B	0.841	30.1	1.0	36.5	0.0
		WEST-2014[c]			
		≥30°C		≥35°C	
Treatment	R^2	Minimum air T (°C)	Time (hrs)	Minimum air T (°C)	Time (hr)
NO	0.906	29.7	1.4	34.5	0.0
MED	0.897	29.4	1.7	34.7	0.0
HIGH	0.887	28.9	3.5	34.0	0.0
P-B	0.905	29.3	2.0	34.6	0.0

[a]Data collected on 15 July, 29 July, 12 Aug, 26 Aug, 10 Sept, and 23 Sept in 2013; berry temperature averaged by each experimental unit and ambient temperature averaged by each time of day.
[b]NO: no leaf removal; MED: post-fruit set removal of leaves to medium extent; HIGH: post-fruit set removal of leaves to high extent; P-B: pre-bloom leaf removal of six basal leaves and laterals.
[c]Data collected on 8 July, 21 July, 5 Aug, 19 Aug, 27 Aug, 8 Sept, 23 Sept, and 7 Oct in 2014; berry and ambient temperature averaged by each experimental unit.

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Supplemental Table 6 Effect of post-fruit set leaf removal treatment on Cabernet franc and Petit Verdot grape carotenoids in 2012.

	Cabernet franc				
Treatment[a]	**Lutein 5,6-epoxide (µg/g berry)**[b]	**Zeaxanthin (µg/g berry)**[b]	**Lutein (µg/g berry)**	**β-carotene (µg/g berry)**	**Zeaxanthin: Lutein ratio**
NO	0.014	0.020 b[c]	1.35	1.23	0.012 c
MED	0.014	0.021 b	1.20	1.06	0.014 b
HIGH	0.014	0.028 a	1.33	0.99	0.017 a
NPS					
Post-fruit set	0.017 a	0.027 a	2.02 a	1.99 a	0.013 b
Preveraison	0.016 a	0.018 b	1.76 b	1.35 b	0.010 c
Veraison	0.010 b	0.024 a	1.22 c	0.77 c	0.020 a
Harvest	nd	nd	0.18 d	0.27 d	n/a[d]
Significance[e]					
Treatment	ns	0.0010	ns	ns	<0.0001
NPS	<0.0001	0.0011	<0.0001	<0.0001	<0.0001
Treatment*NPS	ns	ns	ns	ns	ns
	Petit Verdot				
Treatment	**Lutein 5,6-epoxide (µg/g berry)**	**Zeaxanthin (µg/g berry)**	**Lutein (µg/g berry)**	**β-carotene (µg/g berry)**	**Zeaxanthin: Lutein ratio**
NO	0.019 b	0.022 b	3.04	1.72	0.008 b
MED	0.022 a	0.034 b	3.13	1.77	0.011 a
HIGH	0.020 ab	0.035 a	2.93	1.71	0.012 a
NPS					
Post-fruit set	0.022	0.042 a	3.93 a	2.49 a	0.011 b
Preveraison	0.020	0.028 b	3.52 a	1.67 b	0.008 c
Veraison	0.020	0.037 a	3.54 a	2.00 ab	0.011 b
Harvest	nd	0.014 c	1.14 b	0.76 c	0.013 a
Significance					
Treatment	0.0296	<0.0001	ns	ns	<0.0001
NPS	ns	<0.0001	<0.0001	<0.0001	<0.0001
Treatment*NPS	ns	0.0013	ns	ns	ns

[a]NO: no leaf removal; MED: post-fruit set removal of leaves to medium extent; HIGH: post-fruit set removal of leaves to high extent; NPS: normalized phonological stage.
[b]Lutein 5,6-epoxide and zeaxanthin were below the detection threshold (nd) in the Harvest sample. When detected, zeaxanthin ranged from 0.0091 to 0.0137 µg/g berry across treatments.
[c]Means in the same treatment group (columns) not sharing the same letter are significantly different at $p > 0.05$ based on adjusted *p*-values using Tukey's honest significant difference.
[d]n/a: Zeaxanthin:lutein ratio unable to be determined, as zeaxanthin not detected at harvest.
[e]Significance of treatment effects ($p > F$; ns: not significant at $p = 0.05$).

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Supplemental Table 7 Effect of pre-bloom and post-fruit set leaf removal treatment on Cabernet franc and Petit Verdot grape carotenoids in 2013.

	Cabernet franc				
Treatment[a]	**Lutein 5,6-epoxide (µg/g berry)**[b]	**Zeaxanthin (µg/g berry)**[b]	**Lutein (µg/g berry)**	**β-carotene (µg/g berry)**	**Zeaxanthin: Lutein ratio**
NO	0.015 b[c]	0.019 b	1.21 ab	0.73	0.013 b
MED	0.014 b	0.023 b	1.07 b	0.66	0.015 b
HIGH	0.018 a	0.039 a	1.29 a	0.75	0.025 a
P-B	0.016 ab	0.042 a	1.34 a	0.75	0.025 a
NPS					
Post-fruit set	0.020 a	0.028 b	1.57 a	0.76 a	0.018 b
Preveraison	0.015 b	0.040 a	1.56 a	0.88 a	0.025 a
Veraison	0.012 c	0.025 b	1.48 b	0.88 a	0.016 b
Harvest	nd	nd	0.30 b	0.37 b	n/a[d]
Significance[e]					
Treatment	0.0010	<0.0001	0.0040	ns	<0.0001
NPS	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Treatment*NPS	ns	ns	ns	ns	ns
	Petit Verdot				
Treatment	**Lutein 5,6-epoxide (µg/g berry)**	**Zeaxanthin (µg/g berry)**	**Lutein (µg/g berry)**	**β-carotene (µg/g berry)**	**Zeaxanthin: Lutein ratio**
NO	0.021 ab	0.015 b	2.26 b	1.47	0.008 c
MED	0.021 b	0.016 b	2.14 b	1.28	0.009 bc
HIGH	0.025 a	0.023 a	2.72 a	1.55	0.012 a
P-B	0.023 ab	0.027 a	2.90 a	1.47	0.010 ab
NPS					
Post-fruit set	0.026 a	0.024 a	3.36 b	1.17 b	0.007 c
Preveraison	0.023 a	0.023 a	3.92 a	3.27 a	0.006 c
Veraison	0.019 b	0.020 a	1.84 c	0.68 c	0.011 b
Harvest	nd	0.014 b	0.89 d	0.64 c	0.016 a
Significance					
Treatment	0.0297	<0.0001	<0.0001	ns	<0.0001
NPS	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Treatment*NPS	ns	ns	0.0074	ns	0.0333

[a]NO: no leaf removal; MED: post-fruit set removal of leaves to medium extent; HIGH: post-fruit set removal of leaves to high extent; P-B: pre-bloom leaf removal of six basal leaves and laterals; NPS: normalized phonological stage.
[b]Lutein 5,6-epoxide and zeaxanthin were below the detection threshold (nd) in the Harvest sample. When detected, zeaxanthin ranged from 0.0091 to 0.0137 µg/g berry across treatments.
[c]Means in the same treatment group (columns) not sharing the same letter are significantly different at $p > 0.05$ based on adjusted p-values using Tukey's honest significant difference.
[d]n/a: Zeaxanthin:lutein ratio unable to be determined, as zeaxanthin not detected at harvest.
[e]Significance of treatment effects ($p > F$; ns: not significant at $p = 0.05$).

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Supplemental Table 8 Pre-bloom and post-fruit set leaf removal treatment effect on Cabernet franc grape carotenoids in 2014.

Treatment[a]	Lutein 5,6-epoxide (µg/g berry)[b]	Zeaxanthin (µg/g berry)[b]	Lutein (µg/g berry)	β-carotene (µg/g berry)	Zeaxanthin: Lutein ratio
NO	0.015 c[c]	0.031 c	1.11 b	0.91	0.023 c
MED	0.016 bc	0.036 c	1.18 ab	0.86	0.026 c
HIGH	0.017 ab	0.056 b	1.30 ab	0.91	0.035 b
P-B	0.018 a	0.064 a	1.26 a	0.99	0.038 a
Canopy side[d]					
East	0.014 b	0.038 b	1.02 b	0.65 b	0.030
West	0.016 a	0.057 a	1.35 a	0.91 a	0.031
NPS[e]					
Post-fruit set	0.021	0.046	1.30	1.32	0.031
Preveraison	0.015	0.060 a	1.61 a	1.07 a	0.038 a
Veraison	0.015	0.035 b	1.54 a	0.66 b	0.023 b
Harvest	nd	nd	0.41 b	0.61 b	n/a[f]
Significance[g]					
Treatment (Tx)	<0.0001	<0.0001	0.0287	ns	<0.0001
Canopy side (CS)	<0.0001	<0.0001	<0.0001	<0.0001	ns
NPS	ns	<0.0001	<0.0001	<0.0001	<0.0001
Tx*CS	ns	ns	ns	ns	ns
Tx*NPS	ns	0.0016	0.0262	0.0159	0.0412
CS*NPS	0.0159	0.0187	<0.0001	<0.0001	<0.0001
Tx*CS*NPS	ns	ns	ns	ns	ns

[a]NO: no leaf removal; MED: post-fruit set removal of leaves to medium extent; HIGH: post-fruit set removal of leaves to high extent; P-B: pre-bloom removal of six basal leaves and laterals; post-fruit set sample was included in the mean, but not in statistical separation analysis.
[b]Lutein 5,6-epoxide and zeaxanthin were below the detection threshold (nd) in the Harvest sample. When detected, zeaxanthin ranged from 0.0091 to 0.0137 µg/g berry across treatments.
[c]Means in the same treatment group (columns) not sharing the same letter are significantly different at $p > 0.05$ based on adjusted *p*-values using Tukey's honest significant difference.
[d]Does not include post-fruit set sample.
[e]NPS: normalized phenological stage. The post-fruit set sample could not be compared with others statistically because the post-fruit set sample was analyzed as a combination of east-west data while the rest were analyzed separately by canopy side.
[f]n/a: Zeaxanthin:lutein ratio unable to be determined, as zeaxanthin not detected at harvest.
[g]Significance of treatment effects ($p > F$; ns: not significant at 0.05 level).

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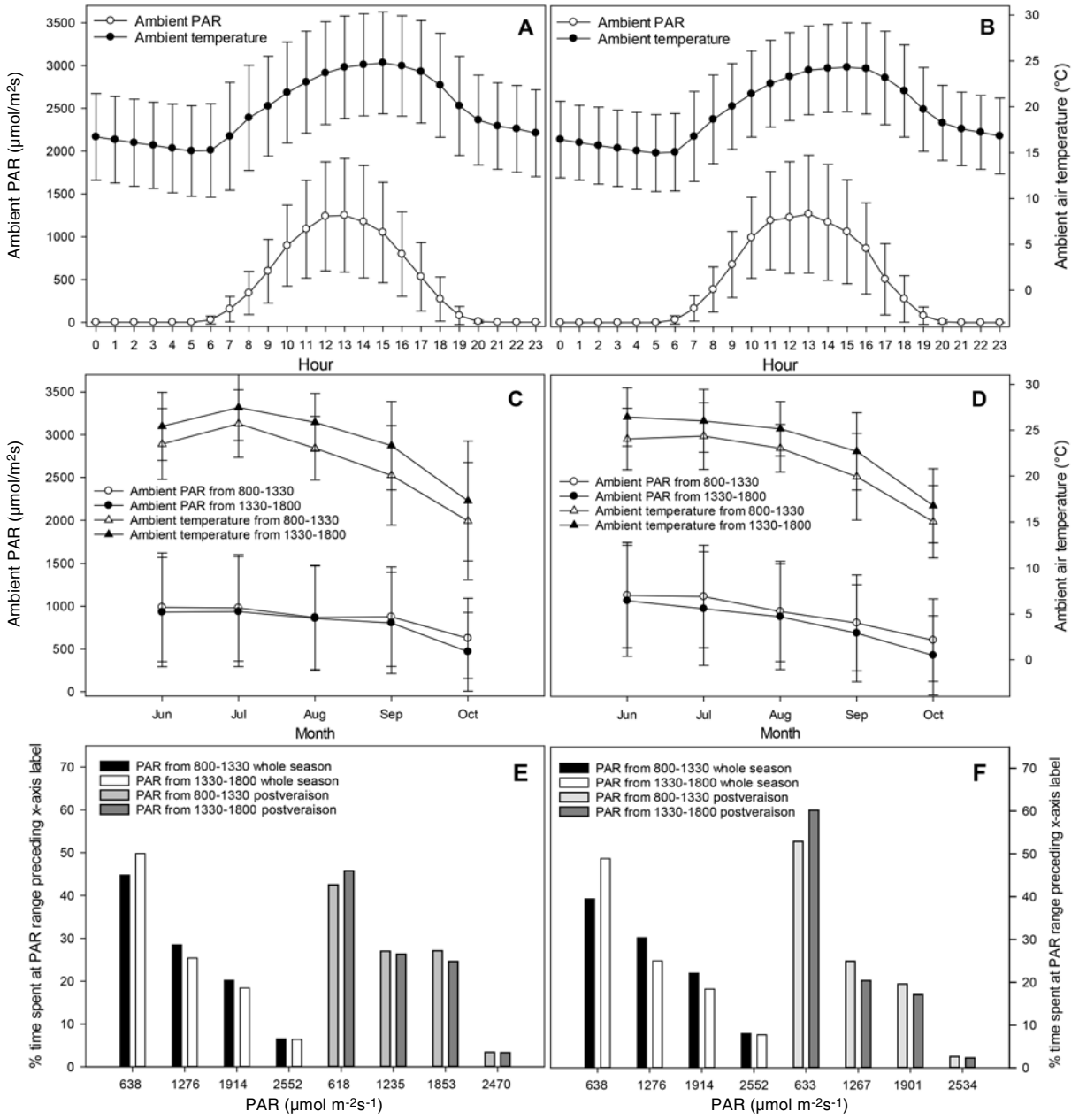
Supplemental Table 9 Pre-bloom and post-fruit set leaf removal treatment effect on Petit Verdot grape carotenoids in 2014.

Treatment[a]	Lutein 5,6-epoxide (µg/g berry)[b]	Zeaxanthin (µg/g berry)[b]	Lutein (µg/g berry)	β-carotene (µg/g berry)	Zeaxanthin: Lutein ratio
NO	0.017 b[c]	0.021 b	2.65 b	2.22 b	0.009 b
MED	0.017 b	0.028 b	2.60 b	2.32 b	0.012 b
HIGH	0.021 a	0.048 a	3.11 a	2.64 ab	0.016 a
P-B	0.019 a	0.053 a	2.85 a	2.73 a	0.019 a
Canopy side[d]					
East	0.019 a	0.033	2.70	2.54	0.013
West	0.016 b	0.033	2.57	2.57	0.013
NPS[e]					
Post-fruit set	0.021	0.051	3.35	2.25	0.016
Preveraison	0.021 a	0.040 a	3.84 a	3.09 a	0.010 b
Veraison	0.013 b	0.036 a	2.43 b	2.69 a	0.014 a
Harvest	nd	0.024 b	1.64 c	1.89 b	0.015 a
Significance[f]					
Treatment (Tx)	<0.0001	<0.0001	0.0002	0.0005	<0.0001
Canopy side (CS)	<0.0001	ns	ns	ns	ns
NPS	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Tx*CS	ns	ns	ns	ns	ns
Tx*NPS	0.0002	<0.0001	<0.0001	0.0016	0.0002
CS*NPS	ns	ns	ns	ns	ns
Tx*CS*NPS	ns	ns	ns	ns	ns

[a]NO: no leaf removal; MED: post-fruit set removal of leaves to medium extent; HIGH: post-fruit set removal of leaves to high extent; P-B: pre-bloom removal of six basal leaves and laterals; post-fruit set sample was included in the mean, but not in statistical separation analysis.
[b]Lutein 5,6-epoxide and zeaxanthin were below the detection threshold (nd) in the Harvest sample. When detected, zeaxanthin ranged 0.0091 to 0.0137 µg/g berry across treatments.
[c]Means in the same treatment group (columns) not sharing the same letter are significantly different at $p > 0.05$ based on adjusted *p*-values using Tukey's honest significant difference.
[d]Does not include post-fruit set sample.
[e]NPS: normalized phenological stage. The post-fruit set sample could not be compared with others statistically because the post-fruit set sample was analyzed as a combination of east-west data while the rest were analyzed separately by canopy side.
[f]Significance of treatment effects ($p > F$; ns: not significant at 0.05 level).

Supplemental Data for:

Hickey CC, Kwasniewski MT and Wolf TK. 2018.
Leaf removal effects on Cabernet franc and Petit Verdot: II. Grape carotenoids, phenolics, and wine sensory analysis.
Am J Enol Vitic 69:231-246. doi: 10.5344/ajev.2018.17107.



Supplemental Figure 1 Hourly average ambient photosynthetic active radiation (PAR) and air temperature (**A**, **B**), monthly average ambient PAR and air temperature during 800 to1330 hr and 1330 to 1800 hr (**C**, **D**), and percent time spent at 25% increments of the seasonal (1 June to 28 Oct) and postverasion (15 Aug to 9/19 Oct 2013/2014) PAR ranges during 800 to 1330 hr and 1300 to 1800 hr (**E**, **F**) in 2013 (**A**, **C**, **E**) and 2014 (**B**, **D**, **F**). Data logged every minute from 1 June to 28 Oct.

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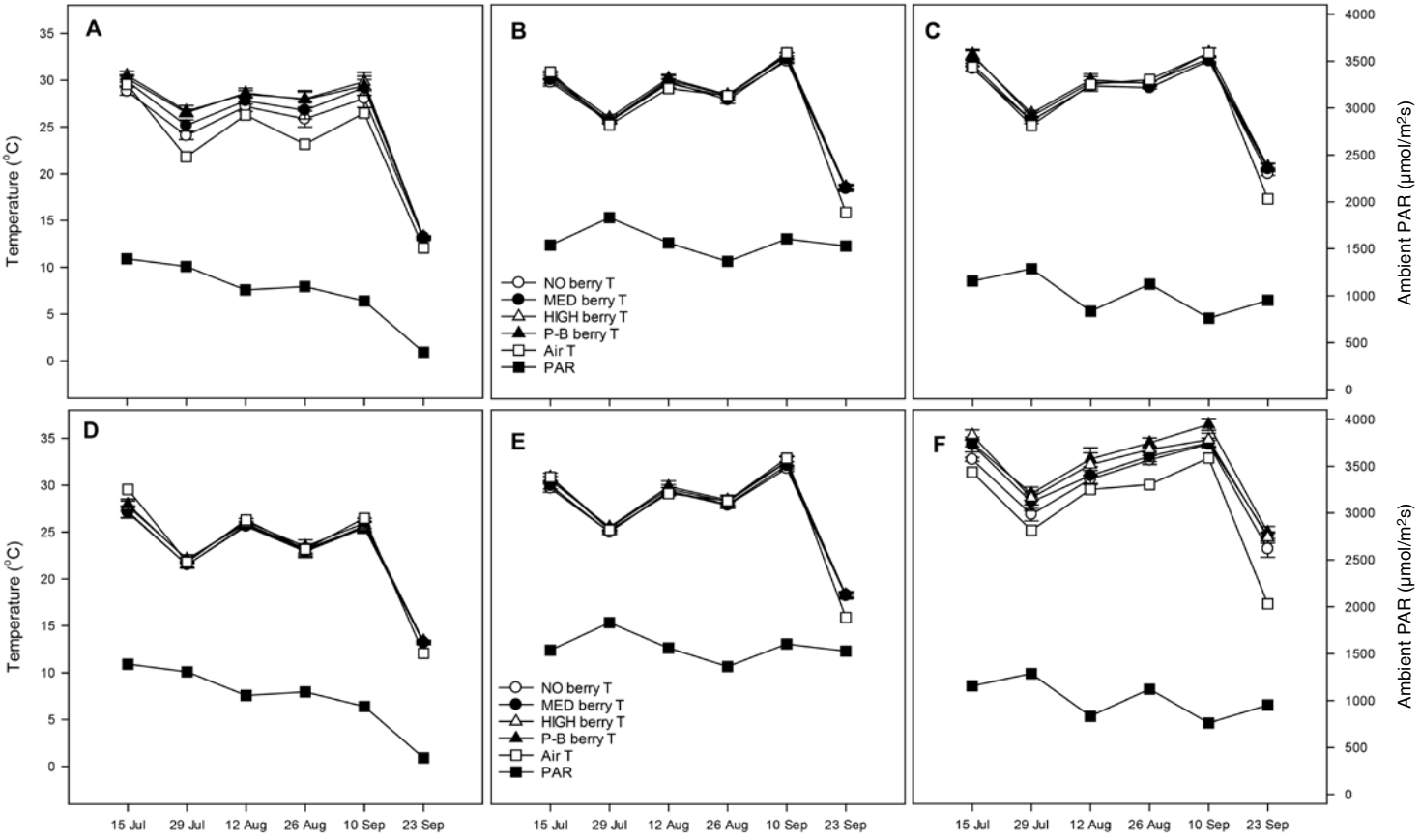

Supplemental Figure 2 2013 Cabernet franc berry temperature on EAST (**A**, **B**, and **C**) and WEST (**D**, **E**, and **F**) canopy sides in AM (**A** and **D**), NOON (**B** and **E**), and PM (**C** and **F**) as affected by leaf/lateral removal (NO = no removal; MED and HIGH = post-fruit set removal to medium and high extents, respectively; P-B = pre-bloom removal). AM = 0900 to 1030 hr; NOON = 1245 to 1415 hr; PM = 1545 to 1715 hr. Data points are an average of six berry temperature measurements; n = 6. Error bars are +/- standard error.

Supplemental Data for:

Hickey CC, Kwasniewski MT and Wolf TK. 2018.
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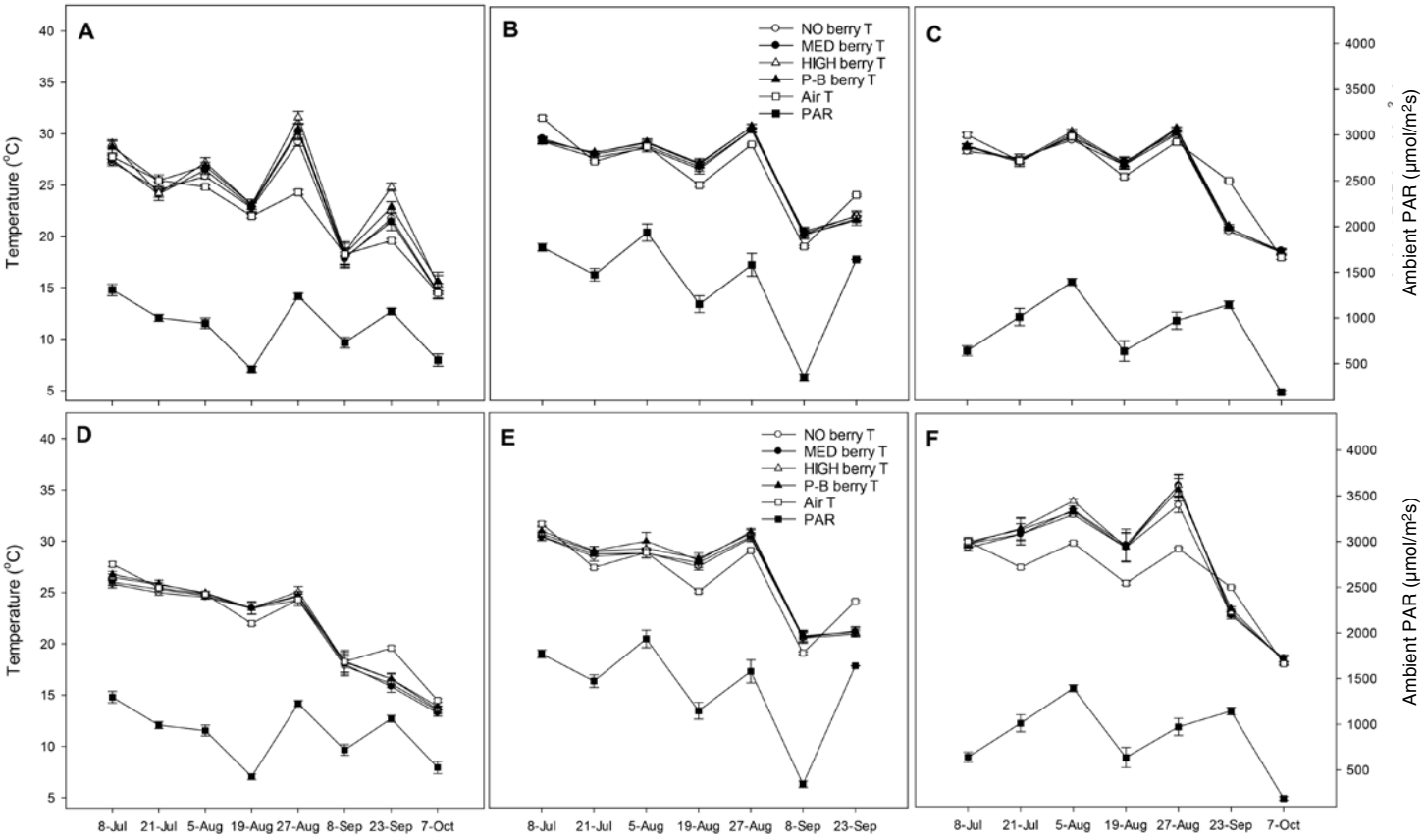

Supplemental Figure 3 2014 Cabernet franc berry temperature on EAST (**A**, **B**, and **C**) and WEST (**D**, **E**, and **F**) canopy sides in AM (**A** and **D**), NOON (**B** and **E**), and PM (**C** and **F**) as affected by leaf/lateral removal (NO = no removal; MED and HIGH = post-fruit set removal to medium and high extents, respectively; P-B = pre-bloom leaf removal). AM = 0900 to 1030 hr; NOON = 1245 to 1415 hr; PM = 1545 to 1715 hr. Data points are an average of six berry temperature measurements; n = 6. Error bars are +/- standard error.

Supplemental Data for:
Hickey CC, Kwasniewski MT and Wolf TK. 2018.
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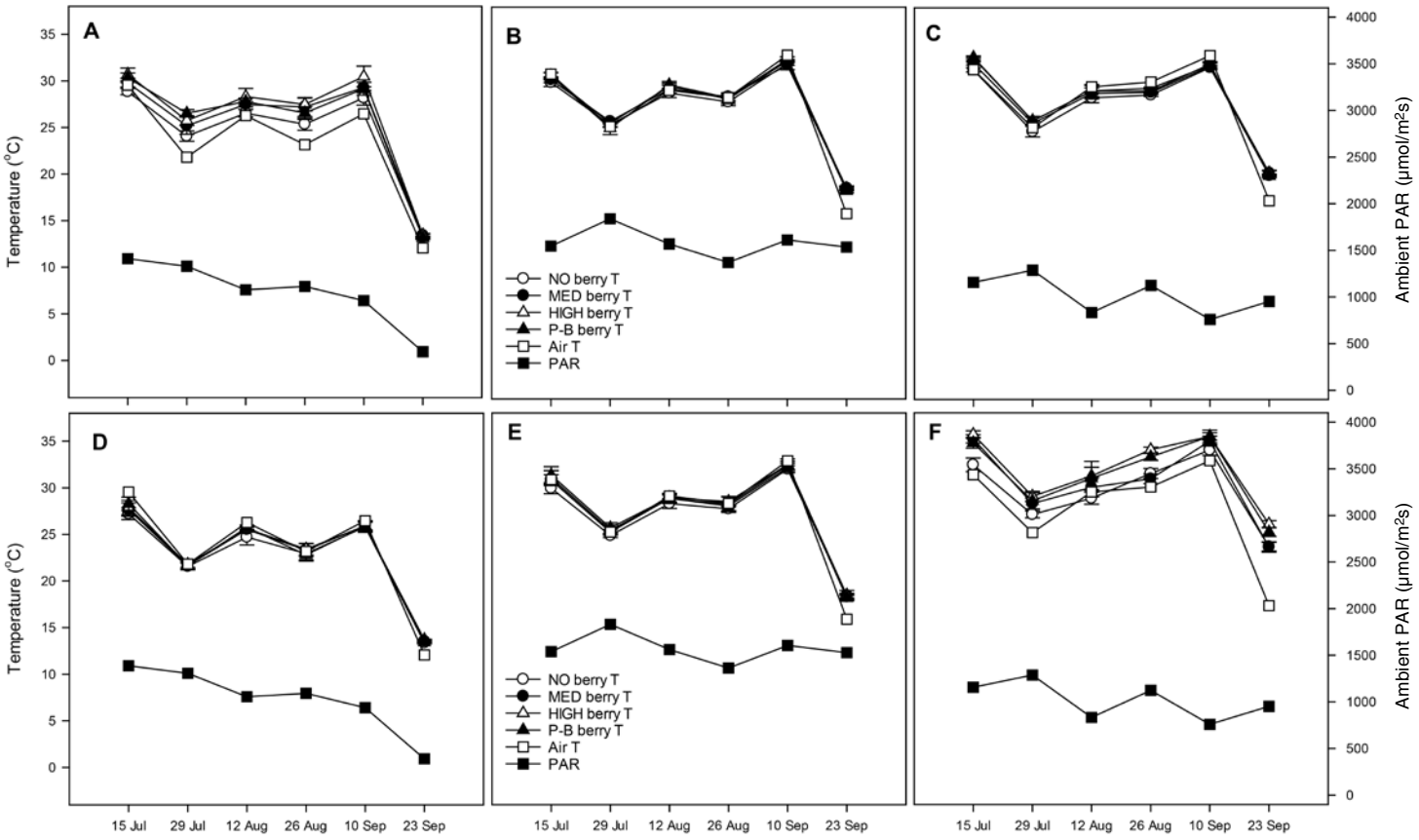

Supplemental Figure 4 2013 Petit Verdot berry temperature on EAST (**A**, **B**, and **C**) and WEST (**D**, **E**, and **F**) canopy sides in AM (**A** and **D**), NOON (**B** and **E**), and PM (**C** and **F**) as affected by leaf/lateral removal (NO = no removal; MED and HIGH = post-fruit set removal to medium and high extents, respectively; P-B = pre-bloom leaf removal). AM = 0900 to 1030 hr; NOON = 1245 to 1415 hr; PM = 1545 to 1715 hr. Data points are an average of six berry temperature measurements; n = 6. Error bars are +/- standard error.

Supplemental Data for:
Hickey CC, Kwasniewski MT and Wolf TK. 2018.
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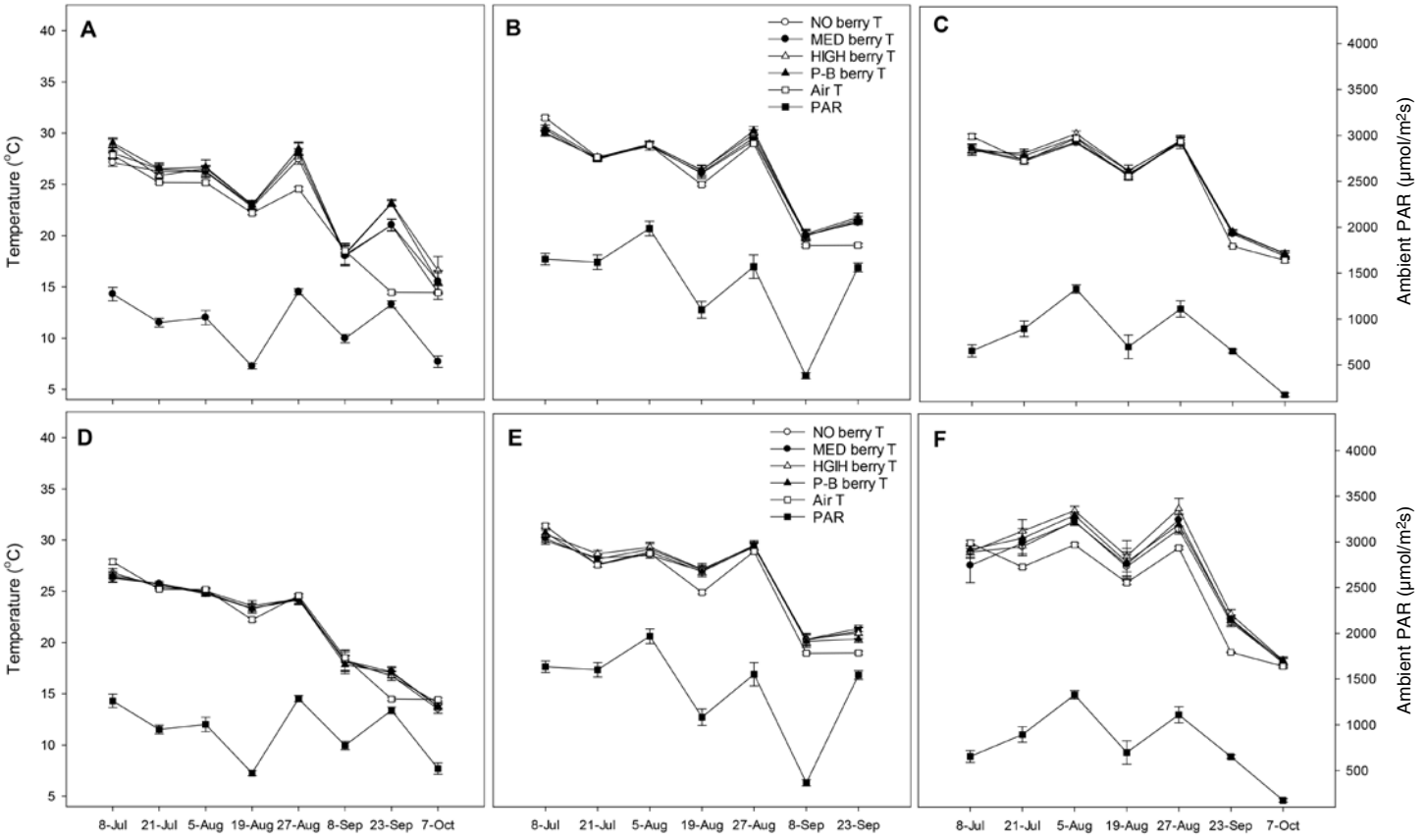
Am J Enol Vitic 69:231-246. doi: 10.5344/ajev.2018.17107.



Supplemental Figure 5 2014 Petit Verdot berry temperature on EAST (**A**, **B**, and **C**) and WEST (**D**, **E**, and **F**) canopy sides in AM (**A** and **D**), NOON (**B** and **E**), and PM (**C** and **F**) as affected by leaf/lateral removal (NO = no removal; MED and HIGH = post-fruit set removal to medium and high extents, respectively; P-B = pre-bloom removal). AM = 0900 to 1015 hr; NOON = 1245 to 1415 hr; PM = 1545 to 1715 hr. Data points are an average of six berry temperature measurements; n = 6. Error bars are +/- standard error.