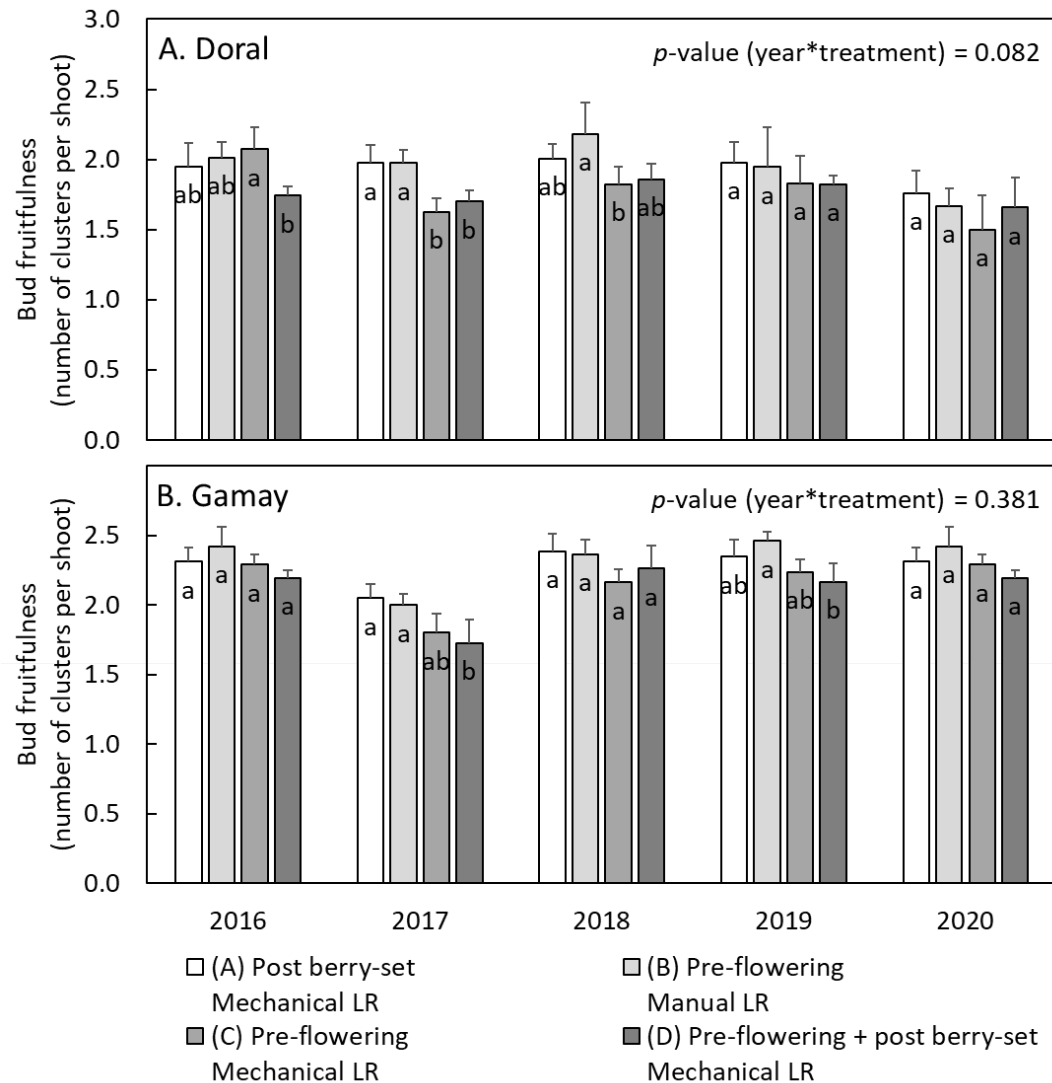


**SUPPLEMENTARY DATA**

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**Supplementary figure S1. Bud fruitfulness per year and per treatment for Doral (A) and Gamay (B). Changins, Switzerland. Treatments with different letters are statistically different in a given year (Tukey's test,  $p < 0.05$ ). Error bars represent standard deviation.**



SUPPLEMENTARY DATA

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**Supplementary table S1. Vineyard observations and must composition on Doral and Gamay as a function of year. Average data 2016-2020, Changins, Switzerland.**

	Doral							Gamay						
	2016	2017	2018	2019	2020	P-value	Interaction Year*Treatment	2016	2017	2018	2019	2020	P-value	Interaction Year*Treatment
<b>Vineyard observations</b>														
Pruning weight (g/m)	56 a	55 ab	54 ab	50 ab	49 b	**	n.s.	40 b	45 a	45 a	42 ab	45 a	***	n.s.
Bud fruitfulness (clusters per shoot)	1.9 a	1.8 a	2.0 a	1.9 a	1.6 b	***	•	2.3 a	1.9 b	2.3 a	2.3 a	2.3 a	***	n.s.
Veraison (% red berries at a chosen date)	–	–	–	–	–	–	–	44	68	77	43	58	***	**
Chlorophyll index (N-tester at veraison)	520 c	607 a	553 b	561 b	464 d	***	n.s.	547 c	601 a	584 b	556 c	505 d	***	n.s.
Leaf nitrogen (% dry mass)	2.70 a	2.24 b	2.20 b	2.29 b	2.12 b	***	–	2.13 a	2.12 a	1.94 b	2.13 a	1.96 ab	**	–
Leaf phosphorus (% dry mass)	0.22 a	0.20 b	0.20 b	0.20 b	0.23 a	**	–	0.17 b	0.20 a	0.20 a	0.20 a	0.18 b	***	–
Leaf potassium (% dry mass)	1.3	1.3	1.3	1.3	1.4	•	–	1.1 b	1.3 a	1.3 a	1.1 b	1.2 ab	**	–
Leaf calcium (% dry mass)	2.6 b	2.5 b	3.0 a	2.7 b	2.6 b	**	–	2.9 b	2.8 b	3.3 a	2.9 b	3.2 a	***	–
Leaf magnesium (% dry mass)	0.2 b	0.3 a	0.3 a	0.3 a	0.3 a	***	–	0.3 b	0.4 a	0.4 a	0.4 a	0.4 a	***	–
Light-exposed leaf area (m <sup>2</sup> /m <sup>2</sup> of ground)	0.90	1.07	1.02	1.03	1.05	***	**	0.91	1.12	0.99	1.03	0.99	***	**
Leaf-to-fruit ratio (m <sup>2</sup> /kg)	1.0	1.3	1.1	1.1	2.0	***	**	1.0	1.5	1.0	1.9	1.3	***	***
Early estimated yield (kg/m <sup>2</sup> )	1.7	1.2	1.4	0.7	0.5	***	***	2.0 a	1.1 b	2.0 a	1.3 b	1.3 b	***	n.s.
Cluster thinning (number removed per vine)	4.3	0.6	2.6	0.0	0.0	***	***	6.8	0.2	6.9	3.3	6.8	***	***
Number of berries par cluster	140	101	129	79	77	***	**	126	115	122	79	92	***	*
Berry weight at harvest (g)	1.6 b	1.4 c	1.6 b	2.1 a	1.6 b	***	n.s.	1.8 d	2.6 a	2.0 b	2.1 b	1.9 c	***	n.s.
Cluster weight at harvest (g)	191	126	156	137	87	***	***	180 a	98 b	181 a	81 c	105 b	***	n.s.
Yield at harvest (kg/m <sup>2</sup> )	1.0	0.8	0.9	1.0	0.5	***	***	1.0	0.8	1.0	0.6	0.8	***	***

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**Must composition at harvest**

Total soluble sugars (Brix)	23.0	23.3	23.3	23.1	22.9	***	***	23.7	23	25.2	22.3	24.7	***	**
pH	3.00 d	3.11 b	3.24 a	3.05 c	3.08 c	***	n.s.	3.04 e	3.13 c	3.28 a	3.06 d	3.20 b	***	n.s.
Titrateable acidity (g tartrate/L)	8.6	8.1	7.5	8.4	8.5	***	**	10.2	9.7	8.4	11.8	9.9	***	*
Tartaric acid (g/L)	7.6	8.1	8.2	7.9	8.9	***	**	7.7 c	8.7 b	7.8 c	9.6 a	9.5 a	***	n.s.
Malic acid (g/L)	2.6 a	2.2 b	1.8 c	2.6 a	2.0 b	***	•	4.3	3.5	2.9	5.3	3.2	***	*
Ammonium (mg/L)	–	73 a	77 a	76 a	55 b	***	–	–	100 a	80 b	106 a	85 b	**	–
Alpha amino N (mg N/L)	–	99 b	139 a	156 a	91 b	***	–	–	124 b	125 b	146 a	92 c	***	–
Yeast assimilable nitrogen (mg N/L)	–	159 b	202 a	218 a	137 b	***	–	–	206 b	191 b	234 a	162 c	***	–
Folin index	–	12.5 b	14.5 a	14.5 a	10.9 b	***	–	–	20.3	16.7	19.8	14.4	•	–
Total glutathions (mg/L)	–	62.5 a	56.9 b	39.9 c	34.3 d	***	–	–	16.0 b	31.9 a	14.9 b	21.1 b	***	–
Total anthocyanins (mg/L)	–	–	–	–	–	–	–	–	705 a	615 ab	546 b	650 ab	*	–
Delphinidol-3-glucoside (% total anthocyanins)	–	–	–	–	–	–	–	–	7.1 a	3.9 b	6.4 a	7.1 a	***	–
Cyanidol-3-glucoside (% total anthocyanins)	–	–	–	–	–	–	–	–	1.0 c	0.6 d	1.5 a	1.2 b	***	–
Petunidol-3-glucoside (% total anthocyanins)	–	–	–	–	–	–	–	–	8.3 a	5.5 c	7.6 b	8.4 a	***	–
Peonidol-3-glucoside (% total anthocyanins)	–	–	–	–	–	–	–	–	10.9 c	11.2 c	15.6 a	13.1 b	***	–
Malvidol-3-glucoside (% total anthocyanins)	–	–	–	–	–	–	–	–	62.4 b	68.2 a	60.1 c	61.4 bc	***	–
Acetylated anthocyanins (% total anthocyanins)	–	–	–	–	–	–	–	–	3.0 ab	5.3 a	3.1 ab	2.6 b	*	–
Coumaroylated anthocyanins (% total anthocyanins)	–	–	–	–	–	–	–	–	7.3 a	7.0 a	5.7 b	6.1 b	***	–

Numbers with different letters are statistically different (Tukey’s test,  $p < 0.05$ ). The wine tasting data are scores based on a predefined 1–7 scale. \*\*\*  $p < 0.001$ ; \*\*  $p < 0.01$ ; \*  $p < 0.05$ ; •  $p < 0.10$ ; n.s., non-significant.

SUPPLEMENTARY DATA

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**Supplementary table S2. Wine analysis and tasting data on Doral and Gamay as a function of year. Average data 2016-2020, Changins, Switzerland.**

	Doral						Gamay					
	2016	2017	2018	2019	2020	P-value	2016	2017	2018	2019	2020	P-value
<b>Wine composition</b>												
Alcohol (%vol.)	13.7 a	14.2 a	13.5 a	13.8 a	11.7 b	***	13.6 b	13.7 b	14.4 a	12.3 c	14.2 a	***
Dry extract (%)	17.0 b	17.3 b	17.4 b	17.4 b	19.5 a	***	22.3 d	24.4 c	28.9 a	25.3 bc	26.3 b	***
pH	3.3 c	3.4 b	3.5 a	3.4 b	3.3 c	***	3.4 d	3.4 c	3.7 a	3.3 d	3.5 b	***
Titrateable acidity (g tartrate/L)	5.1 b	5.1 b	4.5 c	5.2 b	6.5 a	***	5.3 cd	5.7 c	5.2 d	7.0 a	6.1 b	***
Tartaric acid (g/L)	1.7 b	1.6 b	1.7 b	1.9 b	2.8 a	***	2.1 d	2.6 b	2.2 cd	3.5 a	2.5 bc	***
Lactic acid (g/L)	1.6 a	1.5 ab	1.5 ab	1.2 bc	0.9 c	**	2.1 b	1.7 c	1.4 d	2.3 a	1.0 e	***
Glycerol (g/L)	7.8 c	8.9 a	8.4 b	8.6 ab	8.7 ab	***	8.3 e	9.8 c	10.3 b	9.3 d	11.2 a	***
Succinic acid (g/L)	–	1.0 ab	0.9 b	0.9 b	1.1 a	*	–	1.2 b	1.2 b	1.3 ab	1.4 a	**
Proline (mg N/L)	–	75 c	123 a	98 b	54 d	***	–	105 b	133 a	87 c	62 d	***
Total glutathions (mg/L)	2.4 a	1.2 b	1.2 b	2.9 a	1.0 b	***	6.3 a	1.8 bc	0.9 c	3.9 b	1.8 bc	***
Folin index	6.8 a	6.5 a	6.6 a	6.9 a	5.8 b	***	35.7 b	40.2 a	37.0 b	32.4 c	42.6 a	***
Total anthocyanins (mg/L)	–	–	–	–	–	–	591 b	751 a	433 c	532.8 b	587 b	***
Delphinidol-3-glucoside (% total anthocyanins)	–	–	–	–	–	–	–	4.8 a	1.9 b	4.5 a	–	***
Cyanidol-3-glucoside (% total anthocyanins)	–	–	–	–	–	–	–	0.6 a	0.0 b	0.7 a	–	***
Petunidol-3-glucoside (% total anthocyanins)	–	–	–	–	–	–	–	7.1	5.7	6.2	–	n.s.
Peonidol-3-glucoside (% total anthocyanins)	–	–	–	–	–	–	–	8.0 b	6.9 b	12.2 a	–	***
Malvidol-3-glucoside (% total anthocyanins)	–	–	–	–	–	–	–	72.4 b	77.5 a	70.4 b	–	**
Acetylated anthocyanins (% total anthocyanins)	–	–	–	–	–	–	–	0.9 c	1.4 b	1.9 a	–	***
Coumaroylated anthocyanins (% total anthocyanins)	–	–	–	–	–	–	–	6.2	6.5	4.2	–	•
Lighness L	98 c	98 bc	99 ab	99 a	98 abc	**	22 bc	19 c	27 b	48 a	10 d	***
Color a (red/green)	-2.3 b	-1.9 b	-1.3 a	-1.3 a	-1.2 a	***	54.5 c	52.2 c	60.6 b	85.8 a	38.6 d	***
Color b (yellow/blue)	11.3 a	11.4 a	8.1 b	7.7 b	8.2 b	***	34.9 c	32.2 c	41.7 b	54.9 a	16.4 d	***

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**Wine tasting (scores 1 to 7)**

Color intensity	5.0 a	5.1 a	4.6 b	4.3 c	4.5 b	***	5.4 b	5.5 a	5.1 c	4.9 d	5.4 b	***
Fruitiness	4.3	4.4	4.5	4.4	4.3	n.s.	4.4	4.4	4.6	4.3	4.5	•
Floral	2.9 ab	2.5 c	3.2 a	2.8 bc	2.6 bc	***	1.5 b	1.3 c	1.5 b	1.6 b	2.0 a	***
Herbaceous	1.5 ab	1.5 b	1.6 ab	1.6 ab	1.8 a	*	1.5 c	1.7 ab	1.5 c	1.8 a	1.6 bc	***
Spicy	–	–	–	–	–	–	3.0 a	2.7 b	2.9 ab	2.7 b	2.9 ab	*
Lactic	1.2 b	1.2 b	1.0 c	1.5 a	1.5 a	***	1.0 b	1.1 b	1.1 b	1.1 b	1.5 a	***
Empyreumatic	1.3 c	1.2 c	1.6 a	1.4 bc	1.5 ab	***	1.1 b	1.0 b	1.2 ab	1.1 ab	1.3 a	**
Global nose impression	1.0	1.0	1.2	1.2	1.1	n.s.	4.5	4.3	4.5	4.3	4.4	•
Volume	4.3	4.3	4.4	4.3	4.1	n.s.	4.5 b	4.5 b	5.1 a	4.2 c	4.7 b	***
Acidity	4.6	4.7	4.7	4.7	4.5	•	4.2 c	4.3 bc	4.2 c	4.4 ab	4.5 a	***
Tannin intensity	4.2 b	4.3 b	4.2 b	4.2 b	4.8 a	***	4.8 a	4.5 b	4.6 a	4.2 c	4.7 a	***
Tannin quality	4.2	4.2	4.3	4.3	4.2	n.s.	4.6 ab	4.4 bc	4.7 a	4.1 d	4.2 cd	***
Bitterness	2.4	2.7	2.5	2.4	2.5	n.s.	1.6 c	1.5 c	1.9 b	1.9 b	2.1 a	***
General impression	4.2	4.0	4.2	4.2	4.0	n.s.	4.5 a	4.4 ab	4.6 a	4.0 c	4.2 bc	***

Numbers with different letters are statistically different (Tukey’s test,  $p < 0.05$ ). The wine tasting data are scores based on a predefined 1–7 scale. \*\*\*  $p < 0.001$ ; \*\*  $p < 0.01$ ; \*  $p < 0.05$ ; •  $p < 0.10$ ; n.s., non-significant.