Farias Bonin, B., Biasi, L. A., Marcon Filho, J. L., Fontanella Brighenti, A., Soldi, C., Guimarães Franciscon, V., & Cosmo, A. C. (2025). Agronomic performance of 'Viognier' grapevines in subtropical conditions and wine aromatic compounds under different bud numbers retained at pruning. *OENO One*, *59*(3).
https://doi.org/10.20870/oeno-one.2025.59.3.9257

SUPPLEMENTARY DATA

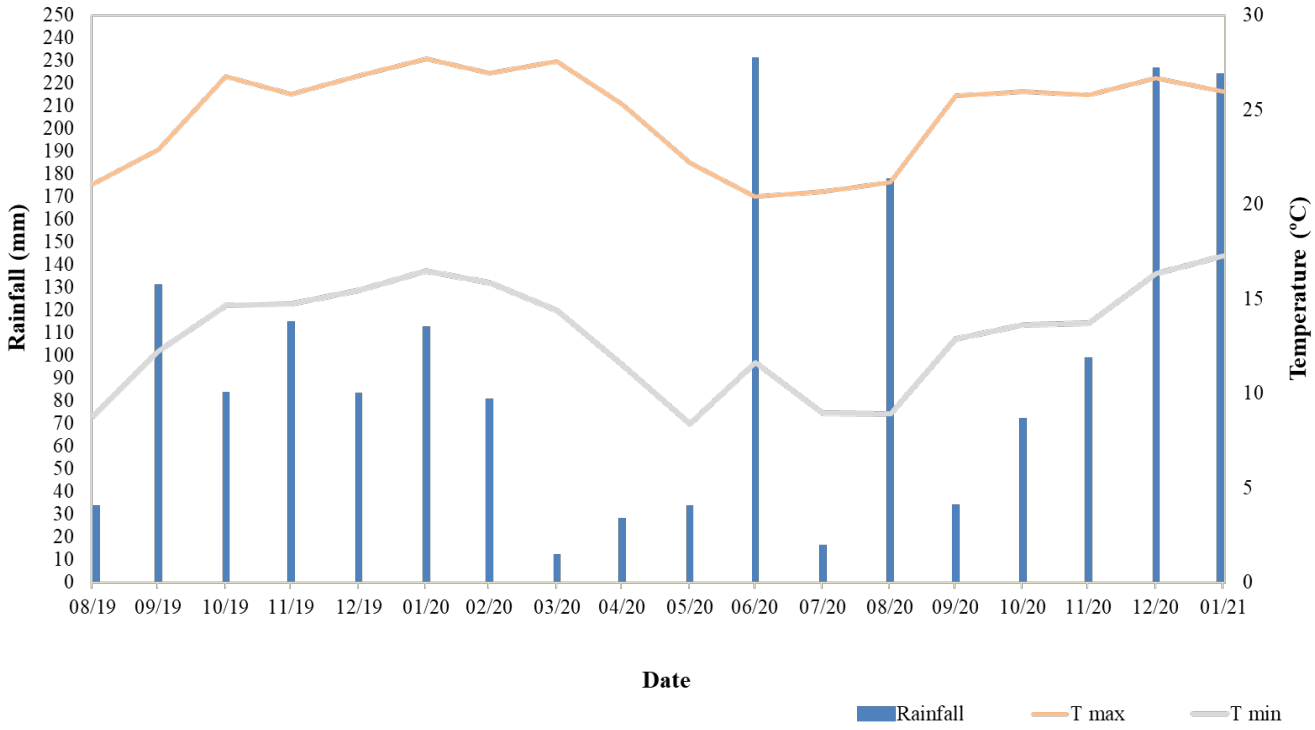


Figure S1. Monthly rainfall (mm), average monthly maximum temperature (°C) and average monthly minimum temperature (°C) in Lapa, PR, Brazil in the 2019/2020 and 2020/2021 seasons. Source: SIMEPAR, Lapa, PR, Brazil.

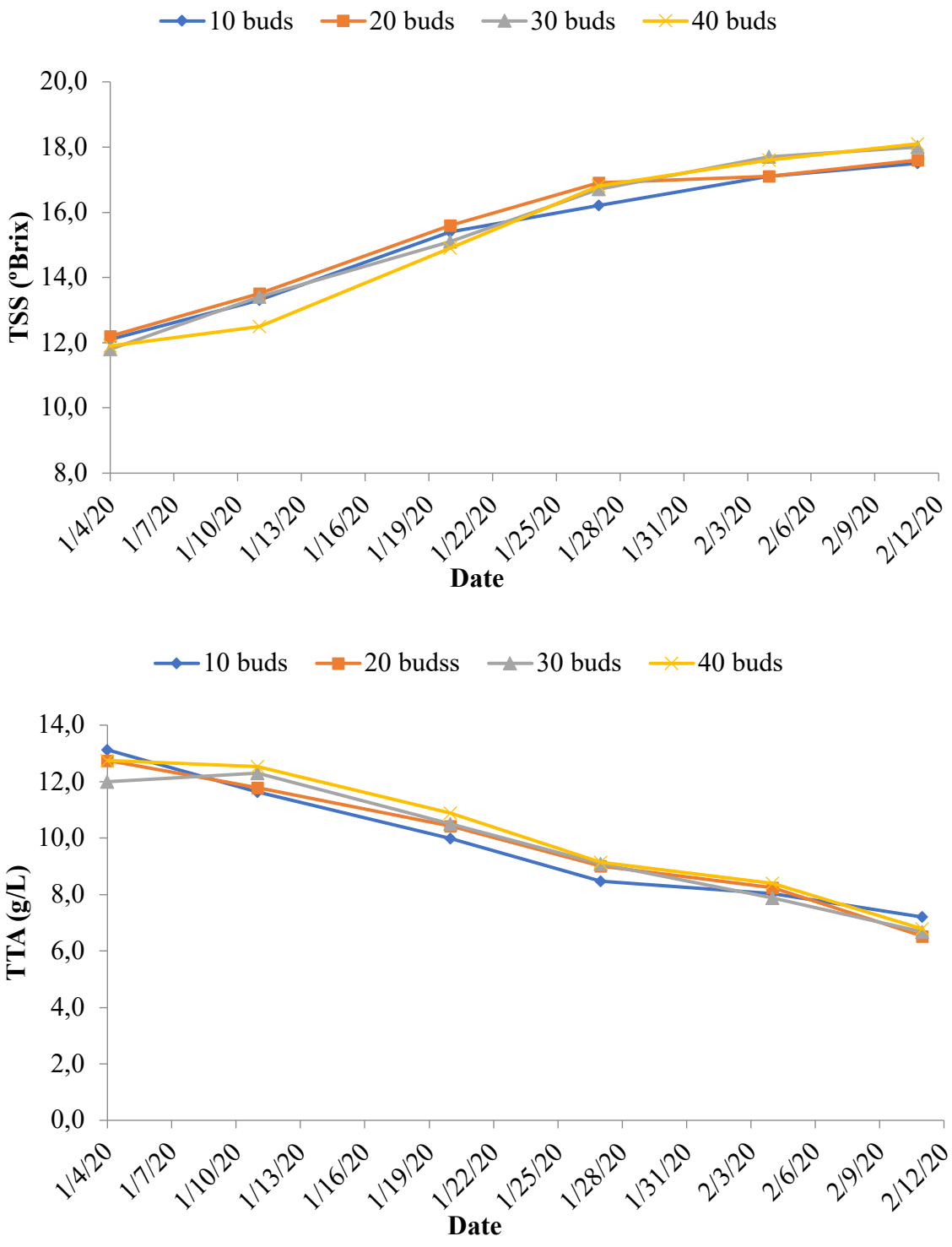


Figure S2. Effect of bud load on the evolution of Total Soluble Solids (TSS) and Total Titratable Acidity (TTA) of 'Viognier' grapes *(Vitis vinifera)*, during the ripening in the 2019/2020 season. Campo Largo, PR, Brazil.

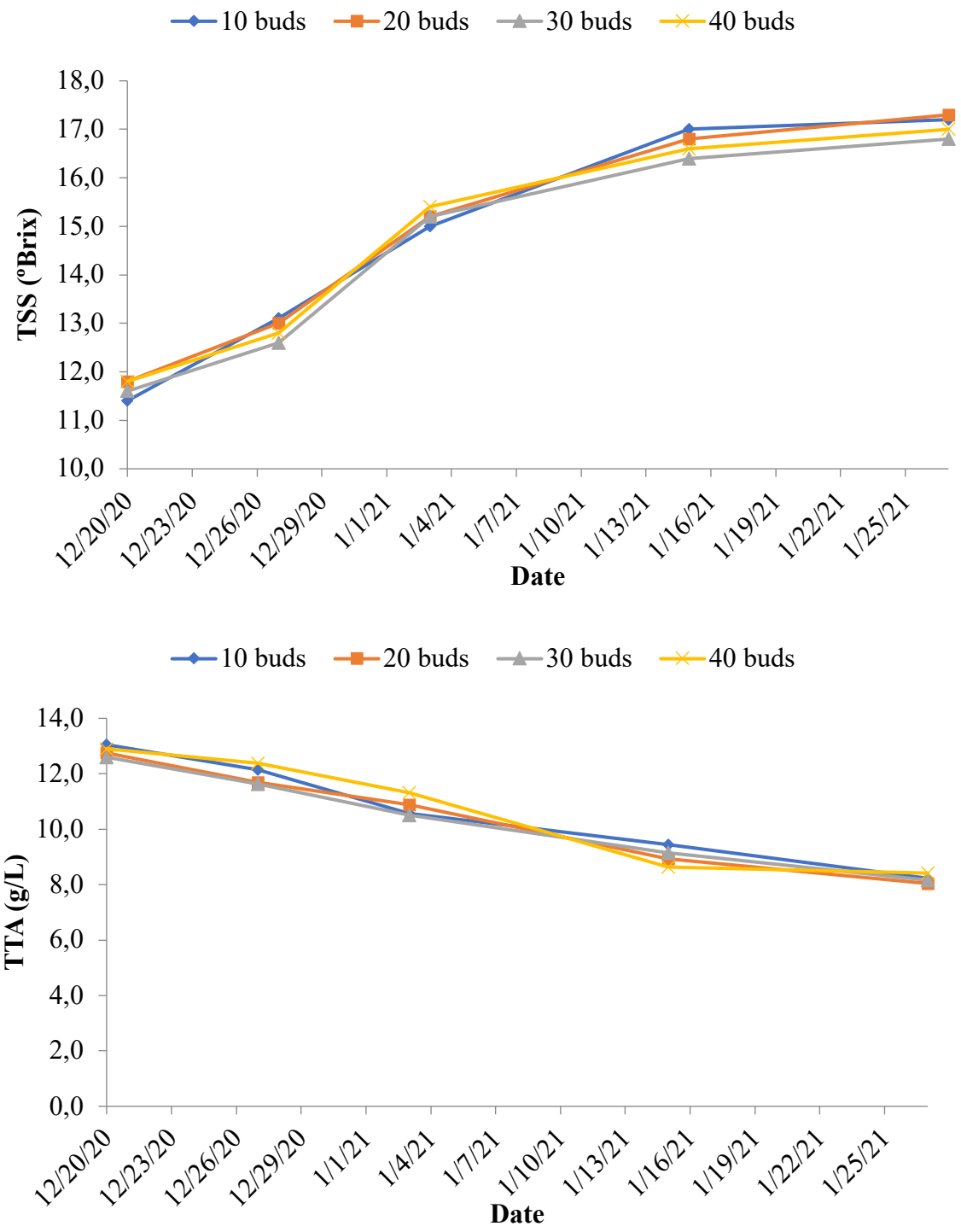


Figure S3. Effect of bud load on the evolution of Total Soluble Solids (TSS) and Total Titratable Acidity (TTA) of the 'Viognier' grapes *(Vitis vinifera)*, during the ripening in the 2020/2021 season. Campo Largo, PR, Brazil.

SUPPLEMENTARY DATA
Farias Bonin, B., Biasi, L. A., Marcon Filho, J. L., Fontanella Brighenti, A., Soldi, C., Guimarães Franciscon, V., & Cosmo, A. C. (2025). Agronomic performance of 'Viognier' grapevines in subtropical conditions and wine aromatic compounds under different bud numbers retained at pruning. *OENO One*, *59*(3).
https://doi.org/10.20870/oeno-one.2025.59.3.9257

Table S1. Effect of bud load on sprouting (% budburst) of the 'Viognier' grapes *(Vitis vinifera)*, in the 2019/2020 and 2020/2021 seasons. Campo Largo, PR, Brazil.

Sprouting	Buds per plant			
	10	20	30	40
2019/2020				
10 %	15/Sept.	17/Sept.	16/Sept.	17/Sept.
50 %	22/Sept.	24/Sept.	23/Sept.	24/Sept.
90 %	27/Sept.	01/Oct.	01/Oct.	03/Oct.
Duration (days)	12,2b	15,2ab	16,7a	17,0a
2020/2021				
10 %	8/Sept.	8/Sept.	8/Sept.	7/Sept.
50 %	12/Sept.	12/Sept.	11/Sept.	10/Sept.
90 %	21/Sept.	20/Sept.	20/Sept.	19/Sept.
Duration (days)	13,0ns	12,5	12,5	12,2

Values followed by different letters on the same line differ significantly (Tukey test, $p < 0.05$). CV (%) in the 2019/2020 season = 13.4; CV (%) in the 2020/2021 season = 10.2 %.

Table S2. Effect of bud load on flowering (% of flowers opened) of the 'Viognier' grapes *(Vitis vinifera)*, in the 2019/2020 and 2020/2021 seasons. Campo Largo, PR, Brazil.

Flowering	Buds per plant			
	10	20	30	40
2019/2020				
10 %	25/Oct.	25/Oct.	25/Oct.	26/Oct.
50 %	29/Oct.	28/Oct.	29/Oct.	29/Oct.
90 %	01/Nov.	02/Nov.	03/Nov.	02/Nov.
Duration (days)	7,5ns	8,0	8,5	8,2
2020/2021				
10 %	10/Oct.	09/Oct.	10/Oct.	10/Oct.
50 %	15/Oct.	14/Oct.	14/Oct.	14/Oct.
90 %	17/Oct.	17/Oct.	17/Oct.	18/Oct.
Duration (days)	7,2ns	8,5	7,7	8,0

ns = not significant by analysis of variance (ANOVA) at 5 % error probability. CV (%) in the 2019/2020 season = 7.3; CV (%) in the 2020/2021 season = 6,2 %.

Table S3. Effect of bud load on veraison (% berry colour change) of the 'Viognier' grapes *(Vitis vinifera)*, in the 2019/2020 and 2020/2021 seasons. Campo Largo, PR, Brazil.

Ripening	Buds per plant			
	10	20	30	40
2019/2020				
10 %	03/Jan.	04/Jan.	05/Jan.	04/Jan.
50 %	07/Jan.	08/Jan.	11/Jan.	11/Jan.
90 %	13/Jan.	14/Jan.	18/Jan.	18/Jan.
Duration (days)	10,5b	10,7b	13,5a	14,0a
2020/2021				
10 %	22/Dec.	23/Dec.	23/Dec.	22/Dec.
50 %	27/Dec.	28/Dec.	28/Dec.	28/Dec.
90 %	03/Jan.	05/Jan.	04/Jan.	03/Jan.
Duration (days)	12,5ns	13,0	12,0	12,0

ns = not significant by analysis of variance (ANOVA) at 5 % error probability. CV (%) in the 2019/2020 season = 11.6 %; CV (%) in the 2020/2021 season = 12.9 %.

SUPPLEMENTARY DATA
Farias Bonin, B., Biasi, L. A., Marcon Filho, J. L., Fontanella Brighenti, A., Soldi, C., Guimarães Franciscon, V., & Cosmo, A. C. (2025). Agronomic performance of 'Viognier' grapevines in subtropical conditions and wine aromatic compounds under different bud numbers retained at pruning. *OENO One*, *59*(3).
https://doi.org/10.20870/oeno-one.2025.59.3.9257

Table S4. Volatile compounds, retention time, measured, theoretical Kovaltz Index (KI), and aroma descriptors of 'Viognier' wine made in Campo Largo, PR, Brazil.

Volatile compound	Retention time (min)	KI measured	KI theoretical	Aroma descriptors
Isoamyl alcohol	3.726	707.3	706	Floral, honey, fruit[a]
Ethyl butanoate	5.085	782.2	778	Fruit, banana, pineapple[b]
Ethyl lactate	5.423	797.7	848	Solvent, acetone[q]
4-methyl-pentanol	6.324	833.6	838	No descriptor aroma[c]
Ethyl-2-methylbutanoate	6.470	838.9	***	Strawberry, fruit candy[d]
Ethyl isovalerate	6.572	842.6	858	Fruit, apple[d]
Hexanol	7.133	861.7	871	Flower, grass, resin, herbs[b]
Isoamyl acetate	7.343	868.4	***	Banana, pineapple, strawberry[i]
2-Methyl butyl acetate	7.409	870.5	881	Pineapple, banana, fruit[e,f]
Ethyl hexanoate	11.698	994.1	998	Fruit, green apple, spices[g,h]
Hexyl acetate	12,178	1007.3	1009	Apple, pear, fruit, cherry[h,i,j]
2-Ethylhexanol	12,737	1024.0	***	Citrus, herbaceous[r]
Ethyl 2-hexanoate	13.317	1040.5	1044	Peppery, sweet, earthy[q]
2-Nonanone	15.071	1086.5	***	Herbaceous, fruit[p]
Linalool	15.334	1092.9	1097	Floral, lavender[d,o]
Nonanal	15.491	1096.7	1101	Citrus, herbaceous[r]
Phenylethyl alcohol	15.939	1110.4	***	Floral, rose, perfume[b,l]
Diethyl succinate	18.255	1182.2	1179	Wine, fruit[r]
Ethyl-octanoate	18.664	1193.9	1127	Melon, wood[q]
Citronellol	19.428	1226.1	1226	Clove, spice, lemon[n,o]
Ethyl-2-phenylacetate	19.794	1243.2	1247	Tropical fruit, pineapple[n]
2-Phenyl ethyl acetate	20.056	1255.2	1258	Floral, sweet[m]
p-Ethylguaiacol	20.527	1276.4	***	Animal, contamination[s]

Caprylic acid	20.246	1370.3	***	Animal, solvent[l]
β-Damascenone	22.446	1381.8	1385	Floral, apple pie, honey[j,k]
Ethyl decanoate	22.568	1388.8	1396	Fruit, grapes[t]

*** Characterization based on NIST software with above 90 % similarity.

[a] Carpena *et al.* (2021); [b] Wu *et al.* (2019); [c] Nan *et al.* (2021); [d] Pereira *et al.* (2014); [e] Jiang and Sun (2019); [f] Yu *et al.* (2019); [g] Chen *et al.* (2013); [h] Gambeta *et al.* (2014); [i] Noguerol-Pato *et al.* (2009); [j] Peng *et al.* (2013); [k] Escudero *et al.* (2007); [l] Feng *et al.* (2017); [m] Zhao *et al.* (2020); [n] Lu *et al.* (2022); [o] Tao *et al.* (2008); [p] Li *et al.* (2008); [q] Mayr *et al.* (2014); [r] Wang *et al.* (2016); [s] Milheiro *et al.* (2019); [t] Welke *et al.* (2014).