

## Supplementary Materials

**Table S1.** Weather conditions from 2019 to 2021. The meteorological data of 2019–2021 came from Weather Underground (<https://www.wunderground.com>).

Growing period	Mean temperature(°C)	Growing degree days	Precipitation(mm)
2019			
April	14.7	145	42
May	21.7	364	40
June	26.0	479	15
July	27.5	542.5	105
August	25.7	486	55
September	23.3	398	47
October	13.7	119.5	22
Average/Total	21.8	2534	326
2020			
April	14.9	149	28
May	21.0	342.5	36
June	26.6	499	20
July	26.2	501	98
August	26.0	497	114
September	22.0	360	42
October	13.7	114.5	0
Average/Total	21.5	2463.0	338
2021			
April	14.5	134	5
May	20.1	314	14
June	25.1	452.5	61
July	26.5	512.5	334
August	25.5	480	92
September	21.7	351.5	151
October	12.2	92	38
Average/Total	20.8	2336.5	695

**Table S2.** Qualitative information on the analyzed monoterpene contents in grape samples. a: "NIST" means identification of compounds based on mass spectra, "RI" indicates compound identification based on retention index, and "St" indicates compound identification against standards; b: Retention indices were calculated under HP-INNOWAX polar column conditions.

Code	Compound	CAS No.	Ion for quantification (m/z)	Standard compounds	Basis of qualitative analysis <sup>a</sup>	RI <sup>b</sup>	Standard curve y=ax+b		
							a	b	R <sup>2</sup>
M1	<i>β</i> -Myrcene	123-35-3	93	<i>β</i> -Myrcene	NIST, St, RI	1172.6	3539.9	9.9197	0.9908
M2	D-Limonene	5989-27-5	68	Limonene	NIST, St, RI	1210.1	1571.9	-41.009	0.9835
M3	Phellandrene	555-10-2	93	Phellandrene	NIST, St, RI	1220	3512.8	23.228	0.999
M4	<i>β</i> -trans-Ocimene	3779-61-1	93	<i>β</i> -Myrcene	NIST, RI	1244.3	3539.9	9.9197	0.9908
M5	<i>γ</i> -Terpinene	99-85-4	93	<i>γ</i> -Terpinene	NIST, St, RI	1256	6059.9	7.4733	0.9966
M6	<i>β</i> -cis-Ocimene	3338-55-4	93	<i>β</i> -Myrcene	NIST, RI	1261.9	3539.9	9.9197	0.9908
M7	Terpinolene	586-62-9	93	Terpinolene	NIST, St, RI	1294.2	27163	266.95	0.9973
M8	<i>cis</i> -Rose oxide	16409-43-1	139	Rose oxide	NIST, St, RI	1363.1	1635.5	32.679	0.9953

M9	<i>trans</i> -Rose oxide	876-18-6	139	Rose oxide	NIST, St, RI	1378.1	1635.5	32.679	0.9953
M10	( <i>E,Z</i> )- <i>Allo</i> -Ocimene	7216-56-0	121	$\beta$ -Myrcene	NIST, RI	1383	3167.4	12.384	0.9911
M11	<i>Allo</i> -Ocimene	673-84-7	121	$\beta$ -Myrcene	NIST, RI	1408.5	3167.4	12.384	0.9911
M12	<i>cis</i> -Furan linalool oxide	5989-33-3	59	Linalool oxide	NIST, St, RI	1450.9	3320	23.157	0.9909
M13	<i>trans</i> -Furan linalool oxide	34995-77-2	59	Linalool oxide	NIST, St, RI	1479.4	3320	23.157	0.9909
M14	Nerol oxide	1786-08-9	68	Rose oxide	NIST, RI	1480.3	1635.5	32.679	0.9953
M15	Linalool	78-70-6	71	Linalool	NIST, St, RI	1551.9	991.64	534.04	0.9967
M16	4-Terpineol	562-74-3	71	4-Terpineol	NIST, St, RI	1605.6	755.58	8.2651	0.9933
M17	Hotrienol	29957-43-5	71	Linalool	NIST, RI	1614.1	1033.2	254.45	0.9921
M18	Neral	106-26-3	69	Citral	NIST, St, RI	1691.5	1698.7	21.529	0.9842
M19	$\alpha$ -Terpineol	98-55-5	59	$\alpha$ -Terpineol	NIST, St, RI	1702.3	913.47	44.256	0.9912
M20	Geranial	141-27-5	69	Citral	NIST, St, RI	1741.7	1698.7	21.529	0.9842
M21	$\beta$ -Citronellol	106-22-9	69	$\beta$ -Citronellol	NIST, St, RI	1766.8	875.25	16.859	0.982
M22	Nerol	106-25-2	69	Nerol	NIST, St, RI	1802.1	585.09	28.403	0.9929
M23	Geraniol	106-24-1	69	Geraniol	NIST, St, RI	1849.5	524.94	77.995	0.9915
M24	Geranic acid	459-80-3	69	Geranic acid	NIST, St, RI	2326.4	2194.6	1824.2	0.9478

**Table S3.** Effects of trellis systems on the phenology of 3 cultivars from 2019 to 2021

Year	Cultivar	Treatment	Budbreak	Flowering begins	Veraison	Cane maturing
2019	RDHY	T	Apr. 12	May. 16	Jul. 2	Aug. 1
		V	Apr. 16	May. 17	Jul. 2	Aug. 2
	RDXY	T	Apr. 17	May. 16	Jul. 8	Aug. 10
		V	Apr. 18	May. 16	Jul. 12	Aug. 12
	RG	T	Apr. 22	May. 22	Jul. 26	Aug. 10
		V	Apr. 22	May. 21	Jul. 27	Aug. 9
2020	RDHY	T	Apr. 13	May. 20	Jun. 29	Aug. 1
		V	Apr. 12	May. 20	Jun. 28	Jul. 28
	RDXY	T	Apr. 13	May. 23	Jul. 15	Aug. 8
		V	Apr. 13	May. 22	Jul. 15	Aug. 8
	RG	T	Apr. 23	May. 26	Aug. 2	Aug. 5
		V	Apr. 23	May. 28	Aug. 2	Aug. 7
2021	RDHY	T	Apr. 12	May. 19	Jun. 25	Aug. 3
		V	Apr. 13	May. 20	Jun. 25	Aug. 3
	RDXY	T	Apr. 13	May. 21	Jul. 15	Aug. 8
		V	Apr. 15	May. 22	Jul. 16	Aug. 10
	RG	T	Apr. 25	May. 27	Aug. 4	Aug. 6
		V	Apr. 24	May. 27	Aug. 3	Aug. 6

Note: RDHY, 'RuiduHongyu'; RDXY, 'RuiduXiangyu'; RG, 'Red Globe'; T, the T trellis system; V, the V trellis system.

**Table S4.** Effects of trellis systems on the monoterpene contents in 3 table grape cultivars ( $\mu\text{g}\cdot\text{L}^{-1}$ ). Data are the mean of three replications. Two-way analysis of variance (ANOVA) was conducted (Treatment  $\times$  Cultivar). Within the same row and factor, different letters stand for the significant difference ( $p$  value  $< 0.05$ ) according to the Student-Newman-Keuls test. Significant differences are indicated: \*,  $p$  value  $< 0.05$ ; \*\*,  $p$  value  $< 0.01$ ; \*\*\*,  $p$  value  $< 0.001$ , ns, not significant. 'nd' represents not determined.

Code	Compound	Cultivar	Treatment
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			T	V	Treatment <i>p</i> value	Cultivar <i>p</i> value	Treatment ×Cultivar <i>p</i> value
M1	$\beta$ -Myrcene	RDHY	428.58 a	206.28 b	0.344	< 0.001	0.009
		RDXY	479.08 a	592.63 a			
		RG	nd	nd			
M2	Limonene	RDHY	29.46 ab	5.21 b	0.802	0.005	0.218
		RDXY	36.74 a	54.01 a			
		RG	nd	nd			
M3	Phellandrene	RDHY	29.13 b	26.19 b	0.609	< 0.001	0.517
		RDXY	67.46 a	78.30 a			
		RG	nd	nd			
M4	$\beta$ -trans-Ocimene	RDHY	135.85 ab	71.72 b	0.036	< 0.001	0.274
		RDXY	161.15 a	82.47 b			
		RG	nd	nd			
M5	$\gamma$ -Terpinen	RDHY	45.56 b	30.47 b	0.145	0.003	0.055
		RDXY	55.49 b	167.24 a			
		RG	nd	nd			
M6	$\beta$ -cis-Ocimene	RDHY	196.63 a	93.92 b	0.132	< 0.001	0.303
		RDXY	238.66 a	211.87 a			
		RG	nd	nd			
M7	Terpinolen	RDHY	353.44 b	315.34 c	0.097	< 0.001	0.027
		RDXY	377.32 a	382.39 a			
		RG	nd	nd			
M8	cis-Rose oxide	RDHY	53.25 bc	51.80 c	0.395	< 0.001	0.148
		RDXY	57.58 b	62.35 a			
		RG	nd	nd			
M9	trans-Rose oxide	RDHY	38.20 a	38.19 a	0.105	< 0.001	0.080
		RDXY	37.20 b	38.48 a			
		RG	nd	nd			
M10	Allo-ocimene	RDHY	37.54 ab	25.11 b	0.641	< 0.001	0.117
		RDXY	39.63 ab	46.92 a			
		RG	nd	nd			
M11	(E,Z)-Allo-ocimene	RDHY	28.53 ab	20.55 b	0.702	< 0.001	0.133
		RDXY	30.21 ab	35.30 a			
		RG	nd	nd			
M12	cis-Furan linalool oxide	RDHY	110.50 c	49.73 d	< 0.001	< 0.001	0.004
		RDXY	369.34 a	292.10 b			
		RG	nd	nd			
M13	trans-Furan linalool oxide	RDHY	55.11 a	34.03 b	< 0.001	< 0.001	< 0.001
		RDXY	54.12 a	52.61 a			
		RG	nd	nd			
M14	Nerol oxide	RDHY	47.73 b	44.13 b	0.259	< 0.001	0.563
		RDXY	58.41 a	57.17 a			
		RG	nd	nd			
M15	Linalool	RDHY	4930.84 a	2308.14 d	< 0.001	< 0.001	< 0.001
		RDXY	3940.29 b	3330.80 c			
		RG	535.41 e	537.27 e			
M16	hortrineol	RDHY	448.06 a	354.12 b	< 0.001	< 0.001	0.002
		RDXY	340.76 bc	309.60 c			
		RG	nd	nd			
M17	4-Terpineol	RDHY	10.18 a	9.11 b	0.060	< 0.001	0.062
		RDXY	9.42 b	9.34 b			
		RG	nd	nd			
M18	Neral	RDHY	nd	nd	\	\	\
		RDXY	nd	nd			
		RG	nd	nd			
M19	$\alpha$ -Terpineol	RDHY	90.79 a	66.53 b	0.027	< 0.001	0.053
		RDXY	98.31 a	93.74 a			
		RG	nd	nd			
M20	Geranial	RDHY	24.44	24.64	0.691	< 0.001	0.954
		RDXY	24.84	25.16			
		RG	nd	nd			

M21	$\beta$ -Citronellol	RDHY	21.53 c	22.36 bc	0.084	< 0.001	0.209
		RDXY	27.88 b	31.02 a			
		RG	nd	nd			
M22	Nerol	RDHY	38.56 b	37.62 b	0.642	< 0.001	0.862
		RDXY	44.38 a	44.24 a			
		RG	nd	nd			
M23	Geraniol	RDHY	122.07	128.19	0.794	< 0.001	0.301
		RDXY	126.26	122.19			
		RG	nd	nd			
M24	Geranic acid	RDHY	1865.71 $\pm$ 4.30 b	1885.73 $\pm$ 4.11 b	0.874	< 0.001	0.216
		RDXY	2087.56 $\pm$ 19.06 a	2071.58 $\pm$ 14.53 a			
		RG	1835.51 $\pm$ 2.17 bc	1827.45 $\pm$ 0.46 c			
	Total	RDHY	9141.69 $\pm$ 179.99 a	5849.10 $\pm$ 193.56 b	< 0.001	< 0.001	< 0.001
		RDXY	8762.09 $\pm$ 490.77 a	8191.52 $\pm$ 329.92 a			
		RG	2370.93 $\pm$ 3.09 c	2364.72 $\pm$ 0.36 c			

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Note: RDHY, 'RuiduHongyu'; RDXY, 'RuiduXiangyu'; RG, 'Red Globe'; T, the T trellis system; V, the V trellis system.