

Exploring the clonal diversity of Shiraz

Nick Dry

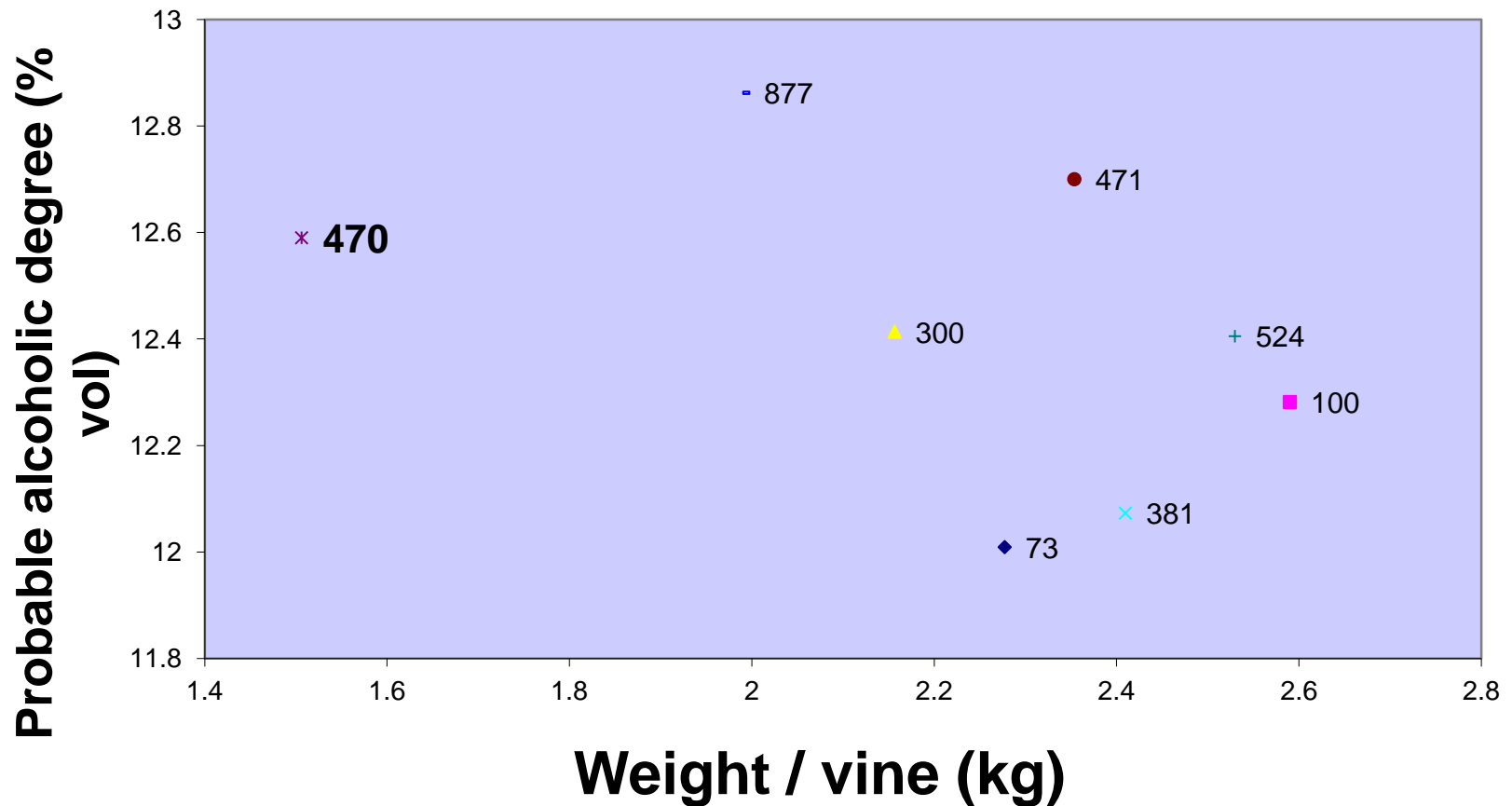
Yalumba Nursery Viticulturist



Exploring the clonal diversity of Shiraz

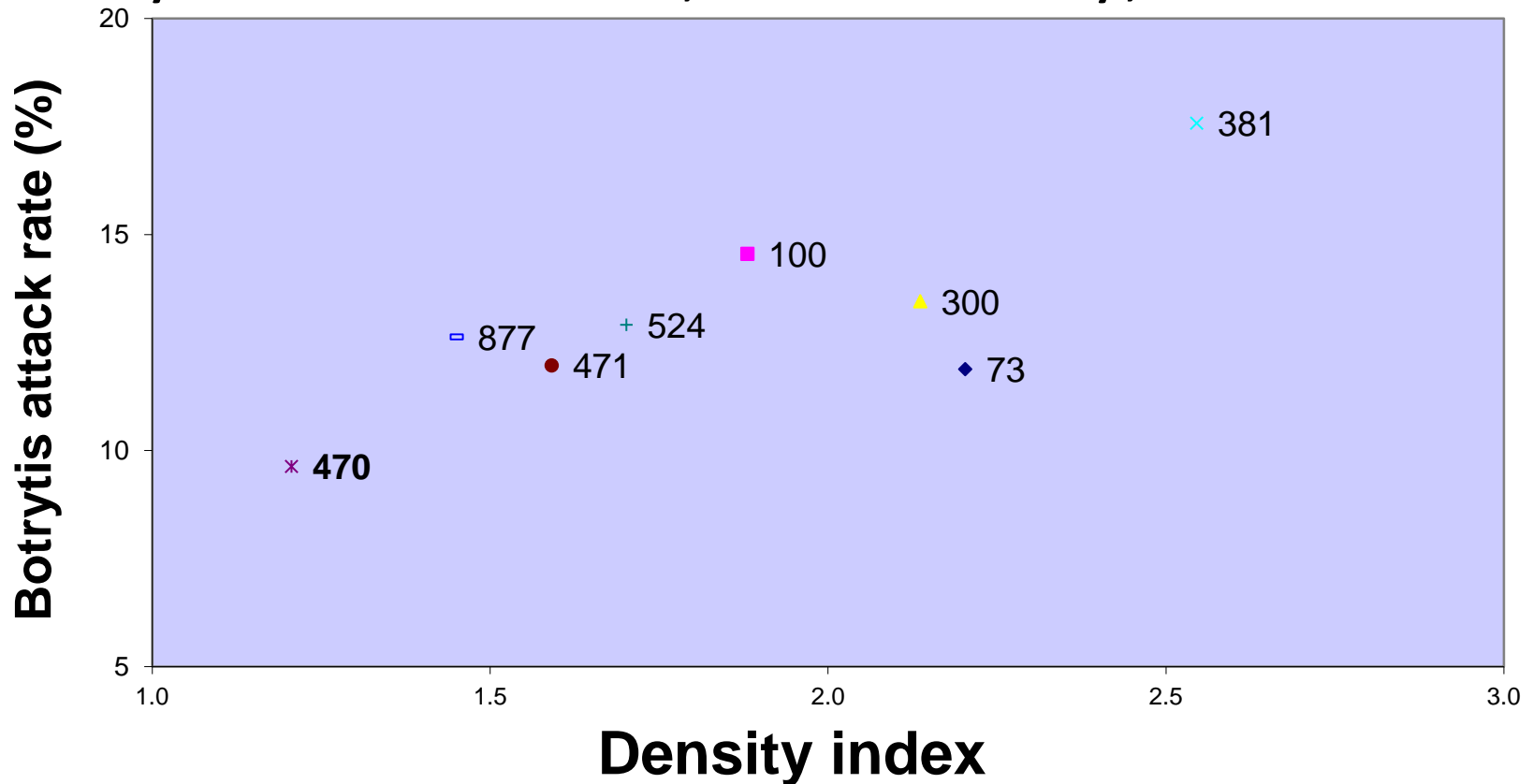
- Introduction and background
- Clonal diversity in France
- Clonal diversity in Australia
- Shiraz clones for cool climate viticulture in Australia

Variations in French clone performance: yield and sugar content



Variations in French clone performance: Bunch structure and susceptibility to botrytis

Density index : 1 = loose clusters, 2 = medium density , 3 = dense clusters



Genetic Repository (Hermitage)



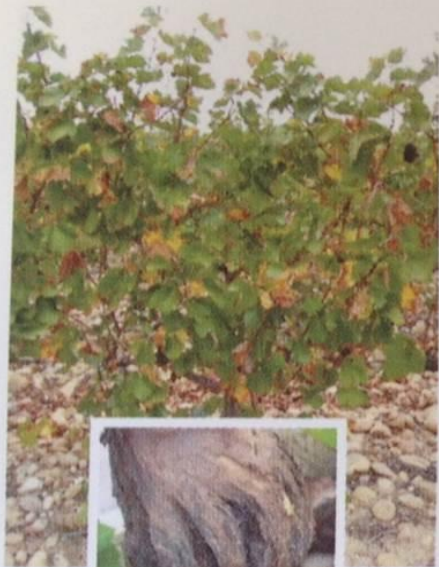
Genetic Repository (Hermitage)



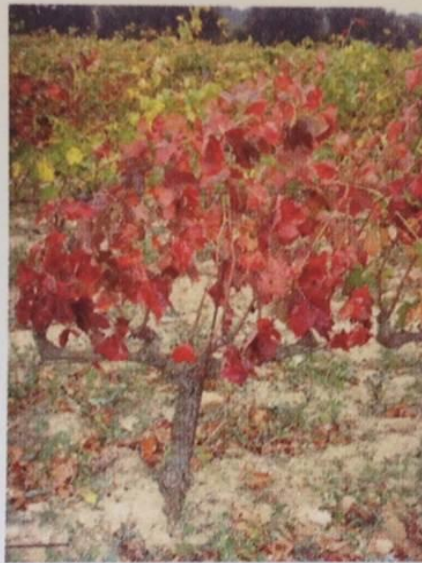
Genetic Repository (Hermitage)



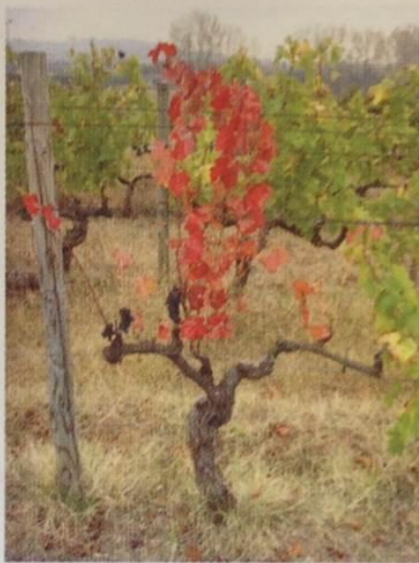
Syrah Decline: Progression of Symptoms



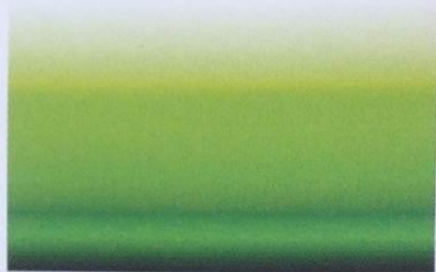
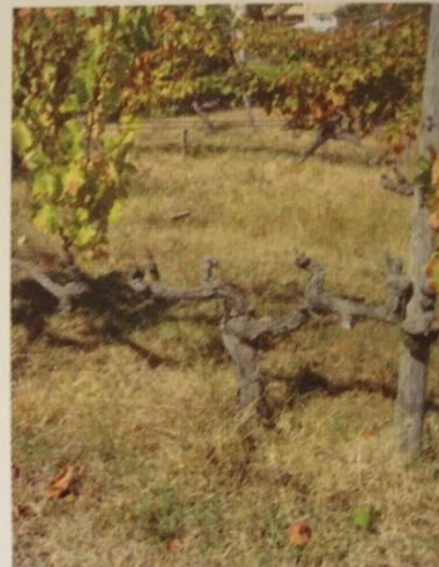
*Aggravation
des crevasses*



*Remises en réserve
racinaire insuffisantes*



*Le greffon chétif est inapte à passer l'hiver,
il meurt. Le porte-greffe peut redémarrer*



10 ans



2 à 3 ans



1 an



Mort

Shiraz Clones from NSW

Pruning Trial Selections

- PT 10, PT15 and PT23
- Selected in Griffith from a pruning trial in the early 1960's
- PT = 'Pruning Trial'
- Suggestions that these selections can be traced back to the Busby Shiraz (original selection in France from Hermitage Hill, Rhone?)

Shiraz Clones from Victoria

Tahbilk '1860' Selections

- 6 selections made during the mid-1970's
- Based on leaf-roll symptoms, yield and maturity
- R6WV28 most widely planted and appreciated
- R6WV28= Row 6, West Vine 28

Shiraz Clones from Victoria

Best's Selection

- Origin from vines planted by Henry Best in 1866
- Supplied generally as a 'mass selection'
- 12 selections from individual vines have been taken, but have not been distributed widely.

Shiraz Clones from South Australia

Harry Tulloch- Manurial Trial

- Selections made from a 'Manurial trial planted in 1944'
- Origin of vines most likely the Barossa Valley
- Tulloch selected the top 6 and bottom 4 yielding clones → virus tested
- Clones of significance: 1654 (highest yielding), 1125, 1127 and 2626.

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Shiraz Clones from South Australia

Hans Loder- Commercial Vineyard Selections

- 44 selections made from commercial vineyards in the Barossa Valley in 1966.
- 5 years of yield data collection + virus testing
- Clones of significance: BVRC12 (ranked 6th) and BVRC30 (ranked 44nd)

Shiraz Clones from South Australia

Yalumba Old Vine Selections

- 12 selections from Barossa and Eden Valley
- Planted into replicated trial
- Based on 4 years of small-lot winemaking, 4 selections were released:
 - EVOVS3
 - BVOVS5
 - BVOVS10
 - EVOVS12

Shiraz Clones from South Australia

- SARDI Heritage Clones
- 150 selections from Barossa, Eden Valley, McLaren Vale and Langhorne Creek
- 8 selections released

From:
Whiting, J. (2003) 'Rootstock
and Clones for Greater Victoria'

5.1 kg/vine
difference in yield
from highest to
lowest → 36%
difference

Table 37

Shiraz, Mildura, sandy loam, 4 years. Comment: Clones selected from old vineyards at Bests Wines Great Western (BGW) and Bests Wines Tresco (BWT).

Clone	Yield kg/vine	Bunch nos. per vine	Bunch wt g	Berry nos. per bunch	Berry wt g	Sugar 'Brix	Titratable acid g/l	pH
CSIRO R7V1	14.5	150.5	112.2	85.9	1.28	22.0	5.4	4.02
BWT 0879	13.8	136.7	116.0	88.2	1.33	21.9	5.4	3.96
NSW 15	13.2	128.9	116.6	88.9	1.31	21.4	5.5	3.95
BWT 0352	12.6	126.7	117.6	87.8	1.34	21.8	5.4	4.01
BWT 2253	12.6	137.3	105.0	80.9	1.32	22.0	5.4	3.95
BWT 1245	12.0	116.6	112.4	86.1	1.30	21.8	5.5	3.97
BGW 2033	12.0	118.3	116.5	90.0	1.30	21.7	5.5	3.95
BGW 2027	11.9	116.3	116.4	88.6	1.31	22.0	5.5	3.93
BWT 1033	11.7	116.1	114.5	89.6	1.29	22.0	5.5	3.98
BWT 0329	11.7	111.4	112.6	89.9	1.27	22.2	5.3	3.99
NSW 23	11.4	116.4	109.6	83.3	1.32	22.5	5.5	4.04
NSW 19	11.4	120.1	107.3	82.8	1.30	22.4	5.4	4.00
SA 1654	11.3	109.4	116.9	88.8	1.33	22.4	5.6	4.01
BWT 2152	11.3	116.0	106.2	83.2	1.28	22.2	5.4	4.03
NSW 10	11.3	119.5	106.4	82.9	1.27	22.5	5.5	3.96
BGW 2111	11.1	111.5	111.1	86.3	1.30	22.4	5.4	4.00
BGW 2132	11.1	115.8	105.3	82.7	1.28	22.3	5.3	3.97
BWT 0233	10.9	103.1	120.6	90.7	1.34	22.6	5.5	4.00
SA 712	10.9	111.4	114.2	85.8	1.35	22.3	5.6	3.97
BGW 2014	10.8	110.1	106.3	81.8	1.28	22.2	5.5	3.97
BWT 0875	10.6	106.1	111.8	84.9	1.29	22.8	5.5	4.06
BWT 0325	10.6	109.7	106.4	82.4	1.30	22.4	5.5	3.99
BWT 0924	10.5	107.7	115.3	90.7	1.27	22.1	5.5	3.96
BGW 2052	10.3	103.1	108.2	83.0	1.32	22.4	5.2	3.99
BGW 2099	10.2	108.6	102.9	78.0	1.32	22.0	5.4	3.98
BGW 2118	9.9	116.3	99.7	78.7	1.30	22.5	5.6	3.99
SA 1127	9.8	102.0	105.7	84.4	1.28	22.1	5.3	3.97
BGW 2026	9.7	101.3	100.3	80.0	1.24	21.9	5.3	4.00
BGW 2022	9.7	95.1	104.8	80.1	1.29	21.5	5.6	3.95
BGW 2104	9.4	88.8	104.3	82.7	1.26	21.8	5.3	3.97
LSD (5%)	1.3	14.2	8.6	6.5	0.06	NS	NS	0.06

From:
Whiting, J. (2003) 'Rootstock
and Clones for Greater Victoria'

Table 35

Shiraz, Ararat, Yellow duplex, mean 4 years

	Yield kg/vine	Bunch nos. per vine	Bunch wt g	Berry nos. per bunch	Berry wt g	Sugar 'Brix	Titrateable acid g/l	pH
CSIRO R7V1	5.2	46.9	106	81	1.31	22.9	7.3	3.39
ESA 3021	5.1	46.2	106	82	1.30	23.0	7.6	3.35
BVRC 12	4.8	45.7	103	81	1.29	23.6	7.0	3.36
NSW 15	4.8	45.5	101	77	1.31	23.1	7.4	3.36
SA 1654	4.7	45.2	101	76	1.33	23.2	7.1	3.35
CW 73-16	4.6	43.6	102	81	1.27	23.5	7.1	3.39
NSW 23	4.5	43.7	99	77	1.28	23.6	7.0	3.38
Tahbilk R6W	4.4	45.1	93	72	1.31	24.2	7.3	3.41
Tahbilk R2E	4.4	41.5	102	79	1.30	23.4	6.9	3.39
BVRC 30	4.4	43.7	99	77	1.29	23.4	7.2	3.37
Rutherglen 'Caracosa'	4.2	43.4	95	74	1.28	23.2	7.0	3.40
NSW 10	3.9	41.0	94	74	1.27	24.0	7.0	3.39
Tahbilk R7V3E	3.3	37.8	85	69	1.25	24.0	6.9	3.41
LSD 5%	0.6	5.2	6	5	0.04	0.5	0.3	0.03

1.9kg/vine difference in yield
from highest to lowest → 37%
difference

From:
Whiting, J. (2003) 'Rootstock
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Mean yield =
11.3 kg/vine

Table 37

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LSD 5%	0.6	5.2	6	5	0.04	0.5	0.3	0.03

Mean yield =
4.5kg/vine



Data from Yalumba Nursery Shiraz clone trial plot-Barossa Valley (2008-2010)

Clone	Yield (kg/vine)	Bunch Weight (g)	Bunch number	Harvest Baume
EVOVS3	6.0	88	67	14.5
BVOVS5	5.7	91	63	14.4
BVOVS10	5.6	90	62	14.7
EVOVS12	5.7	89	68	14.6
1654	5.9	90	65	14.5
R6WV28	5.4	95	56	14.8
Average	5.7	91	64	14.6

Ranking of Shiraz clones based on yield (1 = highest yield)

Clone	Region				
	Ararat	Great Western	Mildura	Barossa Valley (1978-1986)	Barossa Valley (1987-1990)
PT10	7	3	4		
PT15	2	1	1		1
PT23	4	2	2		
1654	3		3	3	
BVRC12	1	4		1	2
BVRC30	6	5		2	
R6WV28	5				3

Higher yielding clones= BVRC12 and PT15

Moderate yielding clones = 1654

Lower yielding clones = PT10 and R6WV28

Comments by Yalumba Senior Winemakers on 2008 vintage wines made from replicated Shiraz clone trial

Clone	Sensory Assessment
BVOVS1	Ripe berry fruit and plum aroma, rich complete palate. Typical warmer valley floor wine.
EVOVS3	Dry spice, fresh, perfumed aroma, tighter, fresh, more defined and linear palate. Cooler climate wine style.
BVOVS5	Spicy, eucalyptus aromas, powerful tannins. Cooler climate palate, Central Victorian style.
BVOVS6	Primary fruit, restrained aroma, secondary flavours with soft palate. Hunter Valley style.
BVOVS7	Black berry fruit conserve aromas with warmer, well structured palate, with powerful tannins.
BVOVS10	Tannin defines style of this wine. Confectionary aromas. Blending wine for increasing tannin.
EVOVS11	Intensely aromatic floral aromas. Powdery tannins and floral flavours. Similar to Shiraz Viognier blend.
EVOVS12	Very perfumed aromas. Succulent full and juicy palate. Similar to Shiraz Viognier blend.
1654	Chocolate, fruit cake aromas with medium bodied but complete palate. Typical Barossa.
R6WV28	Lively palate, soft plush tannins. A touch of peppermint and cedar. Elegant wine.

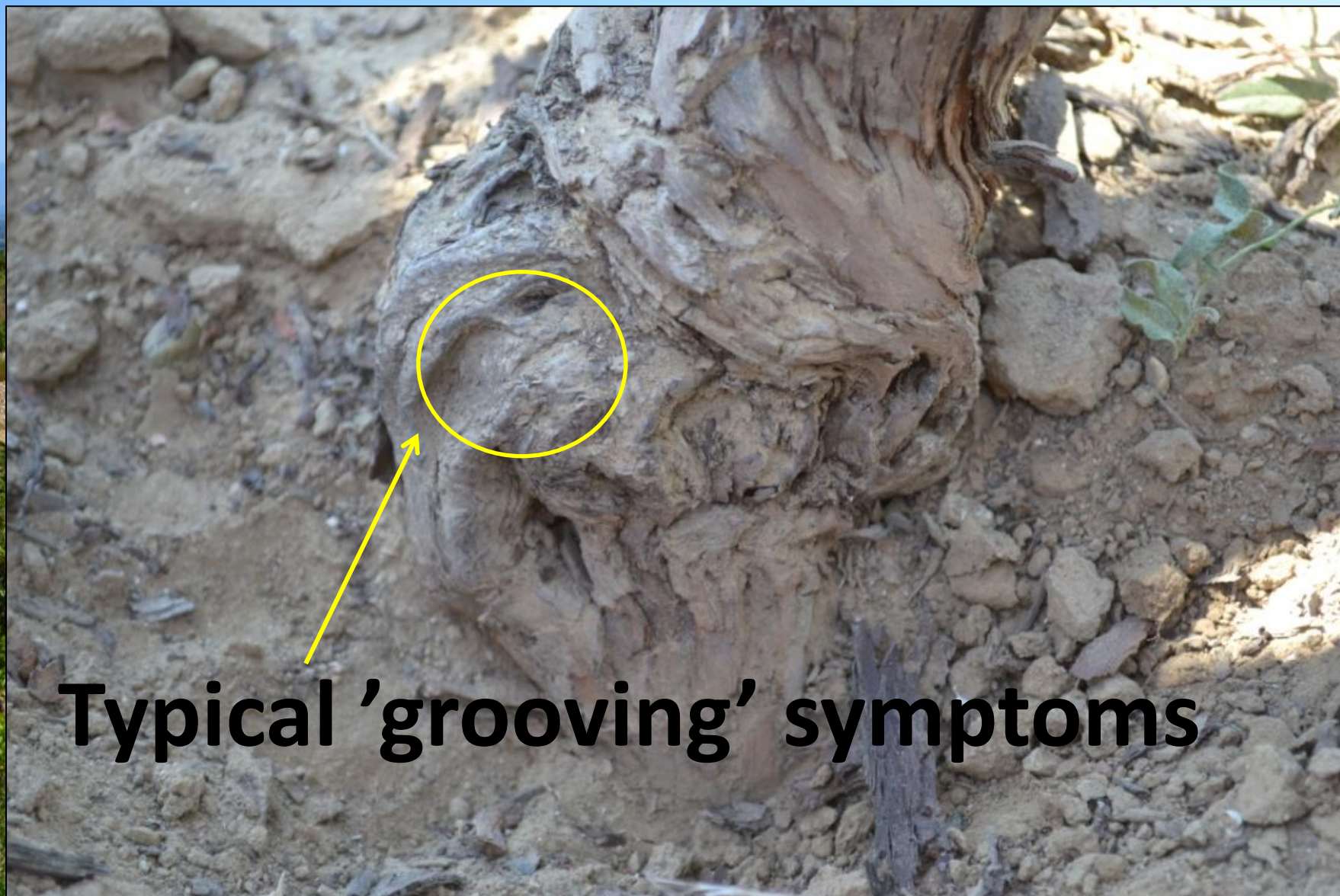
Summary

- Diversity exists amongst the population of Australian clones
- Having diversity in our vineyards is important as a risk management strategy but also allows us to make distinctive wines
- The true extent of diversity will become apparent with DNA typing to clone level
- Clonal selection for cool climate viticulture should be considered.

Thank-you

- ENTAV-INRA®
- Harry Tulloch
- John Whiting
- Yalumba Winemaking and Viticulture team

Syrah Decline Symptoms



Typical 'grooving' symptoms

French clones v susceptibility

Tableau 1 : distinction clonale sur clones de Syrah avec 3 marqueurs génétiques (microsatellites).

Cette analyse peut-être réalisée sur feuilles ou bois
(laboratoire@vignevin.com).

Sensibilité / groupes génétiques	I	II	III ¹	IV	V
Très peu sensibles	470	524 - 747			
Peu sensibles				471	
Sensibles				100 - 174 - 300 - 525 - 877	
Très sensibles*				73 - 99 - 381 382 - 383 - 585	301

**: les clones très sensibles sont en cours de radiation*

¹ Seuls des clones non agréés sont présents dans le groupe III

Clone Susceptibility to Syrah Decline (Languedoc)



ENTAV-INRA®383

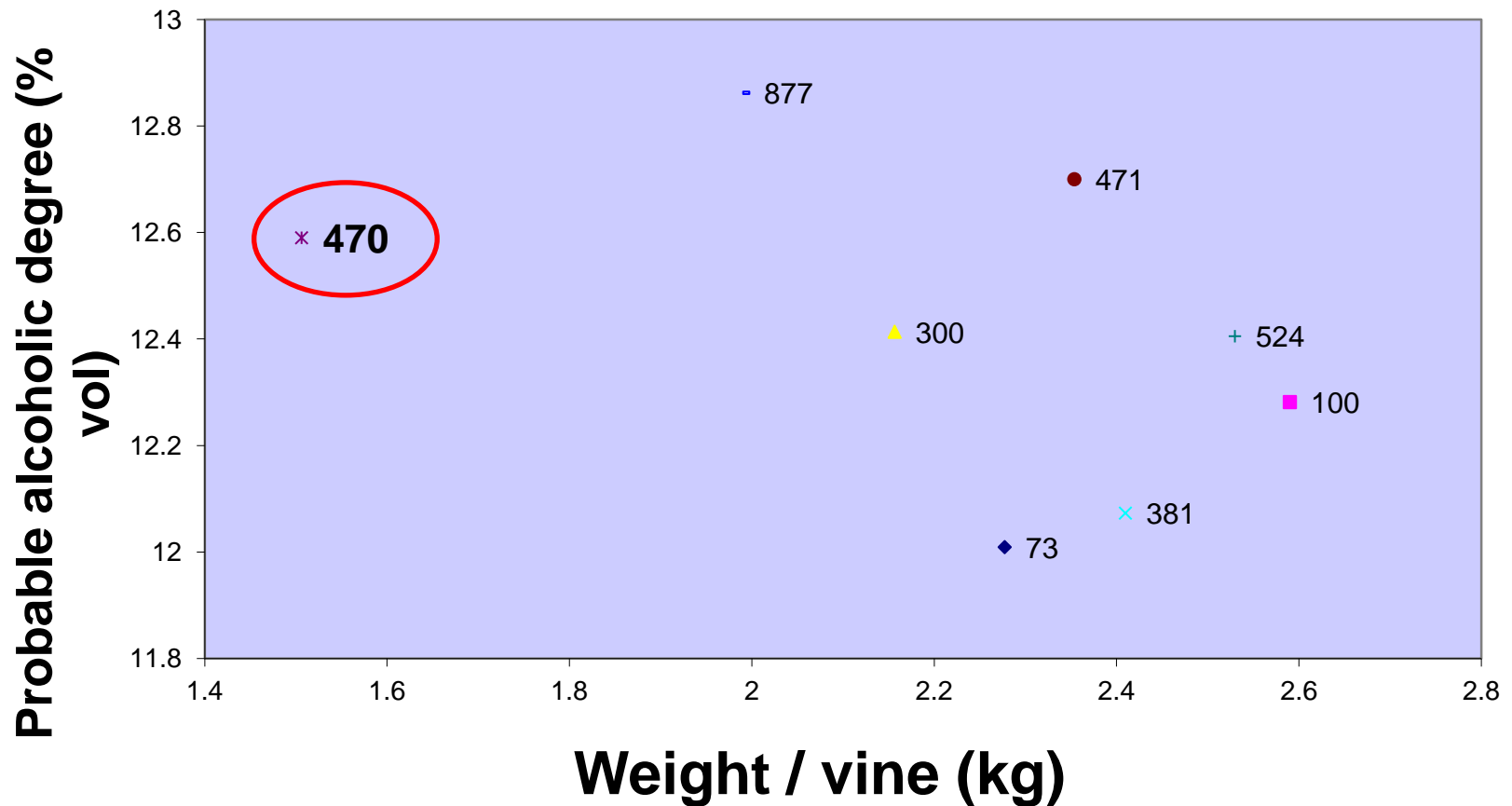
ENTAV-INRA®470

Shiraz Clones for Cool Climate Viticulture

Preferred Characteristics:

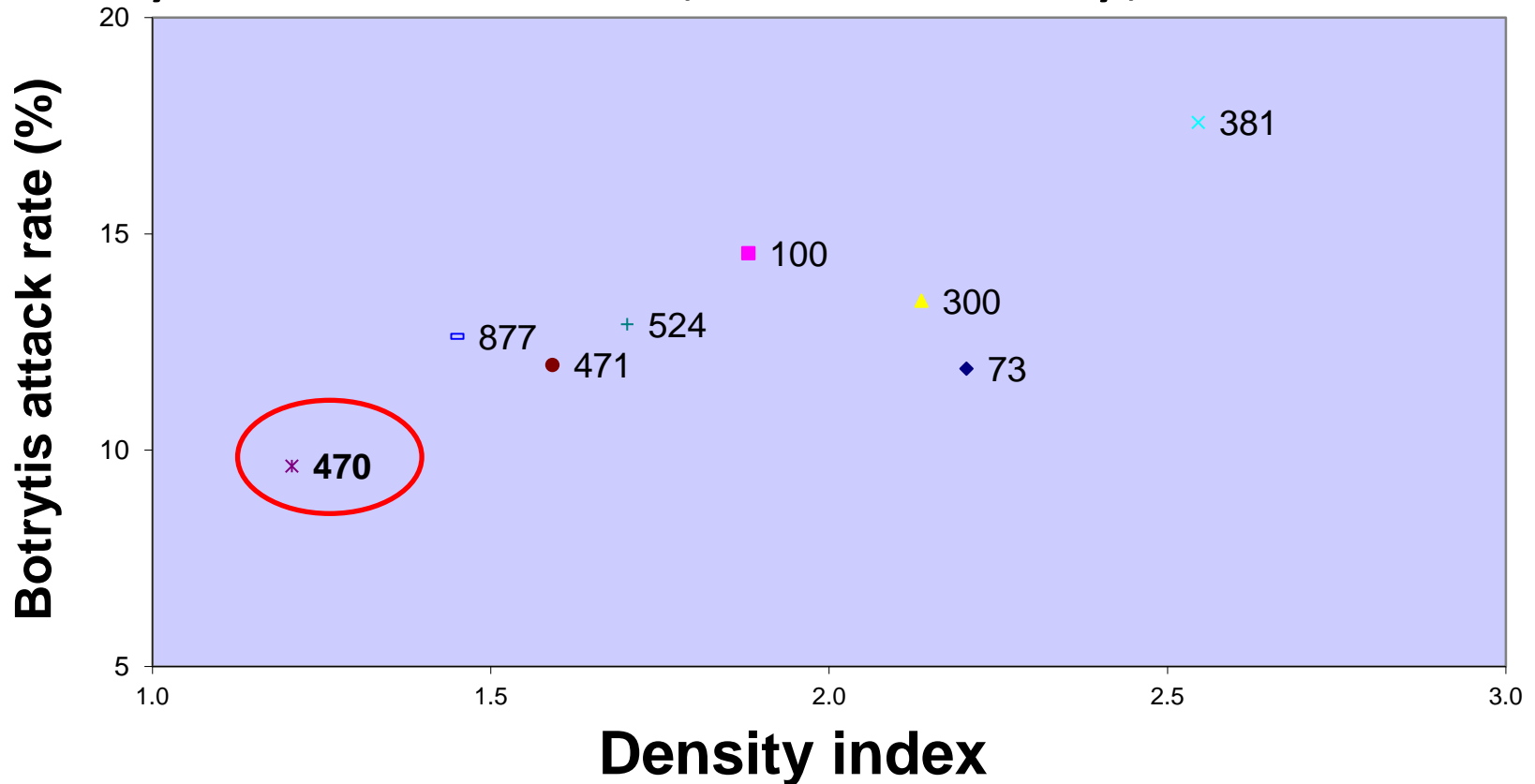
- Low-moderate yield
- Lower bunch number (even spread of fruit)
- Loose bunch structure
- Early ripening
- High rotundone production?

Variations in French clone performance: yield and sugar content



Variations in French clone performance: Bunch structure and susceptibility to botrytis

Density index : 1 = loose clusters, 2 = medium density , 3 = dense clusters



Shiraz Clones for Cool Climate Viticulture

R6WV28

- Consistently ranks as a lower yielding clone
- Consistently earlier ripening
- Loose bunch structure

1654 on left and R6WV28 on right

Shiraz Clones for Cool Climate Viticulture

Typical Bunch Structure:
1654 on left and R6WV28 on right



Shiraz Clones for Cool Climate Viticulture

2626, BRC30 and 1127

- Consistently rank as a lower yielding clones
- Higher rotundone levels?

1654 on left and R6WV28 on right

Shiraz Clones for Cool Climate Viticulture

Best's Selections

1654 on left and R6WV28 on right