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Selections of the Houghton clones of Cabernet Sauvignon

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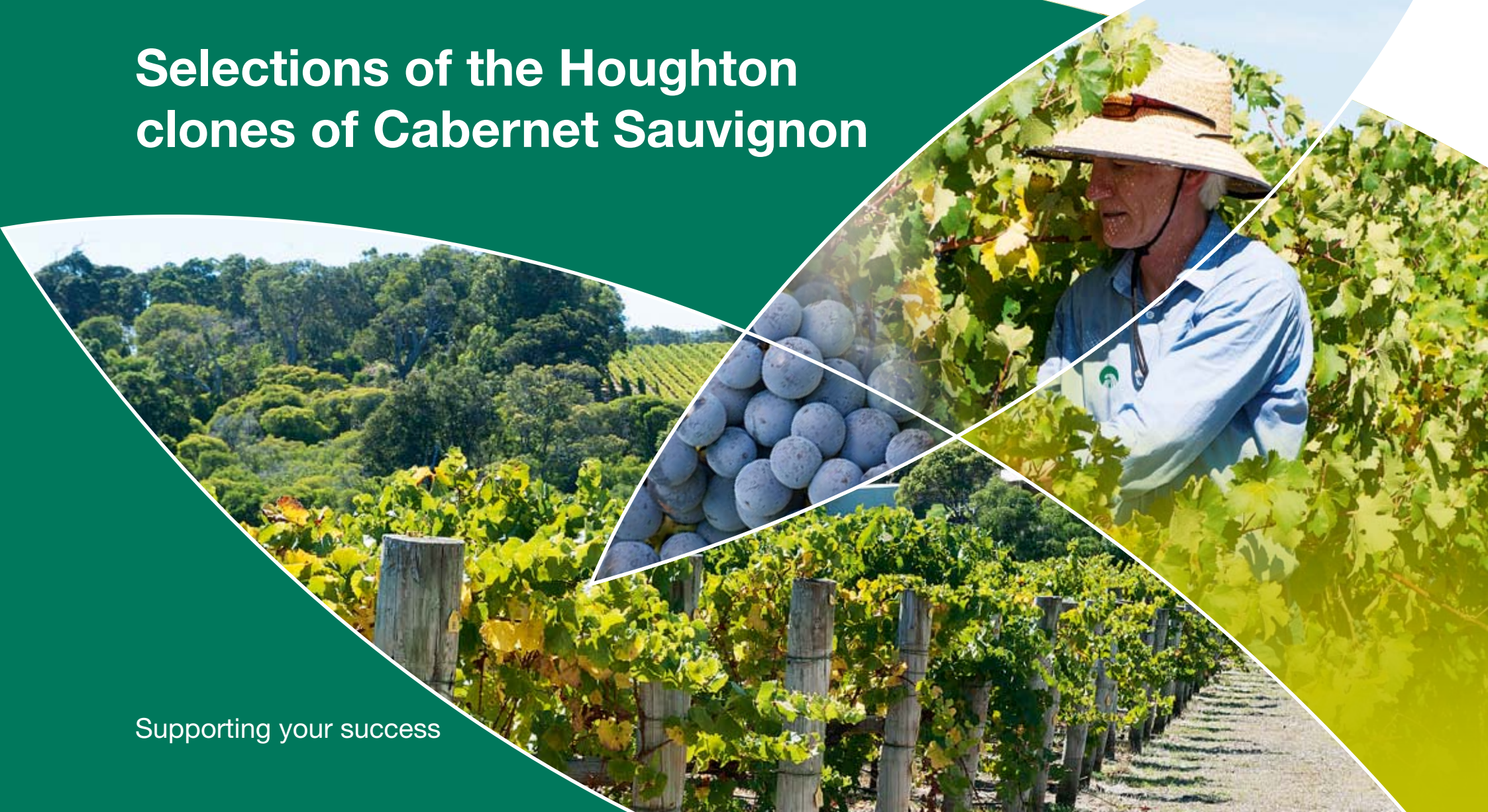

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Acknowledgements

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Glynn Ward, Wine and Grape Project Manager
Ian Cameron, former Viticulture Development Officer
Richard Fennessy, Viticulture Research Officer

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Contents

Background

Cabernet Sauvignon is the premium red wine grape variety grown in Western Australia. The high quality wines produced have won prestigious awards and accolades nationally and internationally.

The first clonal selection of Cabernet Sauvignon in Western Australia was conducted by the Department of Agriculture at the Houghton Vineyard in the Swan Valley from 1968 to 1970. The objective was yield improvement, vine health and fruit flavour. Twenty-one high performing vines were identified from vines planted in Houghton Vineyard in the 1950s as cuttings sourced from vines planted in the 1930s. These high performing vines became known as the 'Houghton clones'. Evaluation trials were planted at Gingin in 1970 and Frankland in 1973.

Twenty Houghton clones were planted in a trial at Westfield Vineyard (now Justin Vineyard) in Frankland in 1973 to evaluate their viticulture performance in a new region. Clone SA126 from South Australia was included as an industry standard. Data collection from the trial was discontinued in 1979 when SA126 became the main clone planted by industry. Viticulture and wine evaluations resumed in 2008 following industry interest in the Houghton clones which were identified as the possible source of fruit for many of the exceptional wines produced in the Great Southern and South West regions of the State.

Experimental wines were made from the individual clones and evaluated by panels of more than 20 experienced winemakers in 2008, 2009 and 2010. The number of panellists varied each year. The blind tastings compared up to 24 wine samples including SA126. The tastings included 10, 8 and 9 single clone wines in 2008, 2009 and 2010 respectively.

The numbers of clones included in the tastings each year was based on viticulture and wine performance in the previous vintage. The tastings were held each December when the wines were eight months-old.

Three Houghton clones were identified as producing consistently higher quality grapes and wine with more desirable wine attributes than SA126 in Frankland. A fourth high yielding clone produced wines that rated higher than SA126 in one season. The results also indicated variation within each of these clones. The best performing vines of each of these clones have been identified as the new selections.

This publication presents information on the wine attributes of these Houghton clones and the viticultural features of the new selections: H5–7 and H5–2 (Clone 5), H9–7 and H9–9 (Clone 9), H20–4 (Clone 20) and H19–5 (Clone 19). These new selections were released in 2012 and selections are recommended for commercial evaluation in different regions.

Grape production environment

The Cabernet Sauvignon clonal trial at Frankland was planted on gravel loam soil. Frankland is a cool climate wine growing region with a mean January temperature of 19.8°C and low average annual rainfall of 400 mm.

The trial consisted of Houghton clones (1–20) and SA126. All 15 vines per clone were established on their own roots on a vertical two-wire trellis at 1780 vines/ha. Mature vines were pruned to four canes per vine (10 buds per cane) and four spurs. Vines have been managed commercially over 35 years. Irrigation was not applied in some seasons when water availability was limited, including 2006–07 and 2007–08.

Winemaking

Wines in this evaluation were produced over three successive vintages — 2008, 2009 and 2010. Wines were made using a standard small lot method (Figure 1) in order to better understand the potential of the clones and to determine the best suited wine styles.

Wines were made from those clones and vines which had performed consistently over consecutive vintages producing high quality grapes and wine with distinctively different characteristics. Wine was made from SA126 for comparison. Juice was analysed for total soluble solids (TSS), Baumé (Be), pH, titratable acidity (TA), malic acid (MA), potassium (K^+), ammonium nitrate (NH_4), free amino nitrogen (FAN) and yeast assimilable nitrogen (YAN). Wines were analysed for pH, titratable acid, alcohol content, sulphur dioxide (SO_2 free and total), volatile acidity (VA), residual sugar (RS), total phenolics (TPH), total anthocyanins (TANTH), colour density and colour hue.

Wine information

All the wines produced in this evaluation had undergone sensory assessment by panels of 24, 20 and 24 experienced winemakers in 2008, 2009 and 2010 respectively in blind tastings. All assessments have been on eight month-old wines using the following criteria:

- Wine Score using the Australian Wine Show Scoring System out of a total of 20 points comprising colour (maximum 3 points), aroma (up to 7 points) and palate (maximum 10 points).
- Intensity of colour, aroma, flavour, tannin and body using a continuous scale where 0 = very low and 10 = very high.
- Expression of Cabernet Sauvignon Varietal Character using a continuous scale where 0 = weak and 10 = strong.
- Descriptors for aroma, flavour, tannin and body characters. Dominant characters are printed in bold in the vintage tables.

Harvest
Hand pick
Store fruit at <5°C overnight

Crush/destem
Add 20 mg/L SO_2
Add 1 g/L tartaric acid
Warm to 16°C

Inoculate
Add 250 mg/L active dry yeast strain (EC1118)
Add 200 mg/L DAP

Ferment
Hand plunge twice daily
Temperature maintained at 16°C
Press after 14 days on skins (<1.0°Be)

Press
Free run and pressing fractions combined

Rack
Off gross lees

Malo-lactic fermentation
Inoculate with *Oenococcus oeni*, maintained at 21°C

Rack
Once malic acid <0.1 g/L add 50 mg/L SO_2
Adjust TA to 6.0–7.0 g/L

Cold stabilise
Hold at 2°C for 8 weeks
Adjust SO_2 to bottling specification

Bottle (3.00 µm membrane filter)

Figure 1 Standard red winemaking method

Vine information

Vines have been assessed for budburst, fruitfulness, fruit set, key phenology timings (flowering, veraison and harvest), vine vigour, vine balance, yield, bunch weight, berry size, berry maturation, and berry composition.

In 2007–08 the crop was not thinned to determine the yield potential for each clone. In 2008–09 the crop was reduced to 25, 35 or 45 bunches per vine to determine the yield to maximise wine quality and desirable wine attributes for each clone. Based on these results the crop was thinned to optimum yield in 2009–10. Fruit was hand-harvested at flavour ripeness.

Virus status

Virus testing has been conducted using PCR, Elisa and indexing for: GLRaV (1, 2, 3, 4, 5 and 9); GVA; Rupestris stem pitting virus (RSPaV); fleck virus (strains A & B); and fan leaf virus.

Clone profile and vine selection

The clone profiles on the following pages present specific information on the best performing Houghton clones and vine selections in the evaluation trial at Frankland over three vintages, 2008, 2009 and 2010. These are Clone 5 (Selections H5–7 and H5–2), Clone 9 (Selections H9–7 and H9–9), Clone 20 (Selection H20–4) and Clone 19 (Selection H19–5), which are listed in decreasing order of perceived commercial potential at this time, although only grown in one location. The information includes:

Wine attributes

This information summarises the assessments over the three vintages and includes a description of the aroma, flavour, tannin, body and colour profiles, the range for Wine Scores, and Cabernet Character expression. The wines of each clone were also given an Overall ranking and a Top 5 ranking:

- Overall ranking is based on the frequency that the wine was scored in the Top 5 wines assessed by the winemakers.
- Top 5 ranking is the percentage of winemakers who chose the wine in their top five samples assessed.

Viticulture features

Information on each selection includes vine vigour, fruitfulness, berry size, bunch size, yield, suitable pruning method and harvest timing compared with SA126 and target yield to maximise grape and wine quality and expression of desirable wine attributes.

Virus status

The results of comprehensive virus testing and observation of virus leaf symptoms of each selection and parent Houghton clone material in the Swan Valley, Gingin and Frankland vineyards over 40 years is provided.

Vintage information

Information on the wine attributes of each Houghton clone and viticulture features of each selection are tabled for three specific vintages (2008 to 2010). Details include:

- **Wine attributes:** juice and wine analysis, wine score, Cabernet character, Overall ranking, Top 5 ranking, intensity scores and descriptors for colour, aroma, flavour, tannin, body and Cabernet character.
- **Viticulture features:** budburst, fruitfulness, average bunch weight and berry weight, yield per vine, yield per hectare, harvest date.

Commercial potential

Commercial potential of each selection is based on wine and viticulture performance. This was rated very high to medium depending on the parent clone. Information is also provided on suitability to different regions and growing conditions. All selections were released in 2012 and are recommended for further evaluation in different regions.

Houghton Clone 5

Selections H5–7 and H5–2

Commercial potential

Very high. Suitable for all regions.

Origin

- Parent vines planted in Houghton Vineyard, Swan Valley, in 1930s.

Selection

- Selected in Houghton Vineyard as Clone 5 (Row 14, Panel 7, Vine 3) by Department of Agriculture and Food (Mann & Cameron 1969–71)
- The best performing vines of Clone 5 selected in Justin Vineyard, Frankland River as H5–7 (Clone 5, Vine 7) and H5–2 (Clone 5, Vine 2), by Department of Agriculture and Food (Cameron & Ward 2007–10).

Wine attributes

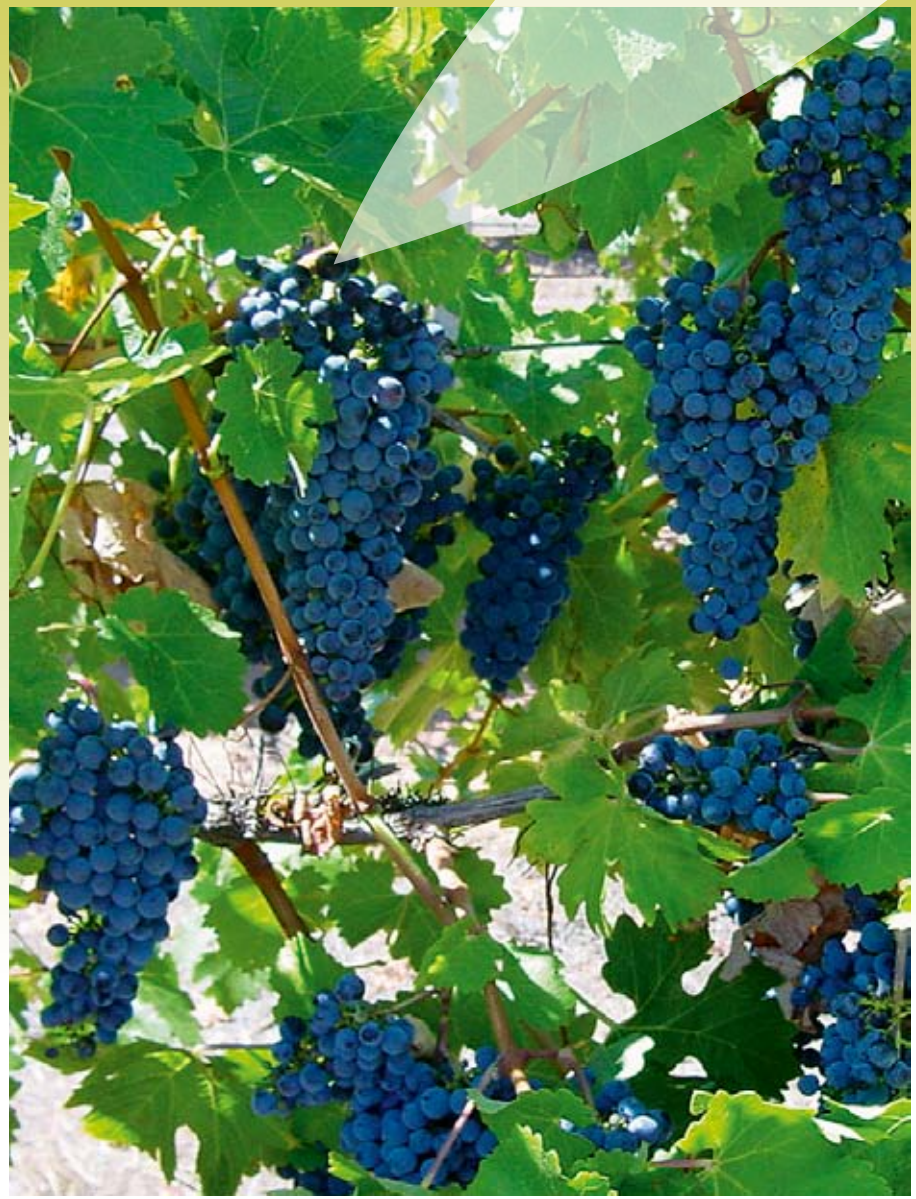
- Intense red/purple colour
- Intense dark fruits of cassis, blackberry and chocolate dominant, and raspberry and savoury aromas
- Complex, persistent, bright fruit flavours with cassis, blackberry and chocolate dominant, and plum, currant, cherry and savoury
- Low herbal characters, fine and powdery tannins, full-bodied
- Wine score: 16.3–17.0
- Cabernet character: 7.1–8.0
- Ranked first by panel in three consecutive vintages
- Top 5 wine ranking by 60–80% of winemakers
- Wine rated consistently better than SA126

Viticultural features

- Low vigour, highly fruitful, small berries, moderate yield
- Yield for maximum wine quality: 4.0–6.0 t/ha at 25–35 bunches per vine
- Early harvest
- Suited to cane pruning
- H5–2 colours earlier and is slightly more vigorous than H5–7

Virus status

- No virus detected by PCR or Elisa testing
- No virus leaf symptoms observed in the vineyards.



Houghton Clone 5

Wine attributes

Vintage 2008

Juice TSS	Juice Baumé	Juice pH	Juice TA
24.3°Brix	13.5°Be	3.70	2.92 g/L
Wine alcohol		**Wine pH**	**Wine TA**
14.2%		3.38	6.50 g/L
Wine score	**Cabernet character**	**Ranking**	**Top 5**
16.7	7.1	1	79%
Colour	**Aroma**	**Flavour**	**Tannin**
7.8	6.6	7.1	6.8

Colour	**Dark purple.** Vibrant cherry red/plum.
Aroma	**Ripe intense dark fruits: blackberry, cherry, plum, black currant, blueberry and cassis.** Liquorice, chocolate, olive, savoury and mint.
Flavour	**Complex, concentrated, dark fruits: blackberry, mulberry, plum.** Red berries: raspberry. Chocolate and mint.
Tannin	**Fine, supple, ripe.** Soft, good intensity. Lingering velvet. Cabernet-like.
Body	**Medium to full-bodied.** Good structure, weight, length and primary fruit concentration.
Cabernet characters	**Deep varietal character.**

Vintage 2009

Juice TSS	Juice Baumé	Juice pH	Juice TA
24.5°Brix	13.6°Be	3.89	3.30 g/L
Wine alcohol		**Wine pH**	**Wine TA**
14.9%		3.51	6.56 g/L
Wine score	**Cabernet character**	**Ranking**	**Top 5**
17.5	8.2	1	70%
Colour	**Aroma**	**Flavour**	**Tannin**
7.7	7.6	7.5	7.2

Colour	**Intense dark purple/red,** deep and rich.
Aroma	**Rich dark forest fruits, intense cassis and blackberry.** Raspberry, chocolate and mint. **Savoury and complex.**
Flavour	**Rich bold fruits: cassis, blackberry, mulberry and cherry.** Spice, vanilla and chocolate. Persistent.
Tannin	**Fine,** ripe, good depth, chalky, savoury.
Body	**Medium, good depth, full flavour, juicy,** tight and light.
Cabernet characters	**Intense cassis.** Blackberry, blueberry. Low herbal character.

Wine attributes

Vintage 2010

Juice TSS	Juice Baumé	Juice pH	Juice TA
24.4°Brix	13.6°Be	3.64	4.80 g/L
Wine alcohol		**Wine pH**	**Wine TA**
14.8%		3.57	6.10 g/L
Wine score	**Cabernet character**	**Ranking**	**Top 5**
16.3	7.2	1	60%
Colour	**Aroma**	**Flavour**	**Tannin**
7.6	6.7	7.3	6.5

Colour	**Intense red/purple.**
Aroma	**Cassis, blackberry and chocolate.** Currant, raspberry, cherry, plum, spice, olive, violets, earthy.
Flavour	**Cassis, blackberry, currant, cherry and plum.** Spice, violets.
Tannin	**Fine, powdery.** Soft, silky.
Body	Medium. Bright.
Cabernet characters	**Intense cassis, blackberry, chocolate, currant and plum. Fine, powdery tannins. Intense red/purple colour.**

Viticulture features

Selection H5–7

Year	2007–08	2008–09	2009–10
Budburst (%)	79	70	67
Fruitfulness – bunches per vine	41	55	43
Fruitfulness – bunches per burst bud	2.5	1.5	1.8
Bunch weight (g)	102	87	96
Berry weight (g)	0.69	1.05	0.92
Yield per vine (kg)	4.2	4.3	3.4
Yield per hectare equivalent (t)	7.5	7.6	6.0
Harvest date	3 April	23 April	8 April

Selection H5–2

Year	2007–08	2008–09	2009–10
Budburst (%)	83	78	80
Fruitfulness – bunches per vine	48	65	54
Fruitfulness – bunches per burst bud	3.2	1.7	1.7
Bunch weight (g)	88	92	94
Berry weight (g)	n/a	0.91	0.78
Yield per vine (kg)	4.2	4.3	3.6
Yield per hectare equivalent (t)	7.5	7.6	6.4
Harvest date	3 April	23 April	8 April

Houghton Clone 9

Selections H9–7 and H9–9

Commercial potential

Very high. Suitable for all regions.

Origin

- Parent vines planted in Houghton Vineyard, Swan Valley, in 1930s.

Selection

- Selected in Houghton Vineyard as Clone 9 (Row 7, Panel 9, Vine 1) by Department of Agriculture and Food (Mann & Cameron 1969–71).
- The best performing vines of Clone 9 selected in Justin Vineyard, Frankland River as H9–7 (Clone 9, Vine 7) and H9–9 (Clone 9, Vine 9) by Department of Agriculture and Food (Cameron & Ward 2007–10).

Wine attributes

- Dark crimson/purple colour
- Aromatic rich currant, blackberry and cherry dominant, and chocolate and savoury aromas
- Concentrated delicate fruit flavours with blackberry, cassis, and plum dominant, and raspberry, olive, spice and savoury
- Low herbal characters; fine, powdery, slightly drying tannins
- Aromatic, full-bodied with long palate
- Wine score: 15.8–6.6
- Cabernet character: 5.8–7.0
- Wine ranked 5th, 3rd and 2nd by winemaker panel in three consecutive vintages
- Top 5 wine ranking by 30 to 50% of winemakers
- Wine rated consistently better than SA126

Viticulture features

- Medium vigour, highly fruitful, large berries, large bunches, high yield
- Yield for maximum wine quality: 4.0–6.0 t/ha at 25–35 bunches per vine
- Late harvest
- Suited to cane pruning
- H9–9 slightly more vigorous, larger berries, higher berry acidity at harvest than H9–7

Virus status

- H9–7 suspected to contain GLRaV–9 but often not found by PCR testing. Autumn leaf virus symptoms observed in Swan Valley but rarely in Frankland vineyard
- H9–9 contains GLRaV–9. Very mild leaf symptoms observed at Frankland in some seasons.

Houghton Clone 9

Wine attributes

Vintage 2008

Juice TSS	Juice Baumé	Juice pH	Juice TA
24.3°Brix	13.5°Be	3.53	3.75 g/L
Wine alcohol		**Wine pH**	**Wine TA**
14.1%		3.38	6.50 g/L
Wine score	**Cabernet character**	**Ranking**	**Top 5**
15.3	5.8	5	40%
Colour	**Aroma**	**Flavour**	**Tannin**
5.9	6.1	5.9	5.3

Colour	**Purple/red**, bright/intense.
Aroma	**Ripe plum and dark cherry.** Rhubarb, black olives.
Flavour	**Deep intense flavour. Strong dark fruit characters: blackberry, currant, plums and cassis.** Black olive and briar.
Tannin	**Tight, slightly grainy.**
Body	**Medium- to full-bodied.** Excellent fruit concentration, intensity, length, fleshy mouth feel. Well structured. Good balance and body.
Cabernet characters	**Strong fruit characters: blackberry and plum.**

Vintage 2009

Juice TSS	Juice Baumé	Juice pH	Juice TA
24.5°Brix	13.6°Be	3.66	3.83 g/L
Wine alcohol		**Wine pH**	**Wine TA**
14.7%		3.41	6.30 g/L
Wine score	**Cabernet character**	**Ranking**	**Top 5**
16.6	7.3	3	46%
Colour	**Aroma**	**Flavour**	**Tannin**
7.6	7.1	7.4	7.2

Colour	**Dark purple/red.**
Aroma	**Intense berries**, black currant.
Flavour	**Rich, intense dark fruits: blackberry and cassis.** Plum, olive and chocolate.
Tannin	**Ripe, fine, firm, chewy.**
Body	**Full-bodied, concentrated, long palate.**
Cabernet characters	**Blackberry, cassis.** Olive, savoury and chocolate.

Wine attributes

Vintage 2010

Juice TSS	Juice Baumé	Juice pH	Juice TA
24.5°Brix	13.6°Be	3.57	5.03 g/L
Wine alcohol		**Wine pH**	**Wine TA**
14.6%		3.61	6.30 g/L
Wine score	**Cabernet character**	**Ranking**	**Top 5**
16.0	7.0	2	50%
Colour	**Aroma**	**Flavour**	**Tannin**
7.6	6.8	6.9	5.8

Colour	**Deep crimson/purple.**
Aroma	**Currant, blackberry, raspberry, cherry, cassis, spice and earthy.** Plum, savoury, chocolate, violets, olive.
Flavour	**Intense currant, blackberry and cherry.** Raspberry, cassis, plum, spice, savoury, violets and olive.
Tannin	**Soft, powdery, fine.** Slightly drying.
Body	Full-bodied, juicy.
Cabernet characters	**Intense blackberry.** Raspberry, cherry and spice. **Fine, powdery tannins**, slightly drying.

Viticulture features

Selection H9–7

Year	2007–08	2008–09	2009–10
Budburst (%)	79	70	67
Fruitfulness – bunches per vine	49	55	59
Fruitfulness – bunches per burst bud	2.7	1.4	1.8
Bunch weight (g)	116	125	116
Berry weight (g)	0.79	1.14	1.04
Yield per vine (kg)	5.7	5.8	4.5
Yield per hectare equivalent (t)	10.1	10.2	8.0
Harvest date	3 April	23 April	13 April

Selection H9–9

Year	2007–08	2008–09	2009–10
Budburst (%)	83	78	80
Fruitfulness – bunches per vine	48	56	43
Fruitfulness – bunches per burst bud	2.7	1.3	1.6
Bunch weight (g)	123	116	106
Berry weight (g)	0.83	1.08	1.18
Yield per vine (kg)	4.8	6.1	4.1
Yield per hectare equivalent (t)	8.6	10.8	7.3
Harvest date	3 April	23 April	13 April

Houghton Clone 20

Selection H20–4

Commercial potential

High. May be most suited to high vigour sites.

Origin

- Parent vines planted in Houghton Vineyard, Swan Valley, in 1930s.

Selection

- Selected in Houghton Vineyard as Clone 20 (Row 14, Panel 15, Vine 3) by Department of Agriculture and Food (Mann & Cameron 1969–71).
- The best performing vine of Clone 20 selected in Justin Vineyard, Frankland River as H20–4 (Clone 20, Vine 4) by Department of Agriculture and Food (Cameron & Ward 2007–10).

Wine attributes

- Deep red/purple colour
- Ripe, fresh berry and dark fruits with blackberry, cassis, raspberry, black currant and plum dominant, and savoury and chocolate aromas
- Generous dark berry and fruit flavours with cassis, blackberry, and plum dominant, and raspberry and plum pudding
- Low herbal characters; fine, powdery tannins; full-bodied, persistent and long palate
- Wine score: 15.6–16.5
- Cabernet character: 6.6–7.0
- Wine ranked 3rd, 2nd and 4th by winemaker panel in consecutive vintages
- Top 5 wine ranking by 30 to 50% of winemakers
- Wine rated consistently better than SA126

Viticulture features

- Low vigour, moderately fruitful, small berries, small bunches, average yield
- Yield for maximum wine quality: 3.5–4.5 t/ha at 25–35 bunches per vine
- Early harvest
- Suited to cane pruning only

Virus status

- No leafroll virus symptoms observed or detected by testing
- Other vines grown from the same parent, Clone 20, have GLRaV–9.

Houghton Clone 20

Wine attributes

Vintage 2008

Juice TSS	Juice Baumé	Juice pH	Juice TA
24.4°Brix	14.1°Be	3.61	3.52 g/L
Wine alcohol		**Wine pH**	**Wine TA**
14.6%		3.42	6.50 g/L
Wine score	**Cabernet character**	**Ranking**	**Top 5**
16.6	6.9	3	63%
Colour	**Aroma**	**Flavour**	**Tannin**
7.8	7.3	6.8	6.8

Colour	**Deep purple,** crimson, vibrant.
Aroma	**Good fruit intensity. Fresh berries: red cherry, blackberry, mulberry, raspberry, black currant, plum and cassis.** Violet, ink, chocolate, tobacco. Ripe fruits.
Flavour	**Strong primary flavours, concentrated, generous, dense, persistent, bright. Blackberry, black currant, cherry, plum, cassis.** Chocolate, plum pudding.
Tannin	**Fine, soft,** ripe.
Body	**Medium – to full-bodied. Good weight.**
Cabernet characters	**Blackberry, cassis, plum.**

Vintage 2009

Juice TSS	Juice Baumé	Juice pH	Juice TA
24.7°Brix	13.7°Be	3.80	3.60 g/L
Wine alcohol		**Wine pH**	**Wine TA**
14.7%		3.49	6.00 g/L
Wine score	**Cabernet character**	**Ranking**	**Top 5**
16.5	7.2	2	50%
Colour	**Aroma**	**Flavour**	**Tannin**
6.7	6.7	6.7	6.4

Colour	**Dark purple/red.**
Aroma	**Ripe dark fruits: cassis, raspberry, plum.** Savoury, chocolate and coffee.
Flavour	**Concentrated fruits: cassis and plum.** Blackberry, raspberry and olive.
Tannin	**Fine, powdery,** ripe.
Body	**Medium to full, lush and long palate,** good texture.
Cabernet characters	**Blackberry, cherry, plum.** Raspberry, currant, mint and chocolate. Low herbal.

Wine attributes

Vintage 2010

Juice TSS	Juice Baumé	Juice pH	Juice TA
23.7°Brix	13.2°Be	3.52	4.80 g/L
Wine alcohol		**Wine pH**	**Wine TA**
14.6%		3.49	6.30 g/L
Wine score	**Cabernet character**	**Ranking**	**Top 5**
15.6	6.6	4	30%
Colour	**Aroma**	**Flavour**	**Tannin**
6.6	6.7	6.4	5.8

Colour	**Deep red/purple.**
Aroma	**Cassis, blackberry, currant, cherry.** Spice and earthy.
Flavour	**Cassis, blackberry, plum, raspberry.** Cherry and spice.
Tannin	Fine, powdery.
Body	Juicy and elegant.
Cabernet characters	**Cassis, blackberry.** Plum, raspberry, spice.

Viticulture features

Selection H20–4

Year	2007–08	2008–09	2009–10
Budburst (%)	79	n/a	77
Fruitfulness – bunches per vine	46	55	50
Fruitfulness – bunches per burst bud	2.8	n/a	1.7
Bunch weight (g)	70	83	86
Berry weight (g)	n/a	0.93	0.83
Yield per vine (kg)	3.2	4.0	4.2
Yield per hectare equivalent (t)	5.7	7.1	7.4
Harvest date	3 April	23 April	8 April

Houghton Clone 19

Selection H19–5

Commercial potential

Medium. May be best suited to non-irrigated vineyards.

Origin

- Parent vines planted in Houghton Vineyard, Swan Valley, Western Australia in 1930s.

Selection

- Selected in Houghton Vineyard as Clone 19 (Row 26, Panel 4, Vine 3) by Department of Agriculture and Food (Mann & Cameron 1969–71).
- The best performing vine of Clone 19 selected in Justin Vineyard, Frankland River as H19–5 (Clone 19, Vine 5) by Department of Agriculture and Food (Cameron & Ward 2007–10).

Wine attributes

- Vibrant crimson/purple colour
- Low intensity sweet blackberry, cassis and raspberry aroma
- Medium intensity sweet fruits of raspberry and blackberry
- Herbal edge; fine, powdery tannins; medium-bodied
- Wine score: 15.6–16.1
- Cabernet character: 6.4–6.8
- Wine ranked 2nd, 8th and 6th by winemaker panel in consecutive vintages
- Top 5 ranking by 13 to 58% of winemakers
- Wine rated better than SA126 in some years
- Fruit and wine quality, aroma and flavour intensity improved in dry or non-irrigated seasons

Viticulture features

- High vigour, high fruitfulness, large berries, large bunches, high yield
- Mid-harvest
- Yield for maximum wine quality: 4.0–6.0 t/ha at 25–35 bunches per vine
- Suited to cane pruning

Virus status

- No leafroll virus symptoms detected by testing
- No virus symptoms observed in any parent Houghton Clone 19 material or vineyard.

Houghton Clone 19

Wine attributes

Vintage 2008

Juice TSS	Juice Baumé	Juice pH	Juice TA
24.5°Brix	13.6°Be	3.66	3.22 g/L
Wine alcohol		**Wine pH**	**Wine TA**
13.7%		3.38	6.40 g/L
Wine score	**Cabernet character**	**Ranking**	**Top 5**
16.1	6.8	2	58%
Colour	**Aroma**	**Flavour**	**Tannin**
7.5	7.0	6.7	6.8

Colour	**Vibrant purple/crimson/red.**
Aroma	**Slightly closed but good display of dark fruits: blackberry, blueberry, cassis, currant, plum.** Liquorice, chocolate, olive and mint.
Flavour	**Generous dark fruits: blueberry, mulberry.** Persistent but not mouth filling. **Herbal edge.**
Tannin	Soft, round, ripe.
Body	**Medium- to full-bodied.** Tight, less eloquent. Good weight.
Cabernet characters	**Blackberry, black currant, plum, green peppercorn.**

Vintage 2009

Juice TSS	Juice Baumé	Juice pH	Juice TA
24.8°Brix	13.8°Be	3.71	3.45 g/L
Wine alcohol		**Wine pH**	**Wine TA**
14.8%		3.57	6.45 g/L
Wine score	**Cabernet character**	**Ranking**	**Top 5**
15.8	6.6	8	13%
Colour	**Aroma**	**Flavour**	**Tannin**
7.1	6.9	7.1	6.5

Colour	**Deep red/purple.**
Aroma	**Low intensity.** Cassis, spice.
Flavour	**Sweet fruits.** Raspberry, cherry, plum, blackberry, minty.
Tannin	**Fine, ripe, fleshy.**
Body	**Medium. Juicy, tight, long.**
Cabernet characters	Raspberry and cherry.

Wine attributes

Vintage 2010

Juice TSS	Juice Baumé	Juice pH	Juice TA
22.6°Brix	12.6°Be	3.66	5.25 g/L
Wine alcohol		**Wine pH**	**Wine TA**
14.6%		3.61	6.30 g/L
Wine score	**Cabernet character**	**Ranking**	**Top 5 ranking**
15.6	6.4	6	25%
Colour	**Aroma**	**Flavour**	**Tannin**
7.1	7.0	6.7	6.5

Colour	**Deep plum red.**
Aroma	**Blackberry, raspberry, cassis.** Currant, plum, cherry, spice, olive, violets.
Flavour	Currant, blackberry, raspberry, cassis, spice, olives, violets
Tannin	**Fine, soft.** Powdery.
Body	Medium depth of flavour.
Cabernet characters	**Cassis, blackberry.** Currant, raspberry and spice.

Viticulture features

Selection H19–5

Year	2007–08	2008–09	2009–10
Budburst (%)	77	77	71
Fruitfulness – bunches per vine	53	63	47
Fruitfulness – bunches per burst bud	3.1	1.7	1.6
Bunch weight (g)	108	100	107
Berry weight (g)	0.70	0.90	0.93
Yield per vine (kg)	5.7	5.6	4.3
Yield per hectare equivalent (t)	10.2	10.0	7.6
Harvest date	3 April	23 April	13 April

Further reading

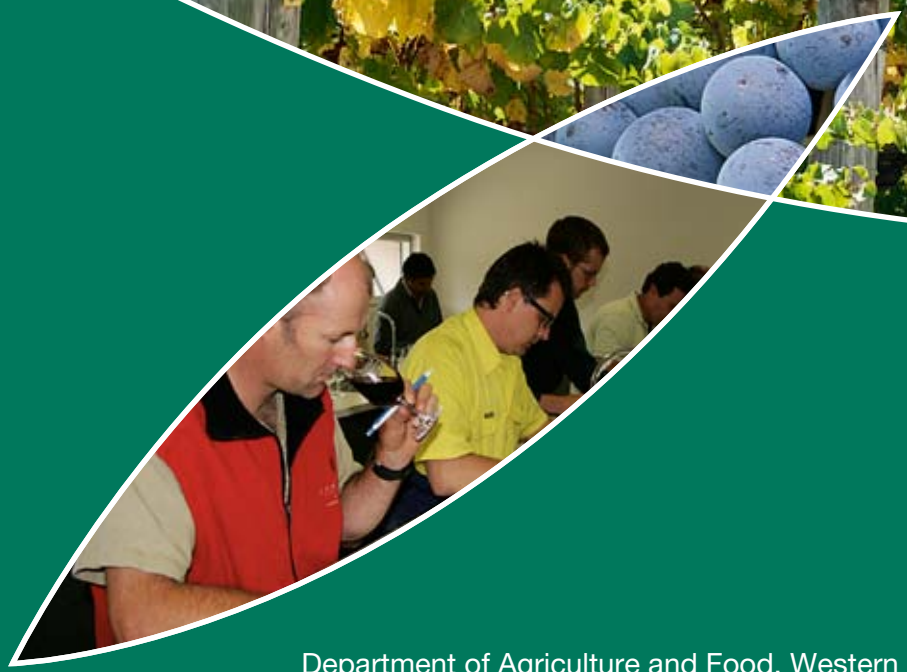
Cameron, I, Ward, G & Fennessy, R 2013, 'Cabernet Sauvignon clone evaluation at Frankland', Department of Agriculture and Food, Bulletin 4845.

Cirami, RM, McCarthy, MG & Nicholas, PR 1993, Clonal selection and evaluation to improve the production of Cabernet Sauvignon grapevines in South Australia, *Australian Journal of Experimental Agriculture* **33**, 213–220.

Sereno, C 2008, Clonal selection of Cabernet Sauvignon in France. 'Variety Focus – Cabernet Sauvignon', UC Davis Extension course 15 May 2008 (http://stream.ucanr.org:80/cabernet/Sererno/index.htm).

Ward, G & Cameron, I 2013, Cabernet Sauvignon in Western Australia. Department of Agriculture and Food, Bulletin 4844.

Whiting, JR & Hardie WJ 1981, Yield and compositional differences between selections of grapevine cv. Cabernet Sauvignon, *American Journal of Enology and Viticulture* **32,** 212–214.



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