



## **COONAWARRA ROOTSTOCK TRIAL 2019**

**Report to South East Natural Resources Management Board  
for grant assistance to host a field walk to showcase the  
trial and pilot winemaking with grapes from new rootstock  
varieties**

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## 1.0 THE IMPORTANCE OF ROOTSTOCKS

Australia has some of the oldest grapevines in the world, predominantly used for winemaking. This important resource has largely manifested over time due to absence of many of the damaging pests and disease impacting vineyards overseas. One of these pests in particular is grape phylloxera, a small insect pest that damages vines by feeding on their roots. Vine death can result after approximately five years of an infestation. There is no chemical or biological control for phylloxera and the only mechanism grapegrowers can employ to combat phylloxera is to plant vines grafted to American rootstocks which convey a level of tolerance to the pest, compared to own rooted vines which are highly susceptible. Planting grafted vines however comes at a cost of at least 3 times that of own rooted material and approximately \$60,000 per hectare.

With the acknowledgement of a rise in phylloxera detection in Australia over approximately the last 10 years, particularly in the Yarra Valley in Victoria, grapegrowers are starting to look at planting or replanting a proportion of their vines to rootstock as an insurance policy. This activity is occurring in conjunction with heightened awareness and adherence to best practice farmgate hygiene practices to prevent phylloxera and other pests and diseases from entering at the property level.

Coonawarra, like other regions in South Australia, has had a low level of vines planted to rootstock to date. Currently the region has 13.6% area under vine planted to rootstocks (Vinehealth Australia, 2019). This level of rootstock planting is not dissimilar across the Limestone Coast.

Rootstock use in the grape and wine industries is not just to combat pests such as phylloxera or nematodes. A wide range of other purposes includes to improve drought tolerance, decrease vigour, increase vigour, tolerance to saline, calcareous or acidic soils, tolerance to waterlogging, reduce potassium uptake. With high awareness by viticultural industries of the effects of climate change on grape production, growers are placing more value on drought tolerance and water use efficiency in situations where water for agricultural uses is becoming scarcer.

## 2.0 THE COONAWARRA ROOTSTOCK TRIAL PARTNERSHIP

The Coonawarra Rootstock Trial established in 2009, is a long term partnership between Coonawarra Vignerons, Treasury Wine Estates and Vinehealth Australia. It is the only standing curated rootstock trial of this type in South Australia. The trial is gaining traction in the Limestone Coast and it is evident that regional leaders are realising and spruiking the potential of the trial as a significant resource for the region to foster.

The trial was setup to facilitate scientific analysis, with both a randomised, replicated section of seven rows from which annual viticultural measures have been recorded to date, as well as 27 commercially managed rows.

The trial includes a range of nine rootstocks and an own rooted control. The rootstocks include M5489, M5512, M6262, 140 Ruggeri, 1103 Paulsen, Ramsey, Börner, 110 Richter and own roots. Of note, the trial has included three CSIRO Merbein-bred rootstocks for low potassium uptake and Börner, a rootstock touted with the highest resistance to grape phylloxera.

### 3.0 AIMS OF THE ROOTSTOCK TRIAL

The rootstock trial was devised to facilitate industry consideration of rootstocks as a risk management tool for future plantings, to combat the risks of phylloxera and climate change for example.

The trial provides local grapegrowers and winemakers a hands-on learning experience about the attributes that the planted rootstocks can convey to scions, to see if they adequately reflect the desired wine quality and style of the Limestone Coast region, compared to own roots. The three Merbein rootstocks and Börner are only planted in small pockets commercially, and therefore the trial allows for a unique learning experience which cannot be gained elsewhere.

Despite larger companies in the Limestone Coast making the shift in recent years to plant a proportion of their redevelopments on rootstock, this trial is of particular importance for small producers who don't always have the capacity to test new planting material and aren't always privy to new industry information.

#### 3.1 FOSTERING COMMUNITY INVOLVEMENT IN THE TRIAL

An important part of the rootstock trial is to foster community involvement and ownership of the trial, and to create a forum for discussion on rootstocks and their potential value to viticulture. This is to be achieved in a number of ways, including holding hosted field walks of the trial site and then holding industry tastings of the wine made from the trial.

### 4.0 FIELD WALK

As the trial vines are reaching peak maturity at nine to 10 years of age, a second public field walk of the trial was held on March 21 2019. Participant numbers were higher than the inaugural field walk, including many new faces, which was pleasing. There were 35 grapegrowers and winemakers in attendance on the day, including some students from Adelaide University. Further interest in the trial also saw a second party of three industry personnel being guided through the trial rows thereafter.

The field walk started with participants gathering at the local Coonawarra Hall and stocking up on coffee and muffins. Attendance was then registered and participants were instructed to put on two layers of shoe covers to meet farmgate hygiene requirements, whilst being transferred to the trial site in groups via a short bus trip.

With biosecurity taken care of, participants exited the bus and received a map of the trial site indicating the placement of the various rootstocks and an observations sheet to complete during their walk. Vinehealth Australia Technical Manager Suzanne McLoughlin welcomed the participants and gave a brief overview of the trial.

Suzanne explained that this trial, established in 2009, was a long term joint venture between Treasury Wine Estates, Vinehealth Australia and Coonawarra Vignerons, with significant funding this year from the Limestone Coast Wine Industry Council to help with winemaking costs. It's the only curated rootstock trial of this type in South Australia and a significant one for the region to foster. The trial includes a range of rootstocks, some not that commonly planted and allows a hands-on learning experience about the attributes that these rootstocks can convey to scions, to see if they adequately reflect the desired wine quality and style of the region, compared to own roots. It will help industry make informed choices about using rootstocks for future plantings, to combat the risks of phylloxera and climate change for example. With a randomized, replicated section and commercially managed rows we have the opportunity to learn a lot from the trial. With the vines at 9-10 years of age they should be hitting their straps quality wise and

therefore this being the first year of making wine after a history of just collecting viticultural measurements, provides an excellent opportunity for industry to link what they see in the field during this field walk and how this translates into the wine; with tastings of the small lot wines planned in time.

4.1 OBSERVATIONS FROM THE FIELD WALK

The field walk proved a positive experience, with clear rootstock differences noted by all attendees. Observations sheets were well completed, with a 63% submission.

With the trial rows irrigated ‘to the average’, distinct rootstock differences were evident, especially in terms of canopy stress. The lowest vigour rootstocks of M6262 and Börner, as well as the Own Rooted control, were suffering significant water stress with yellowing canopies across all replicates. This was an important observation for participants in terms of considering what the water use would have needed to have been in order for these three rootstocks to have had a far healthier canopy. This year it will be really important to be able to measure the impact of this stress on the resultant wine quality, which will be shared with industry via various tastings in time.

Differences in terms of bunch stem necrosis were also notable. M5489, 1103P and 110R had a significantly higher proportion of bunches with bunch stem necrosis compared to all other rootstocks except 140R.



Image courtesy Vinehealth Australia



Image courtesy Vinehealth Australia



Image courtesy Vinehealth Australia



Image courtesy Vinehealth Australia



Image courtesy Coonawarra Vignerons



Image courtesy Vinehealth Australia



Common descriptions of the rootstocks from the observation sheets were as follows, although there was some variance in the observations, also due to the different trial rows the participants walked:

#### 1103 Paulsen:

- smaller crop load, small berries, open bunches, large canopy, good fruit set, lacking flavor, good balanced flavor, some bunch stem necrosis, moderate greens, fine tannins, crunchy skins, lots 2nd crop, noticeable lateral shoots

#### 140 Ruggeri:

- vigorous canopy, dark green foliage, good fruit set, big bunches, big berries, lovely soft tannins, tough skins, green flavours and phenolics, less 2nd crop dropped, quite acidic, very little-some bunch stem necrosis

#### 110 Richter:

- small, loose bunches with poor fruit set but variable across panels as some big and tight bunches, large berries, better fruit set and leaf colour than Ramsey, canopy comparable with 140Ruggeri but with lower yield, bitter flavours, low amount of bunch stem necrosis, vigorous and green canopy

#### Ramsey:

- lot of second crop dropped, open and moderately vigorous canopy, longish loose bunches due to moderate fruit set, good flavour, even set, good shoot length, moderate stress with some vines showing basal leaf yellowing, comparatively light crop

**Börner:**

- inconsistent berry size but generally small, good crop level, small canopy with lots of bunches and yellowing leaves, short shoots, canopy looks stressed and is losing leaf and now open, lower acid, slightly flat, lean flavours, some shrivel, some BSN, skinny graft union

**M5489:**

- bunch architecture variable from open to compact, biggish berries, some BSN, tough (thick) skins and tannin, robust flavor, high yielding, big canopy, balanced, no visual stress, high acid, lot second crop dropped, moderate to large bunch size, good fruit set

**M5512:**

- smaller berries than M5489 but bigger overall cropload, big bunches, very thick skins, lots second crop dropped, moderate vigour canopy, good flavour, even shoot development, good fruit set, some basal leaf yellowing but handles seasonal conditions well, a little shrivel, good balance

**M6262:**

- lots of bunches, very short shoots, very stressed canopy (lot leaf yellowing, very open canopy, observations consistent across all replicates), thin trunks in comparison to other rootstocks, small canopy and especially for the cropload, lacking fruit flavours

**Own roots:**

- small canopy, leaf yellowing indicative of drought stress, lighter cropload good for canopy size, smaller berries, more open canopy with short shoots, fewer second crop bunches dropped, poorer set - similar to Börner, looser bunches, good flavour, some bunch stem necrosis

Only 11 respondents shared an actual preference for a rootstock, with M5512 receiving five votes, followed by own roots with 3 votes, followed by Ramsey and M5489 both receiving two votes, and Börner receiving one vote.

## 5.0 COLLECTION OF VITICULTURAL MEASUREMENTS AND WINEMAKING

Data collection from the Coonawarra Rootstock Trial for 2019 has also encompassed a number of viticultural measurements from the rootstock treatments. Collected prior to harvest, these include yield components (yield per vine, yield per m, bunch number per vine, bunch weight, berry number per bunch, berry weight, berry colour, phenolics and tannin, canopy leaf area index, evaluation of second crop dropped per rootstock, evaluation of bunch stem necrosis per rootstock. Pruning weights, bud numbers per vine and trunk diameter are also scheduled to be collected in winter.

Small lot wines are to be made in duplicate from the trial for the first time this year, which will provide industry a great opportunity to match observations gathered during the field walk to preferences determined during a range of tastings. These small lot wines will also be formally assessed by a group of local winemakers, further adding to the importance of community involvement.

## 6.0 COMMUNICATIONS RELATING TO THE FIELD WALK AND OVERALL ROOTSTOCK TRIAL FOR 2019

A series of communications have been produced in both the lead up to the field trial, at the field trial and also more broadly in advising industry of the inaugural small lot wines to be made from the trial. A number of these communiqués are included as follows:

1. Vinehealth Australia March 2019 E-News article '*Coonawarra rootstock trial to yield results*'
2. Rootstock field walk flyer
3. Rootstock field walk map
4. Rootstock field walk observations sheet
5. Vinehealth Australia April 2019 E-News article '*Field walk identifies clear rootstock differences*'
6. Grapegrower and Winemaker Article - June 2019
7. Social media around the field walk event (not included).

## Vinehealth Australia March 2019 E-News article 'Coonawarra rootstock trial to yield results'



### #V19: Coonawarra rootstock trial to yield results

© March 17, 2019 News (<https://vinehealth.com.au/category/news/>)

Vinehealth Australia is eagerly anticipating a successful #V19 for the Coonawarra Rootstock Trial. After a couple of successive years of not harvesting the vines in the trial due to seasonal conditions, we are looking forward to our first season of small lot winemaking this year to assess the wine characteristics from this mature rootstock planting.

This trial, established in 2009, is a long term joint venture between Coonawarra Vignerons, Treasury Wine Estates and Vinehealth Australia. It was planted in Coonawarra, a region with approximately 13% of vines planted to rootstock, to broaden our understanding of rootstock performance in the Limestone Coast.

<https://vinehealth.com.au/2019/03/v19-coonawarra-rootstock-trial-to-yield-results/>

4/7/2019

#V19: Coonawarra rootstock trial to yield results – Vinehealth Australia

The replicated planting is on the region's famed terra rossa soil, and compares the performance of own-rooted Cabernet Sauvignon (CW 44 clone) vines against that of eight rootstocks:

- 110 Richter
- Ramsey
- 1103 Paulsen
- 140 Ruggeri
- Börner
- M5512, M5489 and M6262 bred as low-moderate vigour rootstocks with low potassium uptake.

Wine is scheduled to be made this vintage from all rootstocks except M6262 and we look forward to sharing the wine through a series of tastings.

While we wait for the grapes to reach optimum ripeness, join us for a vineyard walk on Thursday 21 March to view the trial rows, to taste the grapes and to discuss differences between the rootstocks. For more information, refer to the vineyard walk flyer (<https://limestonecoastwine.com.au/wp-content/uploads/2019/03/Coonawarra-Cabernet-Sauvignon-Rootstock-Trial-Field-Walk-21-March-2019-Flyer-pDf.pdf>) and register your interest at <https://limestonecoastwine.com.au/whats-on/rootstock-walk-march-2019/> (<https://limestonecoastwine.com.au/whats-on/rootstock-walk-march-2019/>).

Stay tuned for more information about the trial from #V19 as it comes to hand.

**SHARE ON:**

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## Rootstock field walk flyer

COONAWARRA \ *Cabernet Sauvignon Rootstock  
Trial*

## FIELD WALK

**When: Thursday 21 March 2019**

All Limestone Coast grape growers are invited to come and see what the eight (8) rootstocks + own roots are looking like before being harvested.

Peruse and taste the fruit and talk to representatives from Vine Health Australia and Coonawarra Vignerons.

**Time:** 10.00am Morning Tea prior to departing on bus to trial site @10:30am.



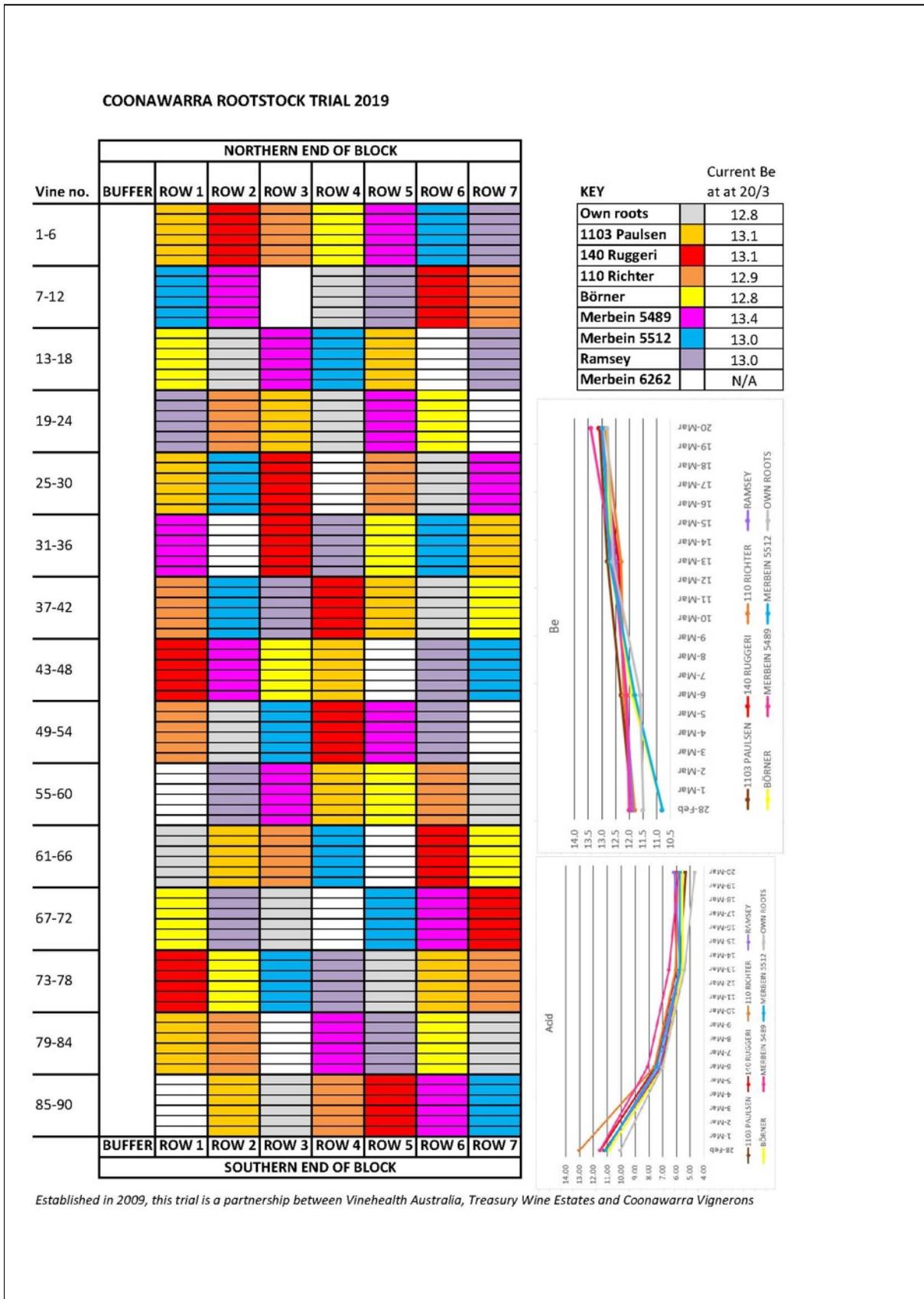
**Where to meet:** Coonawarra Hall

**Note:** For biosecurity reasons no individual vehicles will be allowed on site. Footwear biosecurity measures will be in place.

Register attendance at: <http://limestonecoastwine.com.au/whats-on/rootstock-walk-march-2019/>

For more information please contact Kerry DeGaris on 0417 408 796 or [kerry.degaris@bigpond.com](mailto:kerry.degaris@bigpond.com)

Rootstock field walk map



Rootstock field walk observations sheet

2019 COONAWARRA ROOTSTOCK TRIAL WALK OBSERVATIONS SHEET

NAME:

ROOTSTOCK	COMMENTS
1103 PAULSEN (1103P)	
140 RUGGERI (140 Ru)	
110 RICHTER (110R)	
RAMSEY	
BÖRNER	
MERBEIN 5489 (M5489)	
MERBEIN 5512 (M5512)	
OWN ROOTS	

PREFERRED ROOTSTOCK(S) AND WHY:

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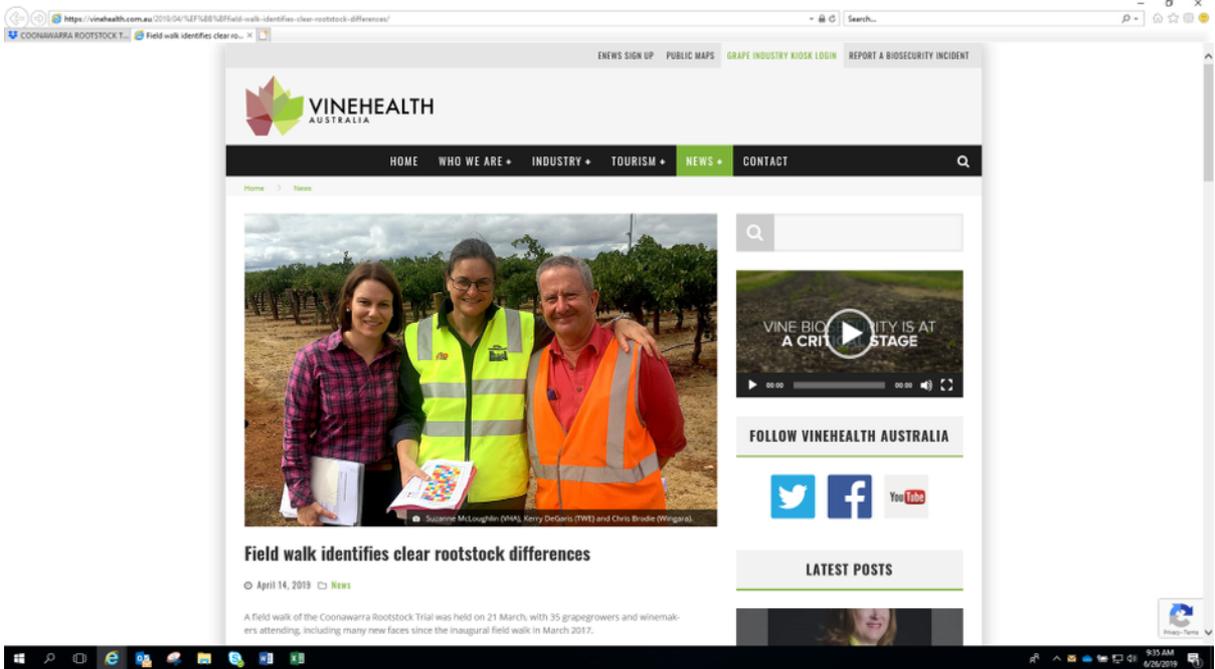
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Vinehealth Australia April 2019 E-News article 'Field walk identifies clear rootstock differences'



## 7.0 BUDGET ACQUITTAL

COONAWARRA ROOTSTOCK TRIAL 2019 INVOICE REGISTER							
DATE	INVOICE #	BUSINESS	PURPOSE	AMOUNT (\$) excl GST	GST	AMOUNT INCL GST (\$)	WHOS PAID
2/19/2019	1452	Sunbird Viticulture	Maturity sampling	196	19.6	215.6	VHA
6/3/2019	1478	Sunbird Viticulture	Maturity sampling	196	19.6	215.6	VHA
13/3/19	1478	Sunbird Viticulture	Maturity sampling	196	19.6	215.6	VHA
20/3/19	1478	Sunbird Viticulture	Maturity sampling	196	19.6	215.6	VHA
27/3/19	1478	Sunbird Viticulture	Maturity sampling	196	19.6	215.6	VHA
3/4/2019	1480	Sunbird Viticulture	Maturity sampling	220.5	22.05	242.55	VHA
3/3/2019		Officeworks	Artline Marker Pen - tags	3.63	0.36	3.99	VHA
3/2/2019		Hills Farm Supplies	Cattle tags for marking out rootstocks	104.55	10.45	115	VHANFRM
3/6/2019		Coonawarra store	Lunch - Coonawarra rootstock trial tagging	10.91	1.09	12	VHA
3/12/2019	SI149176	Cleaners Supermarket	Shoe covers for rootstock walk	129.75	12.97	142.72	VHANFRM
3/21/2019		Coonawarra store	Lunch - Coonawarra rootstock trial walk	10.91	1.09	12	VHA
4/1/2019	19680	Alexander Cameron	SMcLoughlin Accommodation - yield forecasting for rootstock trial	122.73	12.27	135	VHA
4/1/2019		Penola IGA	SMcLoughlin Dinner - yield forecasting for rootstock trial	6.87	0.16	7.03	VHA
4/2/2019		Coonawarra store	Lunch - Coonawarra rootstock trial yield forecasting	9.09	0.91	10	VHA
4/2/2019		BP Naracoorte	Coffee	3.41	0.34	3.75	VHA
4/3/2019		Officeworks	Paddle pop sticks	2.68	0.29	2.97	VHA
4/8/2019		Suburban Taxi	Taxi from Forestville to Budget City	18.48	0.09	18.57	VHA
4/8/2019		Coonawarra store	Lunch - Coonawarra rootstock trial winemaking harvest	9.09	1	10	VHA
4/8/2019	19712	Alexander Cameron	SMcLoughlin Accommodation - harvesting for winemaking for rootstock trial	135		135	VHA
4/8/2019		Royal Oak Penola	Dinner - SM/KDG after winemaking harvest	54.09	5.41	59.5	VHA
4/9/2019		Budget	Van Hire	332.17	33.22	365.39	VHANFRM
4/9/2019		Coonawarra store	Morning Tea - winemaking harvest	12.27	1.23	13.5	VHA
4/9/2019		BP Unley	Fuel for Hire Van	109.75	10.97	120.72	VHA
4/9/2019		Yellow cab SA	Taxi back from Budget to Forestville	20.06	0.1	20.16	VHA
26/4/19		LSCGWC		5704	570.4	6274.4	VHA
		CSFO	Anion analysis				In kind
		Balnaves Vineyard Services	3 handpickers				In kind
		Wingara Wine Group	1 handpicker				In kind
		Treasury Wine Estates	1 handpicker				In kind
		CVA	1 handpicker				In kind
		Peter DeGaris	1 handpicker				In kind
			Hand pickers x 4	310	34.1	344.1	LSCGWC
30/4/19	Inv 100223	AWRI Analytical services	winemaking for 16 ferments - ferment cost only (25%)	4800	480	5280	LSCGWC
30/4/19	Inv 100223	AWRI Analytical services	Berry anthocyanins, phenolics & tannins (18 samples)	800	80	880	LSCGWC
24/4/19	7089322	CSFO	ICP Cation analysis (@\$35/sample excl GST)	560	56	616	LSCGWC
24/3/19		DK Cruizin coffee	Coffee for field walk	115		115	LSCGWCANFRM
31/3/19		Coonawarra store	Morning Tea- field walk	185.45	18.55	204	LSCGWCANFRM
30/5/19		AWRI Analytical services	winemaking for 16 ferments - ferment cost only (75%)	14400	1440	15840	LSCGWCCVA
		AWRI Analytical services	MLF costs - winemaking	180	18	198	LSCGWCCVA
		AWRI Analytical services	Bottling costs - winemaking	2112	211.2	2323.2	LSCGWCCVA
		Photography	Hand picking	500		500	LSCGWCCVANFRM
		Statistics		3000	300	3300	LSCGWCCVA
31/5/19	76	C & MAT Oram	Bus Hire for Field Walk	100	10	110	LSCGWCCVANFRM

## 8.0 REFERENCES

1. Vinehealth Australia (2019) Wine region web maps for South Australia. <https://maps.vinehealth.com.au/mapguide/virtual/region/>