Grape and Wine Practice Survey 2018

SURVEY REPORT

Coutts J&R / **April 2018**

Australian Government
Wine Australia

COUTTS J&R
MANAGING AND EVALUATING CHANGE

ACKNOWLEDGEMENTS

This report would not have been possible without the time willingly given by the Grape Growers and Wine Producers to respond to this survey. Particular mention should be made of those who nominated themselves to be contacted as a part of the survey process. Wine Australia staff members also went above and beyond to help source contacts.

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SUMMARY

Summary Statement

Overall, survey respondents were quite aware of Wine Australia activities and information (7.1/10 avg.). The extension activities (8.0 avg.) and information available (7.4 avg.) were viewed as highly useful with Grape Grower (5.9. avg.) and Wine Producer (4.9 avg.) respondents indicating that Wine Australia has had some influence on the implementation of successful changes.

Conclusions

1 Wine Australia is playing a key role in providing R&D support to the Australian Grape and Wine community. Survey respondents had a high level of access to information and activities which led to a subsequent high level of awareness of information and key messages.

2 The information provided by Wine Australia was indicated as being useful and it is significant that over half of the respondents had made one or more recent changes to their practice triggered and/or supported by Wine Australia information, tools or resources.

3 There is scope to increase awareness of *current* research relevant to different sectors (e.g. on wine efficiency) and regions and to put increased effort into tailoring information/tools to different regions.

4 Enterprises rely on a range of information and advisory support. This support network is a key opportunity to not only provide input into industry R&D needs (along with enterprise owners) but to spread the awareness, adoption and impact of Wine Australia funded research and development.

5 Future RD&E support is seen to be needed around climatic challenges, pests and disease, financial and market issues, and staff and labour.

Findings

DEMOGRAPHICS - WINE PRODUCERS AND GRAPE GROWERS

Respondent Businesses

- 71 total respondents
- 55% Wine Producers and 45% Grape Growers
- Majority of businesses family owned (72%)
- Majority of business expanding (75%)
- Most businesses located in South Australia (38%), Victoria (31%) and New South Wales (20%)

WINE AUSTRALIA INFORMATION & EXTENSION (n=71)

Awareness of information and activities

7.1

Overall there was a fairly high level of awareness of activities and information provided by Wine Australia (7.1 avg.).

Information resources accessed

The top four information resources accessed by the majority of respondents were the Wine Australia website (90%), Email newsletter (77%), Ebulletins (68%), and online resources (65%).

Usefulness of information (n=69)

7.4

Information available from Wine Australia sources was rated overall as quite useful (7.4 avg.).

Promoted information

Smoke taint was the most recalled information promoted by Wine Australia in recent years (63%).

Actions resulting from promoted information

Just over half of respondents indicated they had acted on information promoted by Wine Australia:

- Actions taken included changes to improve winemaking and growing practices (21 mentions) – with the prevention and management of smoke taint common.

Activity participation

The top three extension activities participated in were webinars (59%), workshops (58%), and roadshows (49%).

Usefulness of activities (n=60)

8.0

Wine Australia extension activities were rated overall as highly useful (8.0 avg.).

GRAPEGROWER PRACTICES (n=32)

Pest and disease

The majority of Grape Grower respondents:

- Were aware of best practice treatment of pruning wounds to prevent trunk disease infection (88%);
- Referred to the Eutypa dieback best management practice guide (63%);
- Employed remediation strategies for trunk diseases (63%); and
- Were aware of changes made in 2017 to the footwear and small hand tools disinfestation protocol for phylloxera (59%).

Just under half had a copy of the Biosecurity Manual (47%) and only five (16%) had used PMapp for the assessment of powdery mildew (or anything else).

Rootstocks

- 56% selected rootstocks for their vineyard relevant properties – mostly selecting pest resistance and planting site appropriate rootstocks.
- 53% indicated there were factors limiting choice of rootstocks – including availability of rootlings through nurseries, perceived quality impacts on wine, and cost of grafted rootling.

Spray application

The majority of Grape Grower respondents had actively taken steps to minimise spray drift (88%) and were aware of spray drift technologies (81%):

- Nozzle selection was the most common practice used to minimise spray drift (20 respondents).

Vine balance/grape quality measures

The two most common canopy management practices were bunch and shoot thinning (81%) and leaf plucking (50%).

Adaption to climate change

Around a third of Grape Grower respondents had implemented practices to deal with changes in climate and variability:

- Changes included delayed pruning (38%), variety selection (31%), 'other' practices (25% - e.g. sunscreen), vineyard cooling (19%), and clonal trials (16%).

Most challenging viticulture practices

The most common viticulture challenges related to weather and climate, and pests and disease.

Management help required

Grape Grower respondents believed they needed more management help relating to pests and disease, financial and market issues, staff and labour, and weather and climate.

Influence of Wine Australia on changes (n=28)

5.9

Wine Australia information, tools and extension activities were overall rated as moderately influential in helping Grape Growers successfully make changes (5.9 avg.).

WINE PRODUCER PRACTICES (n=39)

Clarification and filtration

- Juice clarification techniques: Cold settling (87%) and flotation (48%) were the two most common white juice clarification techniques
- Reprocessing method: RDV and cross-flow filtration were equally used with white juice (both 48% n=21) and red ferment (both 42% n=19), while RDV was more commonly used with white bentonite lees (56% n=16).
- Proteins: Around a third had used plant-derived fining proteins (38%), while most had used bentonite to remove proteins (79%) and were aware of pasteurisation plus enzyme as a method for heat/protein stabilising (87%).
- Cold stabilisation: Half used chilling with tartrate seeding (51%) and a third used chilling (33%) as their cold stabilisation method. Almost all were aware of the energy costs associated (97%), some had used additives to prevent tartrate precipitation (28%) and almost half had taken steps to manage risk around calcium tartrate instability (48%).

Awareness of wine efficiency research (n=37)

5.0

Overall, Wine Producer respondents were moderately aware of research being undertaken on wine efficiency (5.0 avg.):

Fermentation monitoring

Plotting of ferment sugar/density measurements was the most common practice used to monitor fermentation (69%).

Faults and taints

The majority indicated copper additions were used on site (79%) and oxygen was used during fermentation to manage stinky sulfur compounds, flavour and colour (64%).

- Of those using copper additions (n=31), the majority based the dose on fining trial (75%) and made copper additions during or soon after ferment (77%).

Practice change

The most common practice changes made over the last three years related to fermentation practices – including changes to manage faults and taints (e.g. oxygen during fermentation) and yeast changes (e.g. wild yeasts).

Influence of Wine Australia on changes

4.9

Wine Australia information, tools and extension activities were overall rated as moderately influential in helping Wine Producers successfully make changes (4.9 avg.).

OTHER/FINAL COMMENTS (n=71)

Other sources of advice/information

Input suppliers (e.g. rootstock, fertiliser, or chemical suppliers – 73%) were the most common other source of advice and information used by respondents to support their business needs.

- Also commonly used were private advisers/consultants (51%), wine company (44%), and state government advisers (41%).

Other comments on practices/ information needs

- Many respondents provided general positive comments about Wine Australia (e.g. happy with the information).
- Others made various suggestions on specific information that would be useful (e.g. disease and pests) and where Wine Australia should focus its resources (e.g. increased R&D investment).

INDUSTRY STAKEHOLDER INTERVIEWS (n=8)

(Note: A more detailed summary is located in Appendix 1)

Awareness

- Industry stakeholders were very aware of activities and information provided by Wine Australia (8.9 avg.).
- There was strong recall of key outputs and messages.
- There was good positive feedback about the work of Wine Australia.

Effectiveness

- The efforts made to promote R&D findings were seen as quite effective.
- Extension and working with local delivery partners was seen as critical in supporting information delivery to bring about practice change.

Observed impacts

- Messages seen to have been taken up by the industry included: faults and taints (e.g. *oxygen use in fermentation*); disease management (e.g. *powdery mildew rule and managing trunk disease*); yield monitoring; and strategic irrigation.
- Adoption examples included improved: disease management; water management; and fermentation choices.

Issues and Improvements

- Improved translation of R&D outcomes into regionally relevant and user-friendly tools is needed.
- Future RD&E areas raised included: climate change and vineyard productivity; understanding industry demand for wine styles; understanding specific regional viticulture needs.
- It was also raised that there is a need to increase the involvement of Grape Growers in the RD&E process.

Recommendations

1 Wine Australia should continue to prioritise the provision of up-to-date and relevant industry information, particularly online and through extension activities (webinars are highly rated).

> *Efforts should be made to develop content around any information gaps – with a potential focus on Grape Growers who on average indicated information to be slightly less useful than Wine Producers (average rating 6.8 vs 7.8/10). Grape Grower respondents noted that they needed more help with the challenges around managing pests and disease, financial and market issues, staff and labour, weather and climate, and weeds.*

2 Increased efforts should be made on raising awareness of current research being undertaken so that interest can be raised on the topic areas and hence increase receptivity of the outputs.

3 To increase the industry reach of R&D outcomes, Wine Australia should continue to build networks and relationships with the diverse information sources used by enterprises.

> *Fostering two-way communication with these 'next users' and 'service providers' will also provide valuable feedback around information needs and gaps for 'end users'*.

4 Efforts should be made to maintain a database of key managers/decision-makers of grape and wine enterprises and their contact details (direct email/mobile) to allow consistent benchmarking over time of practices, needs and value of RD&E being undertaken.

> *The value of such regular (every 3 years for example) practice surveys should also be promoted to the industry and its representatives so that the activity is accepted and supported. Randomised surveys provide the best benchmark of practice and needs and hence the best way to strategically plan and monitor industry RD&E*.

CONTENTS

1. INTRODUCTION

1.1 About this report

This report analyses the results of a telephone survey undertaken by Coutts J&R for Wine Australia between January and March 2018. The survey aimed to gain responses from Wine Producers and Grape Growers to gain a measure of the adoption of selected winemaking and viticultural practices.

Wine Australia's website[1] notes that it invests in research to support both the industry's priorities of increasing demand and the premium paid for all Australian wine, as well as increasing competitiveness. It describes the outcomes as:

> *To increase demand and the premium paid for all Australian wine, we will provide tangible evidence to support our fine wine claims through research into Australia's unique terroirs and deeper knowledge of our customers globally and what influences their purchasing decisions.*
>
> *We will help build excellence through research that develops new viticultural approaches, digital tools and measures to assess grape and wine provenance and quality to optimise viticultural and winemaking practices so that the influences of terroir can be captured, enhanced and preserved.*
>
> *Our focus on enhancing and building Australia's competitive edge will be through research that develops new or enhanced technologies to improve vineyard and winery efficiency and performance.*
>
> *We will encourage improved resource management and sustainability and equip the sector to manage the challenges of short-term climate cycles and long-term climate change.*

1.2 Methodology

The survey was co-developed by Wine Australia and Coutts J&R over November/December 2017. The original intention was to randomly survey approximately 200 enterprises across regions. A random sample across regions was drawn from an extensive 'GrapeWine' contact list provided by Wine Australia and dated January 2018. Emails were sent by Wine Australia to those enterprises randomly selected advising them of the survey's purpose and giving people the option to opt out of being called. A number took this option and were removed.

Calls started being made late January and continued through February and March 2018. However, it was found that many of the phone numbers were general business numbers and there was difficulty accessing the decision-makers directly. There was also feedback that this was a busy season and subsequently a low response to requests for participation. Rather than continuing with the original contact list which was yielding few interviews, Wine Australia suggested an approach to garner 'opt in' survey participants. Using already established tools including the R&D newsletter and other industry communications (as well as contacting state wine associations) to inform the industry about the survey, people were able to 'opt in' by leaving their details via an online form. Wine Australia passed these details on to Coutts J&R as they become available. Within the available timeframe, this resulted in the completion of 71 Wine Producer and Grape Grower interviews and 8 industry stakeholders.

[1] https://www.wineaustralia.com/research

Had the 71 participants been a true random selection, there would have been 95% confidence that the true mean of the whole population would have fallen between plus/minus 12% of the sample mean (for example, if 50% of the sample said they had made a practice chance, then the extent of practice change in the whole population could have fallen between 38% and 62%). However, given the situation of self-selection (opt-in) for many of the participants, the confidence interval may be greater than this (it is difficult to estimate what this may be – but the bias is likely to favour Grape Growers and Wine Producers who are more likely to seek information and make changes). The results however do provide a valuable window to the practices undertaken in the industry which can be built on by future surveys.

2. SURVEY RESULTS

2.1 Demographics

71 Respondents:

- 55% Wine Producers and 45% Grape Growers[2];
- Majority of businesses family owned (72%);
- Majority of business expanding (75%); and
- Most businesses located in South Australia (38%), Victoria (31%) and New South Wales (20%).

2.1.1 Businesses

Figure 1: Breakdown of respondent businesses

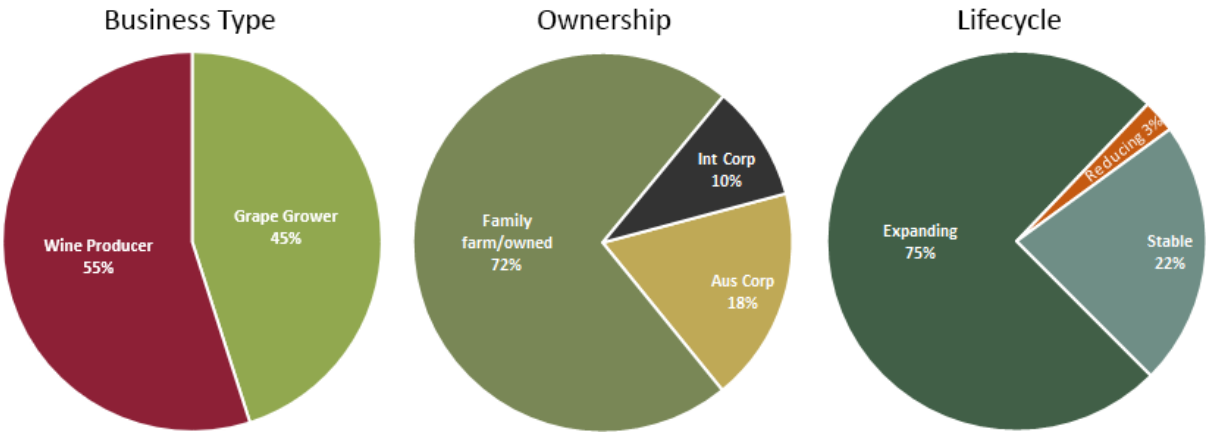


Table 1: Farm size by business type

Wine Producers Tonnes crushed last vintage*		**Grape Growers** Tonnes harvested last vintage	
Average	12,983	**Average**	3,038
Total	480,372	**Total**	69,871
Range	0 – 220,000	**Range**	4 – 36,000
By Ownership	• **Family** 140,855 (29%) • **Aus corp** 49,017 (10%) • **Int corp** 290,500 (60%)	**By Ownership**	• **Family** 43,871 (63%) • **Aus corp** 23,500 (34%) • **Int corp** 2,500 (4%)
Respondents	37 (2 respondents did not provide data)	**Respondents**	23 (9 respondents did not provide data)

**(including contract processing for other people)*

[2] Note: two respondents included in the Grape Grower group indicated they were not Grape Growers - one was a viticulturist and the other worked in the supply chain to vineyards.

2.1.2 Location

Figure 2: Respondents by state

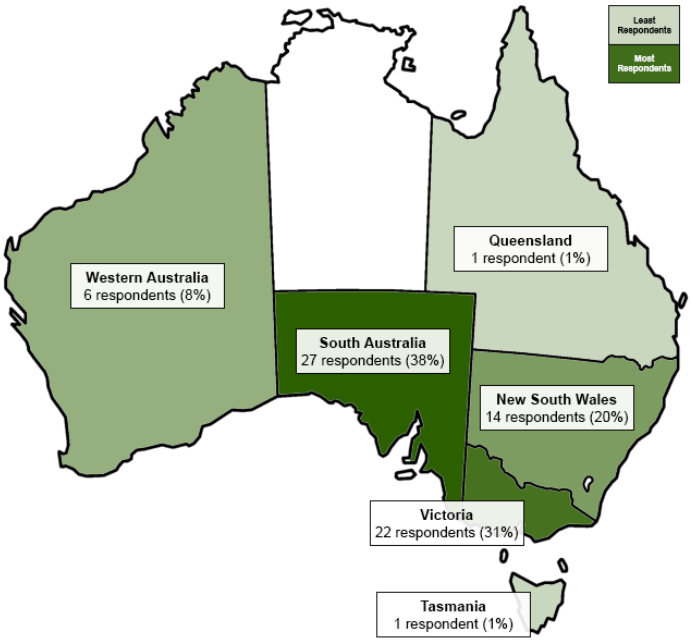


Table 2: Respondents by region

Regions	Wine Producer	Grape Grower	Overall
South Australia	**9**	**18**	**27**
12 Barossa Valley	2	6	8
17 McLaren Vale	2	6	8
16 Adelaide Hills	3		3
21 Langhorne Creek	2	1	3
26 Coonawarra		2	2
14 Riverland		1	1
25 Robe		1	1
Other		1	1
Victoria	**12**	**10**	**22**
50 King Valley	2	3	5
62 Yarra Valley	3	1	4
47 Rutherglen	1	2	3
54 Heathcote	1	2	3
55 Bendigo		2	2

45 Swan Hill	1		1
61 Geelong	1		1
63 Mornington Peninsula	1		1
64 Gippsland	1		1
Other	1		1
New South Wales	**8**	**6**	**14**
32 Hunter	4	1	5
34 Orange	1	3	4
30 New England	1		1
36 Riverina		1	1
37 Hilltops	1		1
43 Perricoota		1	1
Other	1		1
Other	**3**	**5**	**8**
5 Margaret River	2	3	5
28 South Burnett		1	1
9 Great Southern	1		1
Other		1	1

2.2 Wine Australia Information & Extension

2.2.1 Awareness of information and activities

Table 3: Averages by demographics

	Average	n
Business Type		
Grape Grower	6.9	32
Wine Producer	7.3	39
Ownership		
Family farm/owned	7.2	51
Australian corporate	7.2	13
International corporate	6.6	7
Lifecycle		
Expanding	7.2	53
Stable	6.8	16
Reducing	7.5	2
Location		
SA	7.2	27
Vic	6.6	22
NSW	7.6	14
Other	7.1	8
Overall	**7.1**	**71**

Scale: 0=Not aware and 10=Very aware

Overall there was a fairly high level of awareness of activities and information provided by Wine Australia (7.1 avg.).

- Wine Producers (7.3 avg.) were slightly more aware than Grape Growers (6.9 avg.).
- NSW respondents had the highest comparative awareness (7.6 avg.) and Victorians the lowest (6.6 avg.).
- Most comments reiterated respondents' level of awareness (26 mentions) – from reasonably, moderately, and fairly aware to very well aware and up-to-date.
- Many respondents with high awareness noted they received Wine Australia emails (16 mentions).

EXAMPLE COMMENTS

I am reasonably aware, I get the emails that come out and I read the information that's relevant.
(Wine Producer Vic 54)

I keep receiving regular updates and emails and it help keep up to date in what is happening.
(Grape Grower SA 12)

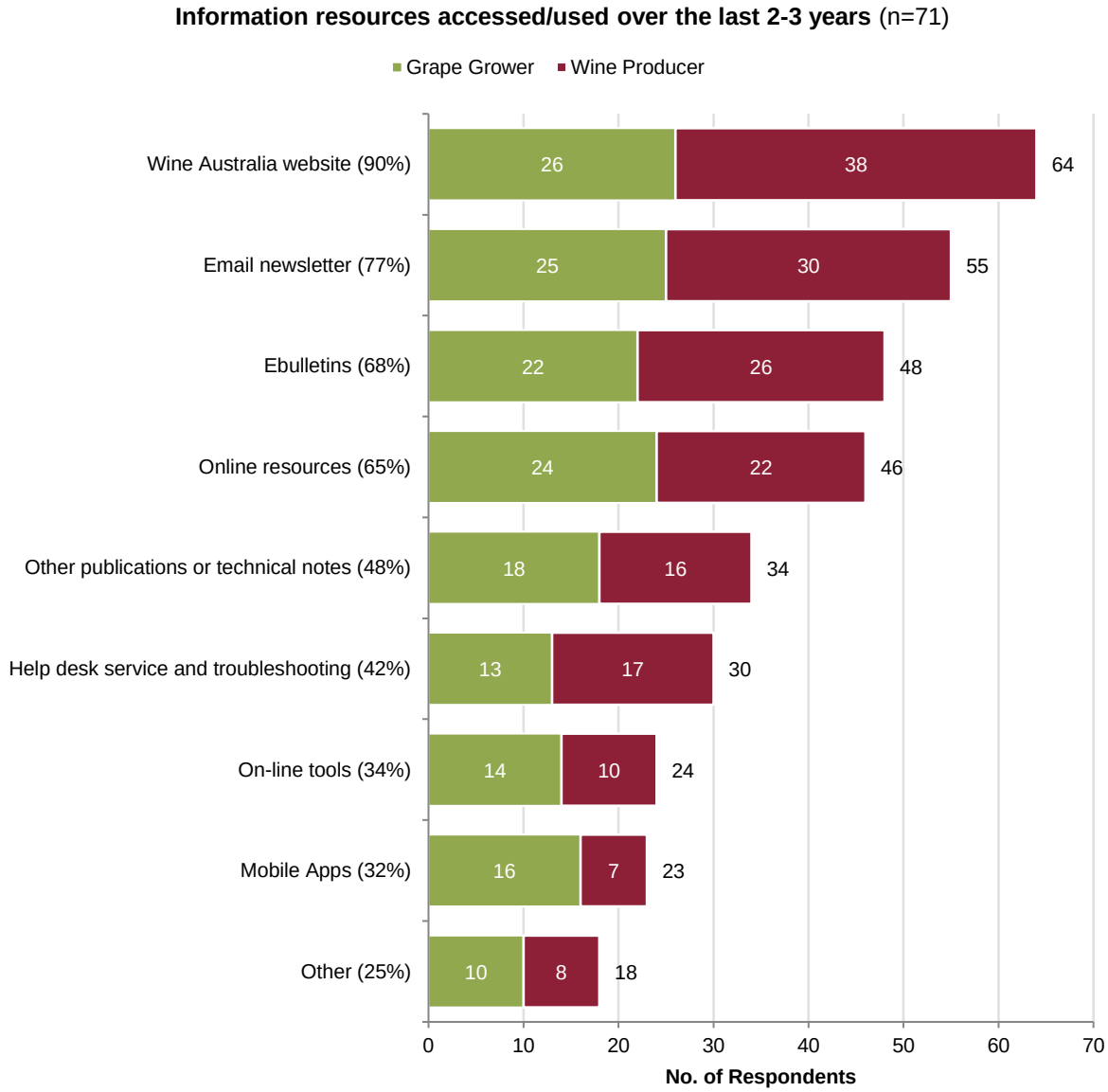
Information is widely available and shared through technical conferences and the website.
(Wine Producer Vic 50)

2.2.2 Information resources accessed

The top four information resources accessed by the majority of respondents were the *Wine Australia website* (90%), *Email newsletter* (77%), *Ebulletins* (68%), and *online resources* (65%).

- Compared to Wine Producers, a higher percentage of Grape Growers had accessed most information sources – including *Mobile Apps* (50% vs. 18%), *online resources* (75% vs. 56%), and *online tools* (44% vs. 26%).
- Other information resources included: export market related (8 mentions), vine watch (2 mentions), and AWRI (2 mentions).

Figure 3:



2.2.3 Usefulness of information

Table 4: Averages by demographics

	Average	n
Business Type		
Grape Grower	6.8	31
Wine Producer	7.8	38
Ownership		
Family farm/owned	7.6	49
Australian corporate	7.1	13
International corporate	6.6	7
Lifecycle		
Expanding	7.4	52
Stable	7.3	15
Reducing	5.5	2
Location		
SA	7.8	25
Vic	6.9	22
NSW	6.7	14
Other	8.4	8
Overall	**7.4**	**69**

Scale: 0=Very low and 10=Very high

Information available from Wine Australia sources was rated overall as quite useful (7.4 avg.).

- Wine Producers (7.8 avg.) found the information slightly more useful than Grape Growers (6.8 avg.).
- Respondents from South Australia (7.8 avg.) and Other locations (8.4 avg.) found the information most useful.
- Respondents who provided high ratings (7-10) described the information as: *very useful, great service, valuable, reliable, very pertinent, easy to use, time sensitive, relevant, helpful, up-to-date,* and *interesting.*
- The value of the Wine Australia emails and website were specifically highlighted (7 mentions) as was information and data relating to export markets (7 mentions).
- Those respondents who only found the information moderately useful, described how not all the information was relevant to them (6 mentions).

EXAMPLE COMMENTS

It is information not readily available elsewhere and reliable.
(Grape Grower SA 21)

I go on the website to research things about wine requirements. I use the website quite a lot and find the information very useful.
(Wine Producer Qld 28)

The exporting information is very very useful in the industry.
(Wine Producer WA 5)

2.2.4 Promoted information

Smoke taint was the most recalled information promoted by Wine Australia in recent years (63%).

- Other information recalled included adapting to difficult vintages (39%), sooty mould (28%), and addressing regional challenges (28%).
- Respondent comments highlighted awareness and recollection of the topics – particularly smoke taint – with some describing how useful and helpful the information had been.

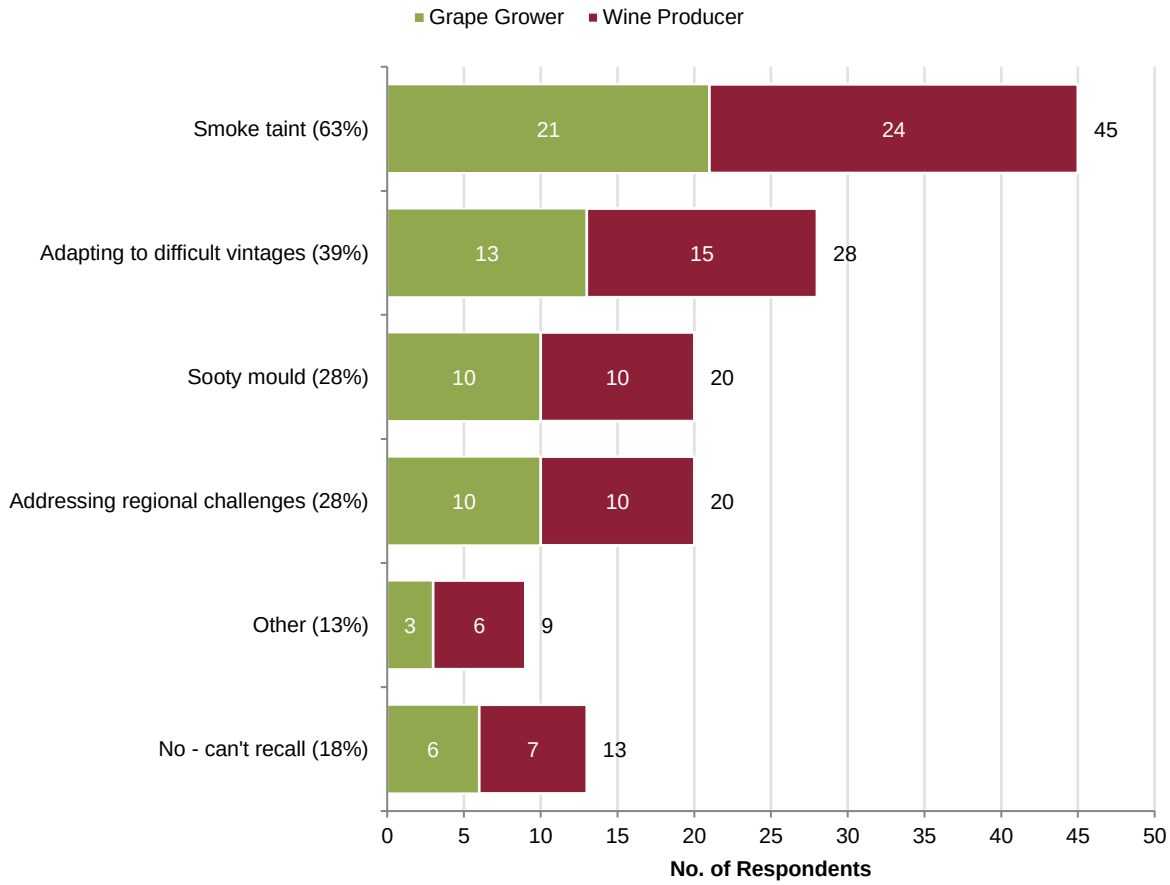
EXAMPLE COMMENTS

I know those topics are being promoted and the main ones being communicated.
(Wine Producer Vic 50)

Particularly smoke taint has been useful. It is an emerging field of knowledge. There is not a lot of research on hand and the advice has been useful.
(Grape Grower SA 17)

Figure 4:

Recollection of specific information being promoted in recent years (n=71)



2.2.5 Actions resulting from promoted information

Table 5: Percentage by demographics

	% Yes	n
Business Type		
Grape Grower	41%	32
Wine Producer	69%	39
Ownership		
Family farm/owned	55%	51
Australian corporate	62%	13
International corporate	57%	7
Lifecycle		
Expanding	55%	53
Stable	63%	16
Reducing	50%	2
Location		
SA	48%	27
Vic	64%	22
NSW	50%	14
Other	75%	8
Overall	**56%**	**71**

Just over half of respondents indicated they had acted on information promoted by Wine Australia.

- A higher percentage of Wine Producers (69%) had acted on information compared to Grape Growers (41%).
- Victorian (64%) respondents had the highest percentage acting on information compared to the other main states.
- Actions taken included changes to improve wine making and growing practices (21 mentions) – with the prevention and management of smoke taint common.
- Many respondents believed the information had improved their decision making by providing them with knowledge and tools that can be utilised when needed (11 mentions).
- Those who hadn't acted generally indicated there was no requirement for action, though many still valued the information provided (11 mentions).

EXAMPLE COMMENTS

Added to the pot of decision making. (Wine Producer Vic 47)

Made changes to chemical applications and other winery practices including refrigeration. (Wine Producer Tas)

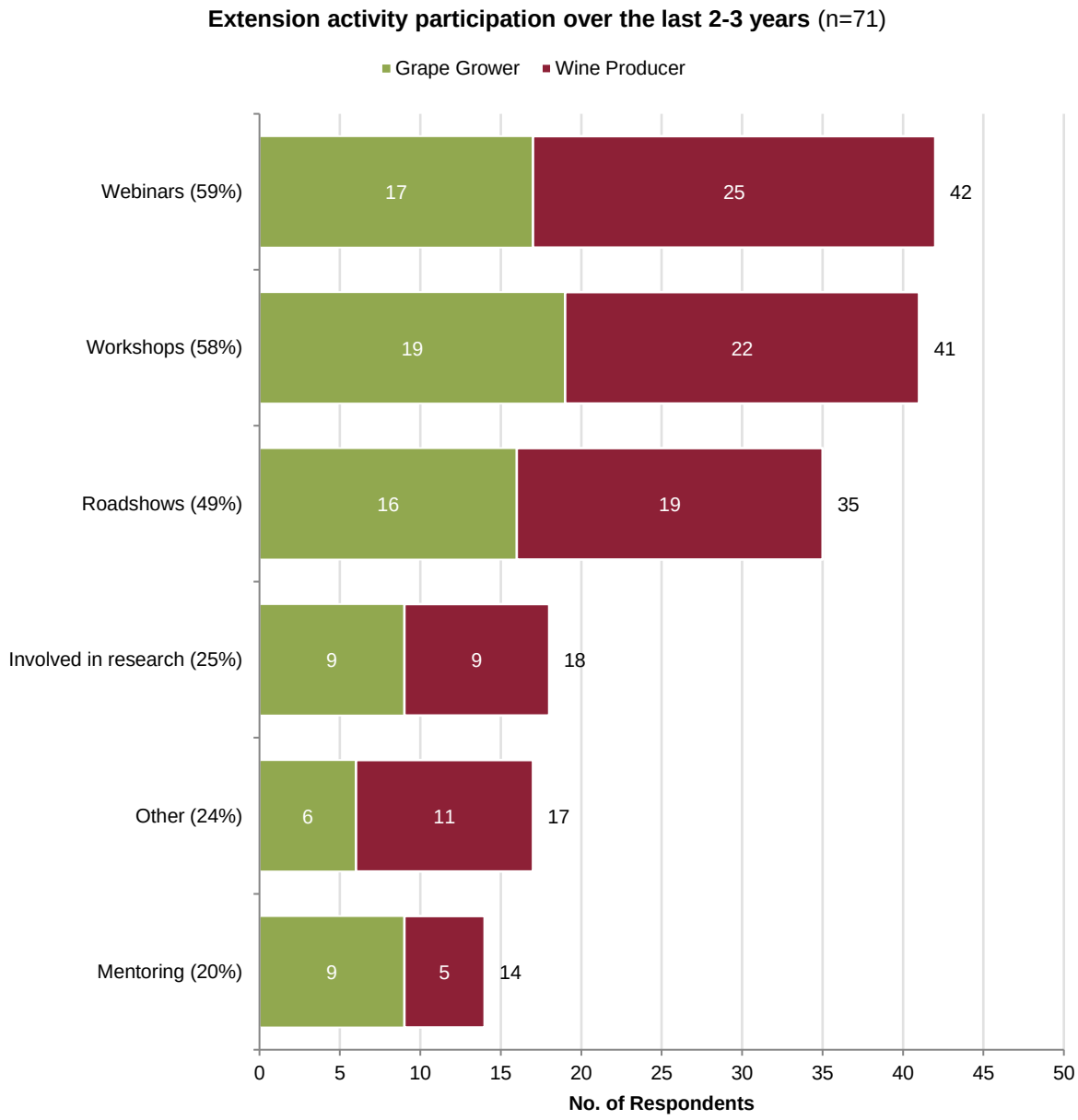
If there is a problem we act on it and the information to correct that problem. (Grape Grower SA 12)

2.2.6 Activity participation

The top three extension activities participated in were webinars (59%), workshops (58%), and roadshows (49%).

- Comparatively, a higher percentage of Wine Producers had participated in webinars (64% vs. 53%) and a higher percentage of Grape Growers had been involved in mentoring (28% vs. 13%).
- Other extension activities included *technical conferences and state seminars* (7 mentions).

Figure 5:



2.2.7 Usefulness of activities

Table 6: Averages by demographics

	Average	n
Business Type		
Grape Grower	7.6	27
Wine Producer	8.3	33
Ownership		
Family farm/owned	8.0	45
Australian corporate	7.8	11
International corporate	8.5	4
Lifecycle		
Expanding	8.0	44
Stable	7.9	15
Reducing	10.0	1
Location		
SA	8.0	22
Vic	8.1	18
NSW	7.5	13
Other	8.6	7
Overall	**8.0**	**60**

Scale: 0=Very low and 10=Very high

Wine Australia extension activities were rated overall as highly useful (8.0 avg.).

- Wine Producers (8.3 avg.) rated the activities slightly more useful compared to Grape Growers (7.6 avg.).
- Respondents who found the activities highly useful described them as: *relevant, very current, valuable, high quality, informative, interesting, useful, great education, refresher, accessible, tangible, local, practical,* and *well presented.*
- Webinars were highlighted as being particularly valuable with respondents describing them as *very useful; very interesting; accessible at any time;* and *well presented.*
- Most issues with extension activities related to instances where topics and information were not directly relevant to individual needs.

EXAMPLE COMMENTS

Absolutely useful, the workshops and webinars are very well presented and with so much useful information. (Wine Producer Qld 28)

Pretty good, I valued them and makes me rethink. We are an industry that is immature. I am forty years in the industry and see lots and lots of changes to improve our wine. (Grape Grower Vic 64)

Very useful. They have really fine-tuned the activities and offer practical and relevant information to people between technical advice and practical tools that people can apply in the own businesses. (Wine Producer Vic 50)

2.3 Grape Grower Practices

2.3.1 Pest and disease

The majority of Grape Grower respondents were *aware of best practice treatment of pruning wounds to prevent trunk disease infection* (88%); *referred to the Eutypa dieback best management practice guide* (63%); *employed remediation strategies for trunk diseases* (63%); and were *aware of changes made in 2017 to the footwear and small hand tools disinfestation protocol for phylloxera* (59%).

- Just under half had a *copy of the Biosecurity Manual* (47%).
- Only five (16%) had *used PMapp for the assessment of powdery mildew (or anything else).*

Figure 6:

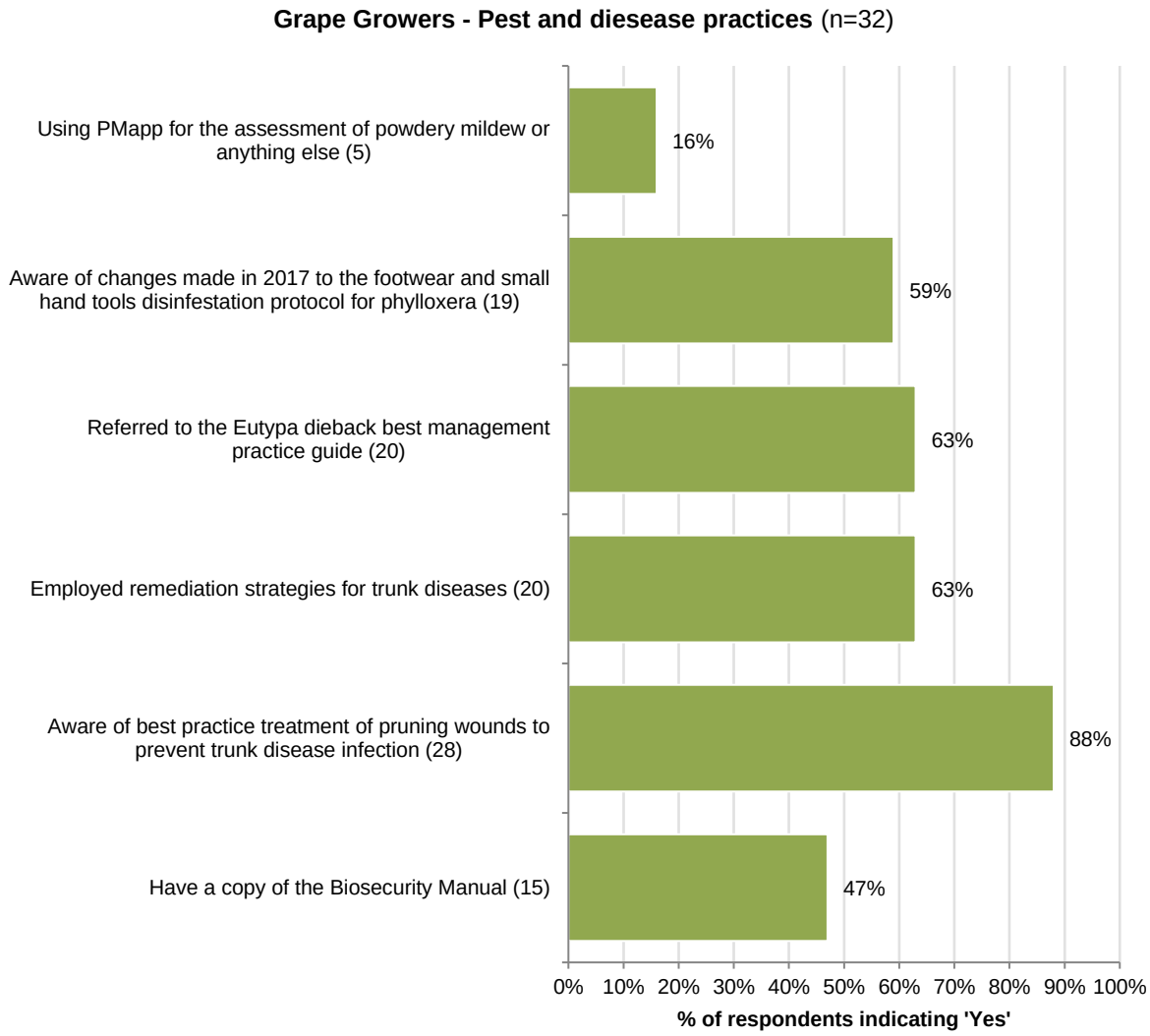


Table 7: Comments relating to pest and disease practices

Practice	Summary	Example Comment(s)
Other uses for PMapp	Other uses included bunch rot and Botrytis (4 mentions)	*I use the app for assessing other problems far beyond what it was designed for – specifically bunch rot.* *(Grape Grower SA 17)*
Activities undertaken to reduce chance of getting phylloxera	The two main activities undertaken to reduce phylloxera infestation were ensuring outside equipment and clothing is properly cleaned and treated (e.g. footbaths, equipment protocols, and biosecurity kits) and restricting farm access (e.g. no equipment or material from phylloxera regions).	*Make the contract cleaners wash hand tools and have a foot bath and I check their vehicles outside the vineyard* *(Grape Grower Vic 62)* *I absolutely don't let anything come onto the vineyard that comes out of a phylloxera zone…* *(Grape Grower NSW 32)*
Awareness of exotic plant pests and diseases that could affect Australia's grapevines if they were to come here	Pierce's disease was the most commonly mentioned exotic disease that respondents were aware of with the potential to affect Australia's grapevines. Number of mentions of specific pest and diseases: • 18 - Pierce's disease • 6 - Glassy-winged sharpshooter • 4 - Phylloxera • 3 - Xylella • 1 - Red blotch • 6 - Other pests (e.g. stink bug; harlequin bug; grubs; kangaroos; fruit fly) • 5 - General awareness of pests/diseases from other regions (e.g. NZ, NT, California)	*Pierce's Disease has been the most scary issue over the past 6-7 years. Less concerned about any others.* *(Grape Grower WA 5)* *Brown marmorated stink bug is the new one at the moment.* *(Grape Grower SA 17)* *I am aware of other diseases from other countries.* *(Grape Grower Vic)*
Other comments on Pest and Disease Practices	Other comments on pest and disease practices were varied with respondents highlighting their personal experience dealing with specific pests and disease (25 mentions – e.g. *trunk disease, powdery mildew*)	*Have had very small incidence of trunk disease and when we have, have cut back and followed protocol.* *(Grape Grower NSW)* *We all manage certain diseases on our vineyard and we need information to do that.* *(Grape Grower Vic 62)* *We worry most about phylloxera as we are in the area. We have to be very careful that implements are clean, cars are not in the vineyard and workers dip their boots.* *(Grape Grower Vic 54)*

2.3.2 Rootstocks

Just over half of Grape Grower respondents (56%) selected rootstocks specifically for their vineyard relevant properties, with most selecting *pest resistant rootstocks* (83%) that are also *appropriate to the planting site* (72%). Some Grape Growers also used the *Rootstock Selector tool* (39%).

- Around half also indicated there were factors limiting their choice of rootstock, including *availability of rootlings through nurseries* (8 respondents), *perceived quality impacts on wine* (7 respondents), and *cost of grafted rootlings* (6 respondents).
- Comments relating to rootstocks described specific desired qualities (8 mentions – e.g. disease resistance, heat resistance, yield, vine vigour, and soil/climate needs) and other factors affecting selection (8 mentions – e.g. use of own/old rootstock vines, financial considerations, and quality considerations).

EXAMPLE COMMENTS

We choose the rootstock for our situation. Had a concern about nematodes and tested and planted appropriately. Here we have a pretty even spread of varieties.
(Grape Grower NSW)

The quality of the rootstock of grafting would be what is limiting me using the rootstock because the vines do not last.
(Grape Grower SA 12)

56% selected rootstocks for their vineyard relevant properties

53% indicated there were factors limiting choice of roostocks

Figure 7:

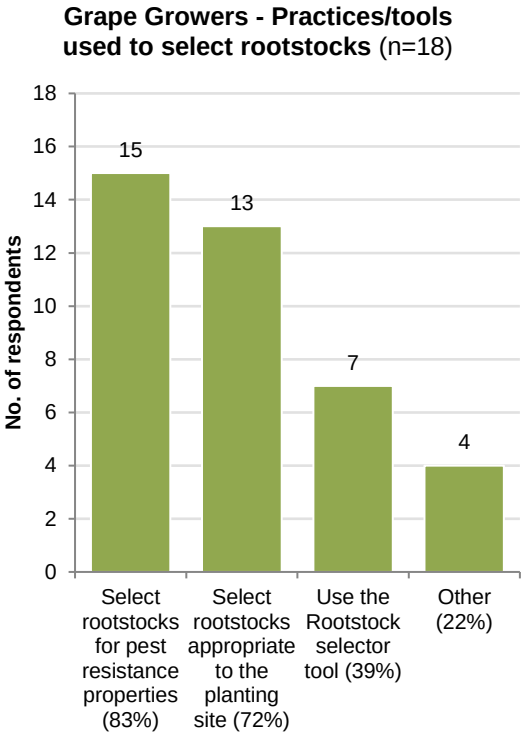
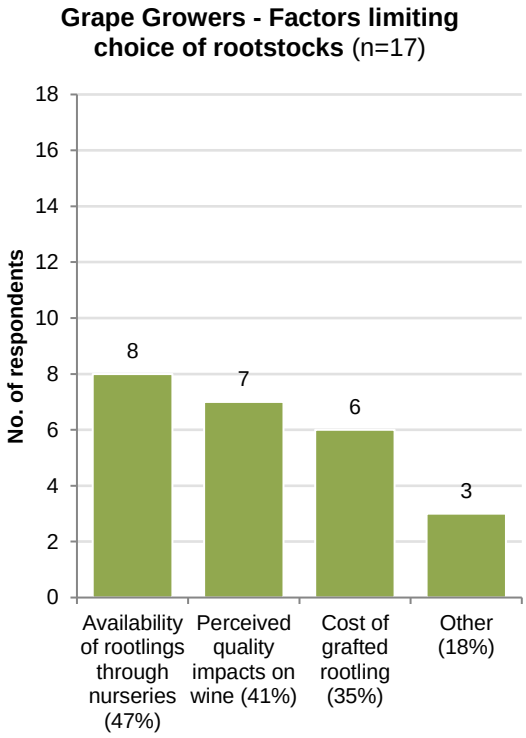


Figure 8:



2.3.3 Spray application

The majority of Grape Grower respondents had actively taken steps to minimise spray drift (88%) and were aware of spray drift technologies (81%).

- *Nozzle selection* was the most common practice used to minimise spray drift (20 respondents) – other practices included the use of *contemporary sprayer technologies* (8 respondents), *no-spray buffer zones* (7 respondents), and *other modifications* (6 respondents).
- Comments on spray application practices highlighted specific equipment and technology being used (19 mentions – e.g. hooded sprayers; nozzle selection; recycle sprayer; new generation machinery).
- Many growers also considered wind conditions before spraying (14 mentions).

EXAMPLE COMMENTS

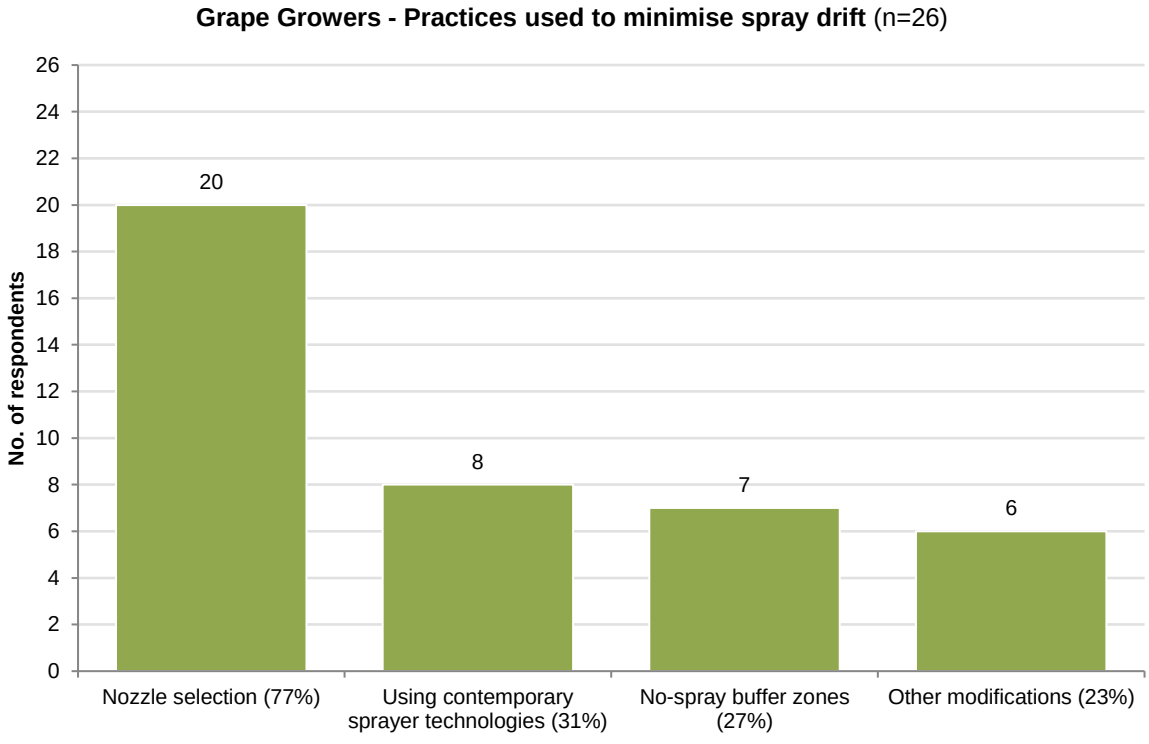
Have a fleet of 9 sprayers all with targeted spray units, targeted nozzles, high water rates and high droplet size to reduce drift.
(Grape Grower NSW)

Use recycling sprayers on some vineyards and use the right nozzle and low drift sprayer technology.
(Grape Grower Vic 50)

Following the weather and spraying to the right weather predictions of winds.
(Grape Grower SA 12)

88% actively take steps to minimise spray drift	81% aware of spray drift technologies

Figure 9:



2.3.4 Vine balance/grape quality measures

The two most common canopy management practices undertaken by Grape Growers were *bunch and shoot thinning* (81%) and *leaf plucking* (50%).

- The VitiCanopy smartphone app was used by some growers (5 respondents).
- Comments on vine balance and grape quality measures mainly described specific practices being used (13 mentions) – including *nutrient testing, irrigation, trimming, pruning, thinning, vine structure techniques, fencing,* and *netting*.

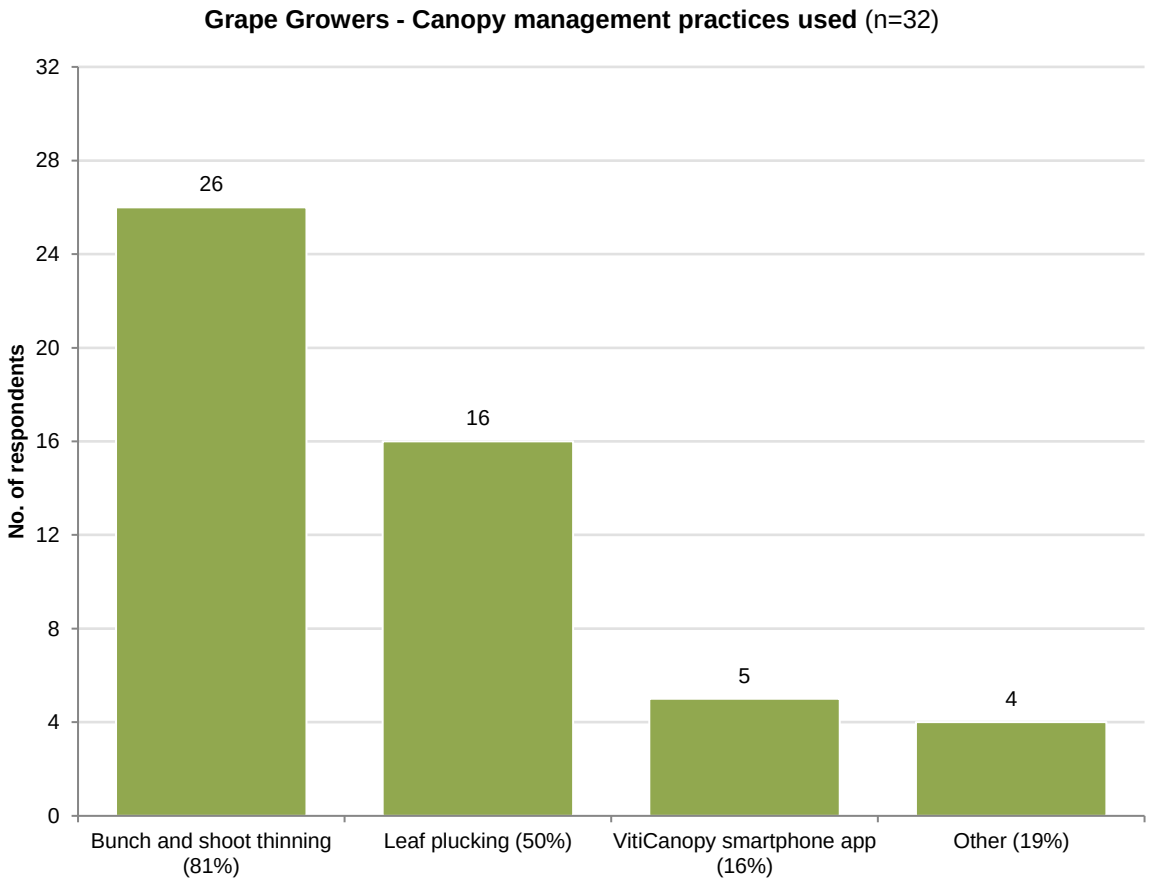
EXAMPLE COMMENTS

It is all hand pruned and is specific to the type of soil because the type of canopies we have on different varieties are pruned to either increase or decrease the canopy. (Grape Grower NSW 32)

We use irrigation monitoring for vine vigour and the correct amount or irrigation and mother nature looks after it. The less input the better on the hip pocket. (Grape Grower SA 12)

We do run yield, shoot and leaf plucking to manage canopy density. (Grape Grower Vic 50)

Figure 10:



2.3.5 Adaption to climate change

Around a third of Grape Grower respondents had implemented practices to deal with changes in climate and variability.

- Changes included *delayed pruning* (38%), *variety selection* (31%), *'other' practices* (25% - e.g. sunscreen), *vineyard cooling* (19%), and *clonal trials* (16%).
- Grower comments provided details on the types of practices implemented with many detailing irrigation and cooling strategies (11 mentions – e.g. *night irrigation, dam covers, securing water sources, adjusting timing, monitoring water levels, and monitoring hot and dry weather*).
- Other practices mentioned included *sunscreen (e.g. clay based), mulching, site selection, shade trials, improving soil health,* and *vine management (e.g. regrafting and managing canopies)*

EXAMPLE COMMENTS

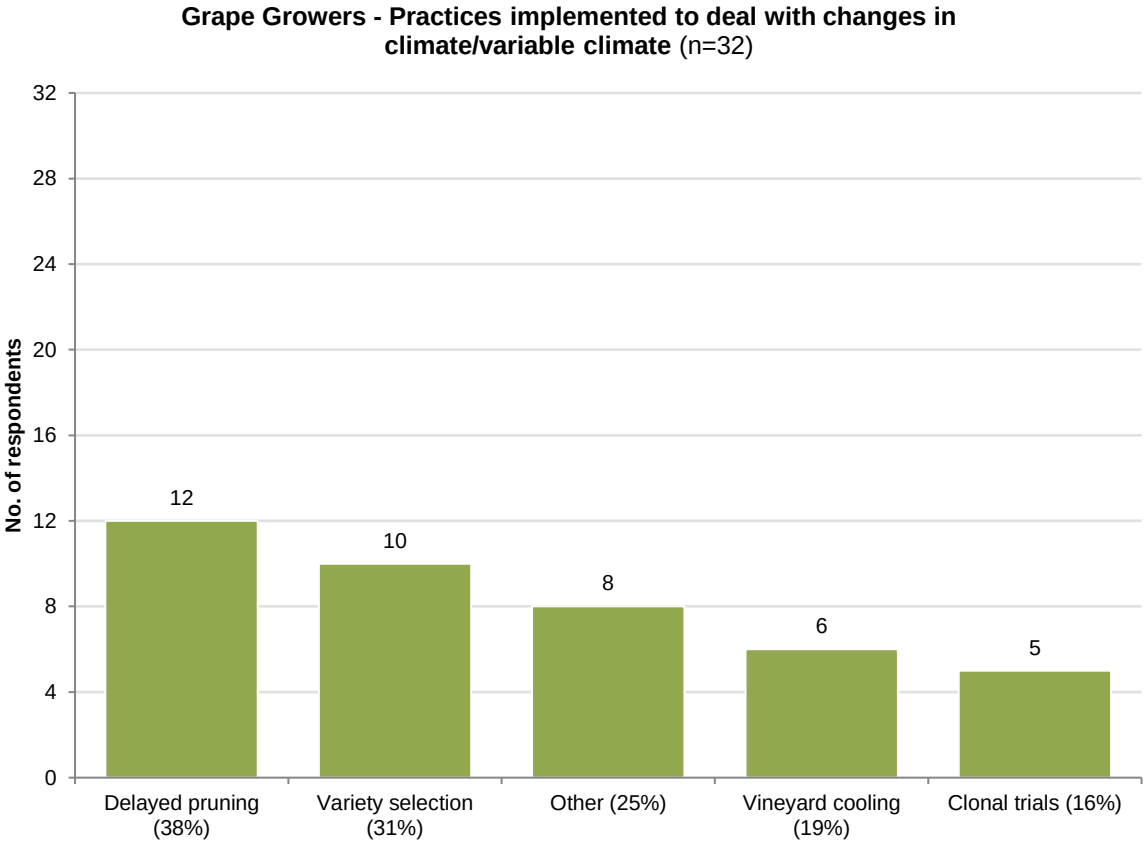
Extreme temperature variation throughout the season. You need the infrastructure for vineyard cooling.
(Grape Grower SA 16)

We have changed our management practice to basically delay the pruning.
(Grape Grower Vic 62)

With our newer plantings they are naturally drought and heat tolerant.
(Grape Grower SA 17)

We have a cover on our dam and we irrigate at night.
(Grape Grower SA 12)

Figure 11:



2.3.6 Most challenging viticulture practices

The most common viticulture challenges highlighted by Grape Grower respondents related to weather and climate, and pests and disease.

- Weather and climate challenges mentioned included *drought, heatwaves, lack of rainfall affecting quality, long-term forecasting,* and *water security.*
- 'Other' challenging practices included *shoot thinning, bunch selection, netting, canopy size, fruit flavour, organic programs, spray drift legalities,* and *variety selection*.

EXAMPLE COMMENTS

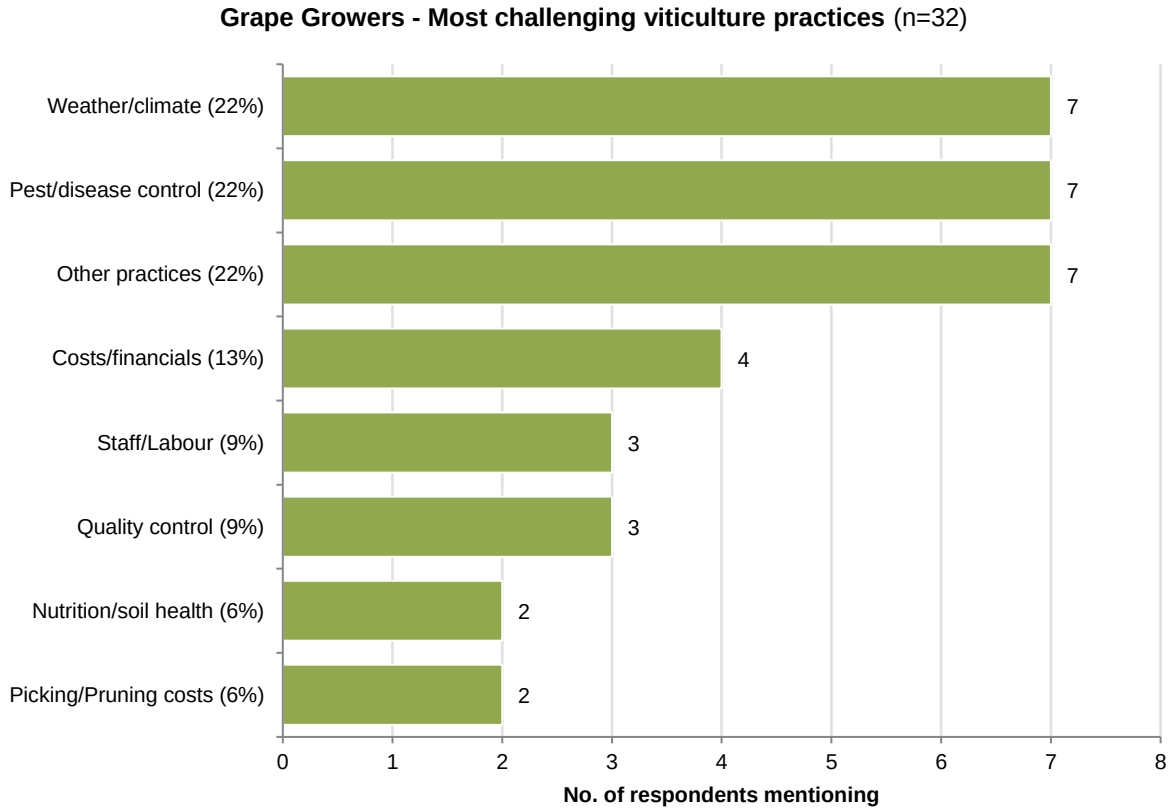
The most challenging is the weather, the Hunter Valley has had a very dry winter.
(Grape Grower NSW 32)

Disease control and getting the sprays out in a timely fashion.
(Grape Grower Vic 63)

Benchmarking the financials – still a lot of issues between the grape producer and the wine maker it is an issue that hasn't gone away.
(Grape Grower SA 16)

Anything to do with labour hand picking to pruning and getting skilled labour to do it.
(Grape Grower Vic 50)

Figure 12:



2.3.7 Management help required

Reflecting those practices that were seen as most challenging, Grape Grower respondents believed they needed more help managing *pests and disease, financial and market issues, staff and labour*, *weather and climate,* and *weeds.*

Suggested help included:

- Pest and disease (6 mentions) – e.g. *native parrots, kangaroos, bunch rot,* and *trunk disease*
- Financial and market (5 mentions – e.g. *speed of produce to market, selling wine, grape contract security, trading,* and *investment return*
- Staff and labour (4 mentions) – e.g. *OH&S, guidelines/process on employing more staff, shortage of skilled labour*
- Weather and climate (3 mentions) – e.g. *climate change, heat management, frosts,* and *accessing weather data*
- Weed management (3 mentions) – e.g. *alternative chemicals* and *strategies*
- Other areas (4 mentions) – e.g. *rate of industry change, objective fruit quality measurement, new technologies,* and *rootstock selection*

EXAMPLE COMMENTS

Disease management; what does a deficiency look like?; how can disease be managed?; anything to automate processes?
(Grape Grower NSW)

In a changing climate we need more security with grape contracts, it's becoming more that they will buy more at harvest and there is no security for the grower because we have a permanent crop in the ground, I guess our wineries need more security with their markets so they know what they are selling from year to year so we know who we are selling to.
(Grape Grower SA 12)

More on OH&S and more on the guidelines and the process of employing more staff.
(Grape Grower SA 21)

Weed control due to the weather and spring summer rainfall area – difficult for non-chemical weed control strategy.
(Grape Grower NSW 32)

2.3.8 Influence of Wine Australia on changes

Table 8: Averages by demographics

	Average	n
Ownership		
Family farm/owned	5.7	21
Australian corporate	6.8	6
International corporate	4.0	4
Lifecycle		
Expanding	6.2	18
Stable	5.2	10
Location		
SA	4.9	8
Vic	5.9	10
NSW	6.6	7
Other	6.7	3
Overall	**5.9**	**28**

Scale: 0=Very low and 10=Very high

Wine Australia information, tools and extension activities were overall rated as moderately influential in helping Grape Growers successfully make changes (5.9 avg.).

- Expanding businesses (7.2 avg.) found Wine Australia assistance more influential than stable businesses (6.2 avg.).
- Grape Growers from NSW (6.6 avg.) were most influenced by Wine Australia compared to those from Victoria (5.9 avg.) and South Australia (4.9 avg.).
- Respondents who were highly influenced by Wine Australia made positive comments including: *useful, very relevant, effective, very helpful, timely information, making decisions with confidence,* and *rely a lot on the information.*
- Those who were less influenced suggested that information had come from other sources and/or information wasn't relevant to their needs.

EXAMPLE COMMENTS

Means relevant and timely information and making decision with confidence.
(Grape Grower SA 1 – 8 rating)

The fact that someone has been doing the field work and research. You can fire questions at them and the information is relevant that is what I like about it. It is hot off the press.
(Grape Grower Vic 50 – 10 rating)

The information on the website and research that has come through has not dealt with the problems we were trying to deal with.
(Grape Grower Vic 62 – 3 rating)

2.4 Wine Producer Practices

2.4.1 Clarification and filtration

Juice clarification techniques

Cold settling (87%) and _flotation_ (48%) were the two most common white juice clarification techniques used by Wine Producer respondents.

- The main benefit of flotation seen by Wine Producers was in increased efficiency and cost savings (11 mentions) – e.g. *less electricity use, faster to ferment, less refrigeration/chilling required, capital savings,* and *inexpensive.*
- Issues relating to flotation (6 mentions) related to its *high capital investment, quality, variability, and complexity.*

EXAMPLE COMMENTS

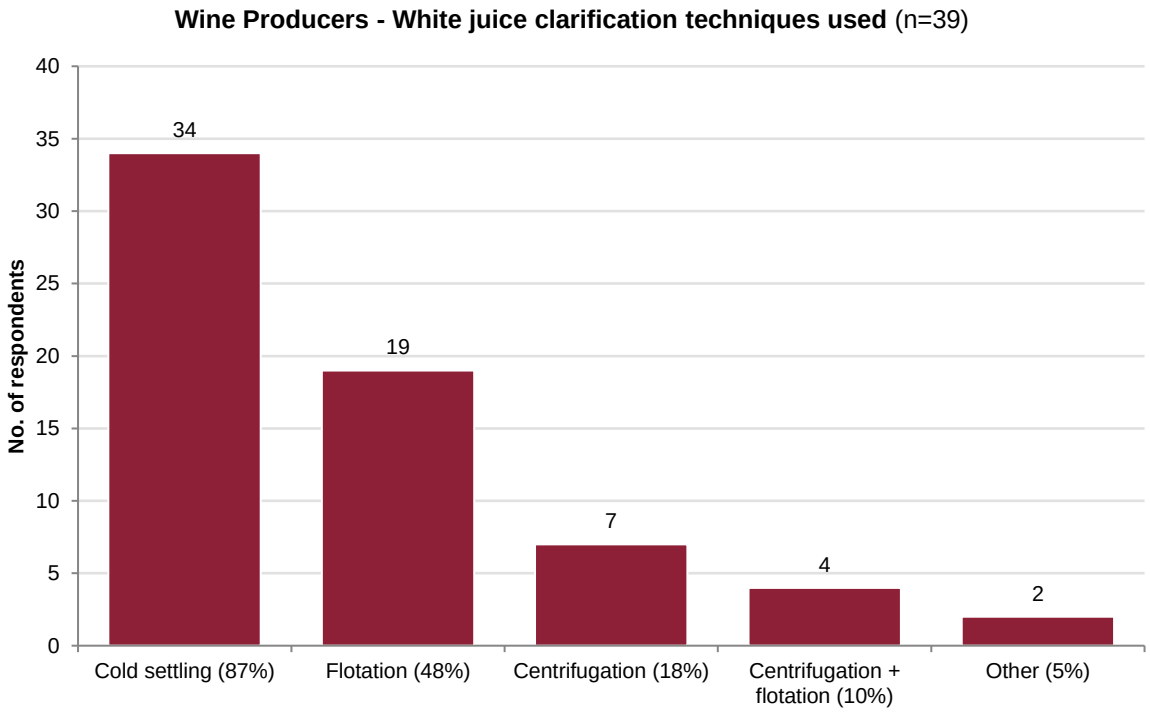
Benefits of flotation:

Less electricity use, more speed, less need not to use so much chilling units and not so much heating usage.
(Wine Producer NSW 36)

The benefits for us is the speed of production – because we do a lot of contract work having the juice ready to be shipped out is very important.
(Wine Producer NSW 43)

It is very good when you have a large volume to process – not so appropriate for smaller volumes. I appreciate the technology. It has improved a lot in the last couple of years.
(Wine Producer Vic 50)

Figure 13:



For Wine Producer respondents where reprocessing was relevant, *RDV* and *cross-flow filtration* were equally used with *white juice* (48%) and *red ferment (42%)*, while *RDV* was more commonly used with *white bentonite lees* (56%).

- The three main benefits Wine Producers saw in using cross-flow filtration were improved wine clarity, quality, and taste (12 mentions) increased efficiency and speed (7 mentions); and increased extraction and reduced losses/waste (5 mentions).
- The two highlighted issues associated with cross-flow filtration were its expense (4 mentions – e.g. *initial cost and filter replacements*) and increased blockages (3 mentions).
- Some respondents used a combination of both RDV and cross-flow filtration.
- 'Other' methods described included: *cold settle, centrifugation, and sterile filters*

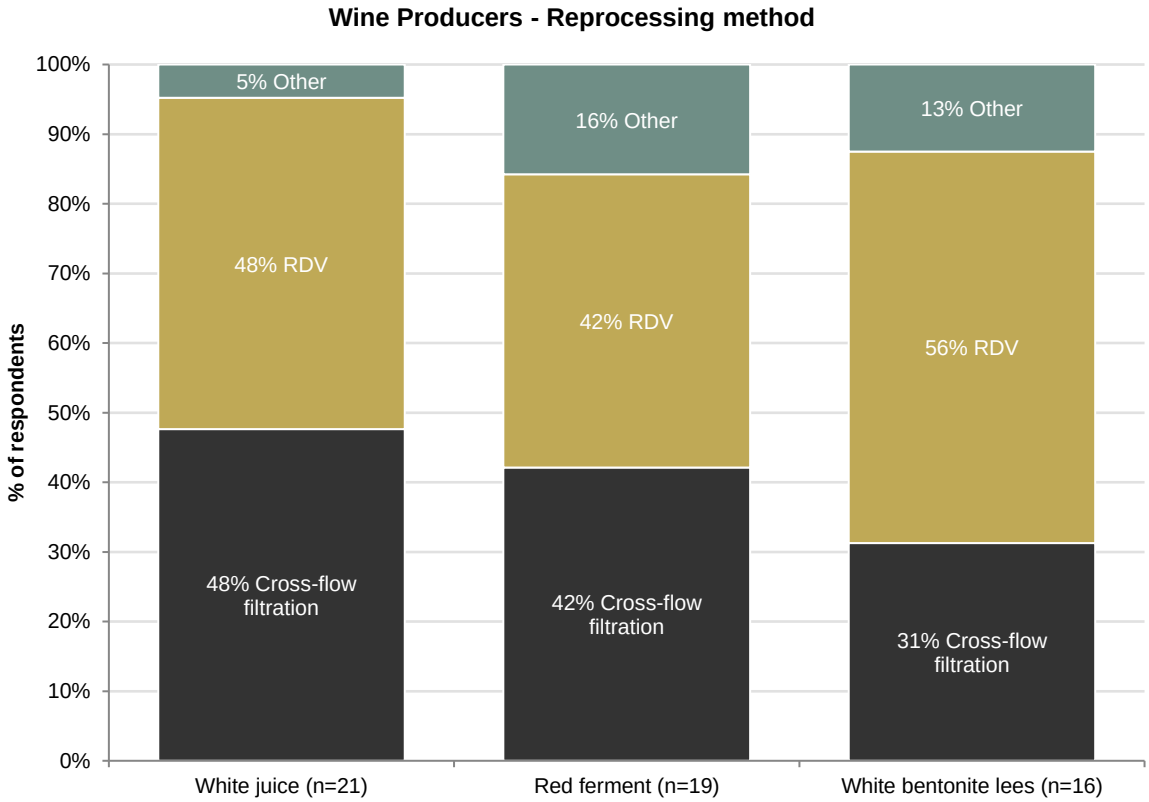
EXAMPLE COMMENTS

Benefits of cross-flow filtration:
Cross flow filtration is more effective, cleaner and has less impact for the wine from the palate point of view. It is good here in the Hunter Valley because we have contractors so we don't have the capital outlay of buying a cross-flow.
(Wine Producer NSW 32)

Very many benefits, speed, simplicity, ability to process a wide variety of types of wine and minimal training.
(Wine Producer NSW 36)

Fewer waste products, higher quality juice and better extraction volumes.
(Wine Producer Vic 50)

Figure 14:



Around a third of Wine Producer respondents had used *plant-derived fining proteins* (38%), while most had used *bentonite to remove proteins* (79%) and were *aware of pasteurisation plus enzyme as a method for heat/protein stabilising* (87%).

- Of the fifteen Wine Producers that had used plant-derived fining proteins, 73% had used them with *white juice*, 67% with *white wine*, and 47% with *red wine.*
- Comments describing the benefits of using bentonite (12 mentions) included: *efficient, effective, improved stability, improved settling, better recovery,* and *reduced haze.*
- Sodium was the most commonly mentioned bentonite used.
- Perceived issues associated with bentonite use (6 mentions) included: *flavour and aromatic stripping, reduced wine quality,* and *high lees volume.*
- General comments on clarification and filtration were varied and mainly related to specific examples of practices used (13 mentions) or reasons why it wasn't used (12 mentions – e.g. *small winery, organic winery, not viable, energy use not feasible, and settle wines naturally*)

EXAMPLE COMMENTS

Benefits of bentonite use:

Cost effective, relatively easy to apply and good for clarification. (Wine Producer SA 12)

It gives me peace of mind with protein stability. (Wine Producer SA 12)

There is less haze in the final wine. (Wine Producer Vic 62)

We use SIHA bentonite which we use because we think we get the best result, cost wise and lees compaction. (Wine Producer SA 14)

Figure 15:

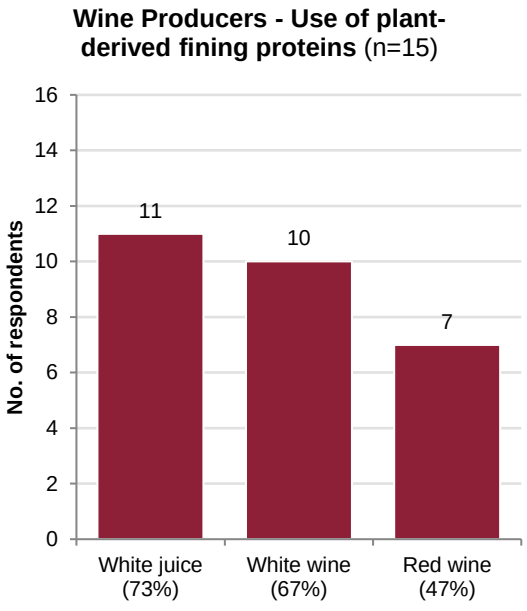
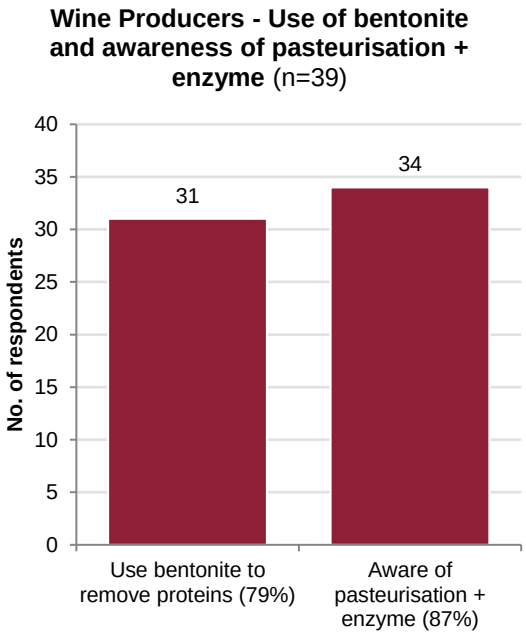


Figure 16:



2.4.2 Cold stabilisation

Half of Wine Producer respondents used *chilling with tartrate seeding* (51%) and a third used *chilling* (33%) as their cold stabilisation method.

- Almost all Wine Producers were aware of the energy costs associated (97%).
- Some had used additives to prevent tartrate precipitation (28%) and almost half had taken steps to manage risk around calcium tartrate instability (48%).
- Monitoring of calcium levels was the main step taken to manage risk around calcium tartrate instability (9 mentions).
- General comments on cold stabilisation practices highlighted both benefits (6 mentions – e.g. efficient and cost effective) and issues (8 mentions – e.g. expensive and labour intensive).

EXAMPLE COMMENTS

Calcium tartrate instability:
Measuring calcium and making sure not to use too much calcium bentonite.
(Wine Producer Tas)

Have a device that determines the calcium tartrate. We measure calcium in the vine.
(Wine Producer NSW 36)

General comments:
Effective and they do produce the results you are after.
(Wine Producer WA 5)

Although it is expensive it is a requirement that we need to do.
(Wine Producer SA 25)

Figure 17:

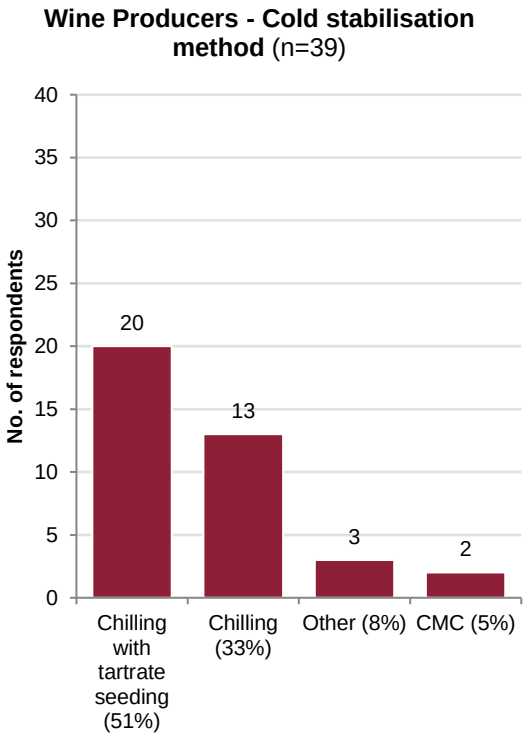
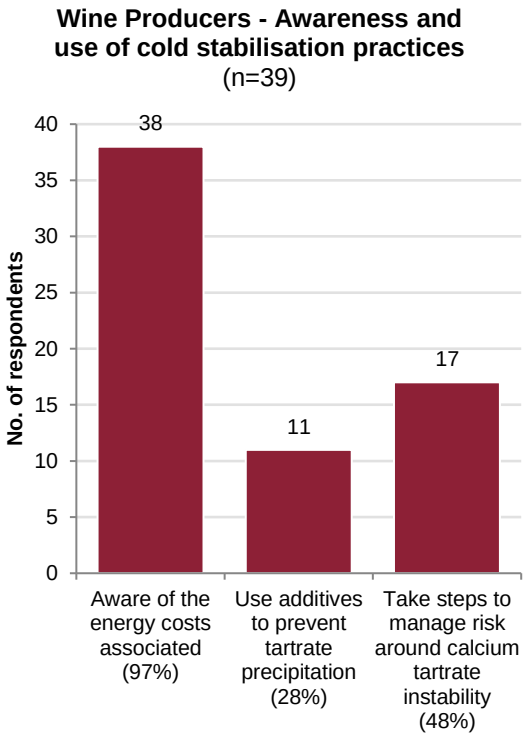


Figure 18:



2.4.3 Awareness of wine efficiency research

Table 9: Averages by demographics

	Average	n
Ownership		
Family farm/owned	4.6	26
Australian corporate	5.5	6
International corporate	6.4	5
Lifecycle		
Expanding	5.5	32
Stable	1.7	4
Reducing	1.0	1
Location		
SA	5.2	17
Vic	5.5	10
NSW	2.7	6
Other	6.5	4
Overall	**5.0**	**37**

Scale: 0=Very low and 10=Very high

Overall, Wine Producer respondents were moderately aware of research being undertaken on wine efficiency (5.0 avg.).

- Corporately owned businesses (6.0 avg.) were more aware of research than family owned business (4.6 avg.).
- The five stable or reducing businesses were noticeably less aware of research (1.4 avg.).
- The six Wine Producers from NSW had the lowest awareness (2.7 avg.) compared to the other two states (SA 5.2 avg. and Vic 5.5 avg.).
- Commenting on wine efficiency research and practices, a number of Wine Producers indicated they had implemented efficiency practices (9 mentions – e.g. *cross-flow, must chilling, solar panels, CMC, temperature to control spoilage, energy audit,* and *avoid tank movement).*
- Some Wine Producers noted that while they were aware of the research, they had not implemented any practices to date.

EXAMPLE COMMENTS

Have a winery group of engineers but overall our energy use is pretty good. We have a lot of solar panels. (Wine Producer SA 12)

Fairly broad process efficiency, we use technology like cross flow which is energy efficient. (Wine Producer Vic 50)

I am aware there are a number of initiatives going around about winery efficiencies, carbon footprints and energy efficiency. (Wine Producer SA 21)

2.4.4 Fermentation monitoring

Figure 19:

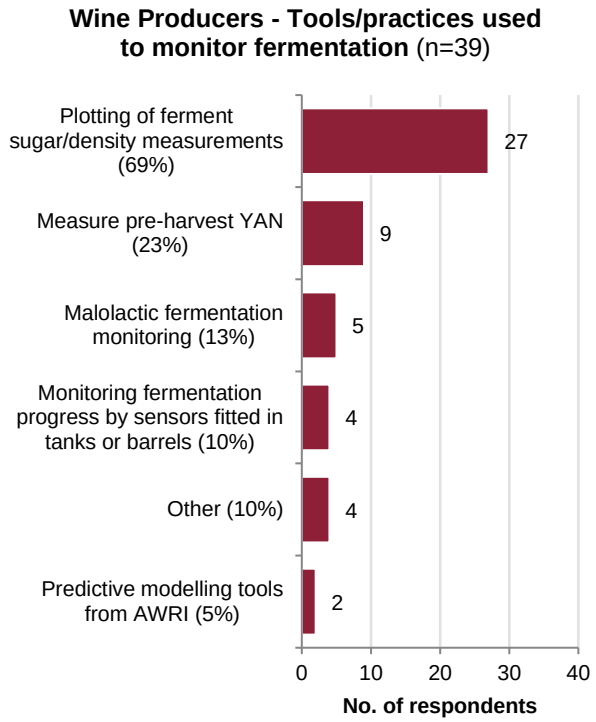


Table 10: Average percentage of occurrence

	Average %	n
% of ferments that were wild (vs. inoculated)	41%	28
% of wine that goes through MLF	73%	32
% of MLFs that were wild (vs. inoculated)	77%	20
% of MLF inoculations that were co-inoculated (vs. 'sequential' which is inoculated after alcoholic fermentation)	72%	21
% of MLFs were sluggish or stuck (over the last 5 years)	13%	30

Note: The average percentage figure excluded responses indicating 0% (i.e. of those respondents indicating this occurred, this is the average percentage of ferments or times it occurred) Figure is overall and includes both red and white wines.

***Plotting of ferment sugar/density measurements* was the most common practice used by Wine Producer respondents to monitor fermentation (69%).**

- Comments on plotting of ferment sugar/density measurements (21 mentions) included: *everybody uses, simple and easy process, efficient for small wineries, straight forward, monitor twice a day, manual plotting, pre-harvest analysis, own graphing system, spectrophotometer, and physically measuring.*
- 72% of Wine Producers indicated on average 41% of their ferments were wild;
- 82% of Wine Producers indicated on average 73% of their wine went through malolactic fermentation (MLF);
- 51% of Wine Producers indicated on average 77% of MLFs were wild;
- 54% of Wine Producers indicated on average 72% of MLF inoculations were co-inoculated; and
- 77% of Wine Producers indicated on average 13% of MLFs had been sluggish or stuck over the last five years.

EXAMPLE COMMENTS

Basically, it is just measuring the sugar and temperature each day and recording information on a graph. (Wine Producer SA 17)

We do pre-harvest analysis and then we measure, no we don't have anything fitted in the tank. (Wine Producer Vic 62)

We plot ferment sugar and we monitor fermentation percentages. (Wine Producer NSW 34)

2.4.5 Faults and taints

The majority of Wine Producer respondents indicated *copper additions were used on site* (79%) and *oxygen was used during fermentation to manage stinky sulfur compounds, flavour and colour* (64%).

- Of the 31 Wine Producers using copper additions, the majority based the dose on fining trial (75%) and made copper additions during or soon after ferment (77%).
- Only a small percentage did tannin or colour measurement (15%) – comments on why it was unnecessary (19 mentions) included: *can see colour, happy with colour, use eyes to evaluate, no demand,* and *not a priority.*
- Those Wine Producers that did tannin or colour measurement, cited quality and consistency as the primary motivators.
- General comments on faults and taints included observations that prevention was the best solution (9 mentions – e.g. *keep lowest possible incidents; prevention better than cure; try to avoid; frequent monitoring;* and *limit occurrence using fermentation nutrients)* and specific details of oxygen processes being used (9 mentions – e.g. *use air rather than oxygen*)

EXAMPLE COMMENTS

General comments:

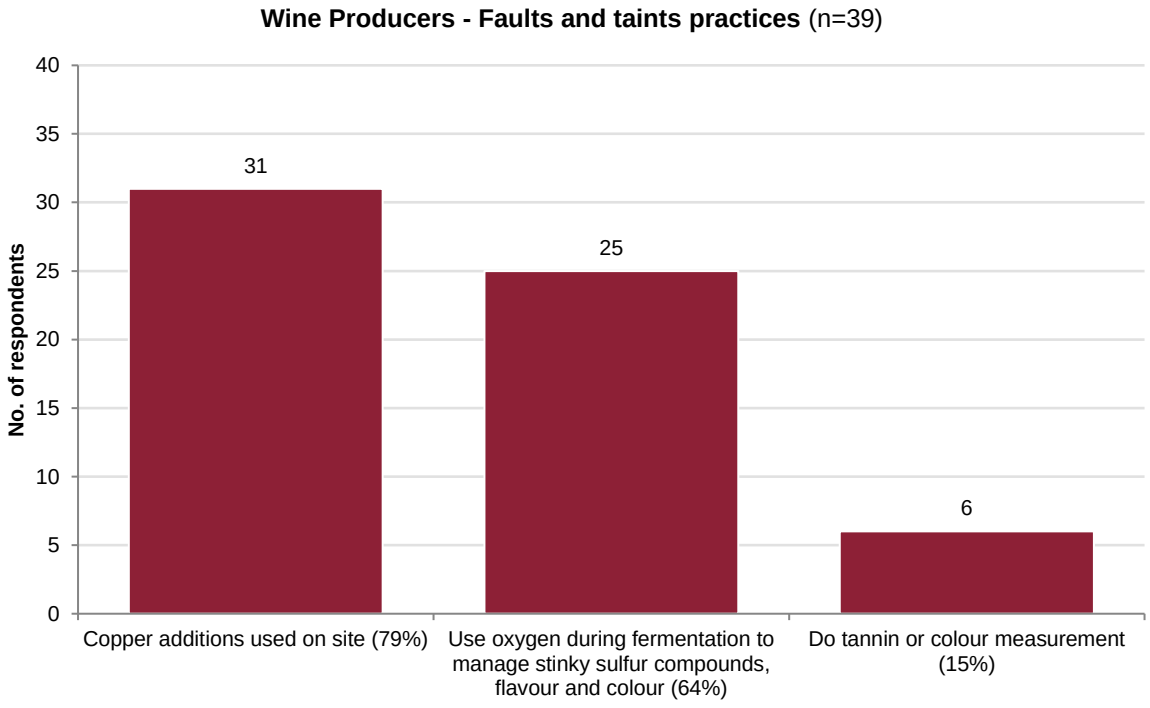
I think what we are trying to do is quite preventative, so trying not to allow faults or taints to occur by using fermentation nutrients, basically looking after the ferment very closely.
(Wine Producer SA 17)

We try to keep to the lowest possible incidents and react as soon as we can rather than leave them.
(Wine Producer SA 14)

Prevention is the best medicine.
(Wine Producer SA 17)

We use air oxygen to clean up the ferment so we don't have to add as many things later on.
(Wine Producer SA 21)

Figure 20:



2.4.6 Practice change

The most common practice changes made by Wine Producer respondents over the last three years related to *fermentation practices* – including changes to manage faults and taints (e.g. oxygen during fermentation) and yeast changes (e.g. wild yeasts).

Types of practice changes made:

- Fermentation changes: Faults and taints (8 mentions – e.g. *more oxygen during fermentation, changes to copper use, and won't accept smoke tainted grapes*)
- Fermentation changes: Yeasts (5 mentions – e.g. *wild yeasts* and *inoculation changes*)
- Fermentation changes: Other (6 mentions – *measuring YAN, post fermentation soaking, more wine ferments, use Fermaid,* and *measuring redox potential*)
- Clarification and filtration changes (3 mentions – e.g. cross-flow on juice bentonite lees and *flotation*)
- Stabilisation changes (2 mentions – e.g. *heat stabilisation and testing for heat stability,* and *specific tartrates that don't include chilling*)
- Other changes (3 mentions – e.g. *vinegar fly management*, *vineyard nutrient requirements,* and *more hygiene*)

Other comments:

- General comments on changes (3 mentions – e.g. *small changes based on AWRI seminars, alter and review annually,* and *change approach and strategy depending on season and fruit*)
- No practices introduced/changed in last 2-3 years (12 mentions)

EXAMPLE COMMENTS

More oxygen during fermentation and using less copper and fining less.
(Wine Producer Vic 50)

We have gone from inoculated to wild ferment.
(Wine Producer SA 25)

Measuring redox potential which is very exciting.
(Wine Producer SA 12)

Cross-flow on juice bentonite lees is new.
(Wine Producer Vic 50)

The heat stabilisation in the last 12 months and test for heat stability.
(Wine Producer NSW 36)

I have paid more attention to nutrient requirements for our vineyard.
(Wine Producer NSW 43)

We always change the approach and strategy depending on the season, the fruit that is coming in, and also the load on the winery. Sometimes you have to make a solution to make it all fit.
(Wine Producer SA 17)

We alter them and review and update every 12 months.
(Wine Producer SA 12)

2.4.7 Influence of Wine Australia on changes

Table 11: Averages by demographics

	Average	n
Ownership		
Family farm/owned	5.3	18
Australian corporate	3.8	4
International corporate	3.5	2
Lifecycle		
Expanding	5.0	21
Stable	4.3	3
Location		
SA	3.3	9
Vic	5.4	8
NSW	5.5	4
Other	7.7	3
Overall	**4.9**	**24**

Scale: 0=Very low and 10=Very high

Wine Australia information, tools and extension activities were overall rated as moderately influential in helping Wine Producers successfully make changes (4.9 avg.).

- Family owned businesses (5.3 avg.) found Wine Australia more influential than corporately owned businesses (3.6 combined avg.).
- South Australian Wine Producers (3.3 avg.) were the least influenced compared to other states (5.4 avg. to 7.7 avg.)
- Respondents who were highly influenced by Wine Australia highlighted increased knowledge and improved decision making (10 mentions), with comments including: *technical information there and well supported, influenced my decisions at times, help make more educated decisions. very informative, constant reference point, build confidence,* and *new research to understand what's going on.*
- Some of those who were less influenced suggested that information had come from other sources and/or information wasn't relevant to their needs.

EXAMPLE COMMENTS

I would say that the information that it has provided had influenced my decisions at times.
(Wine Producer SA 12 – 7 rating)

They are an important ingredient as far as knowledge and help you make more educated decisions.
(Wine Producer Vic 47 – 8 rating)

I look up information from wherever I need to, I guess it has helped a little.
(Wine Producer SA 25 – 2 rating)

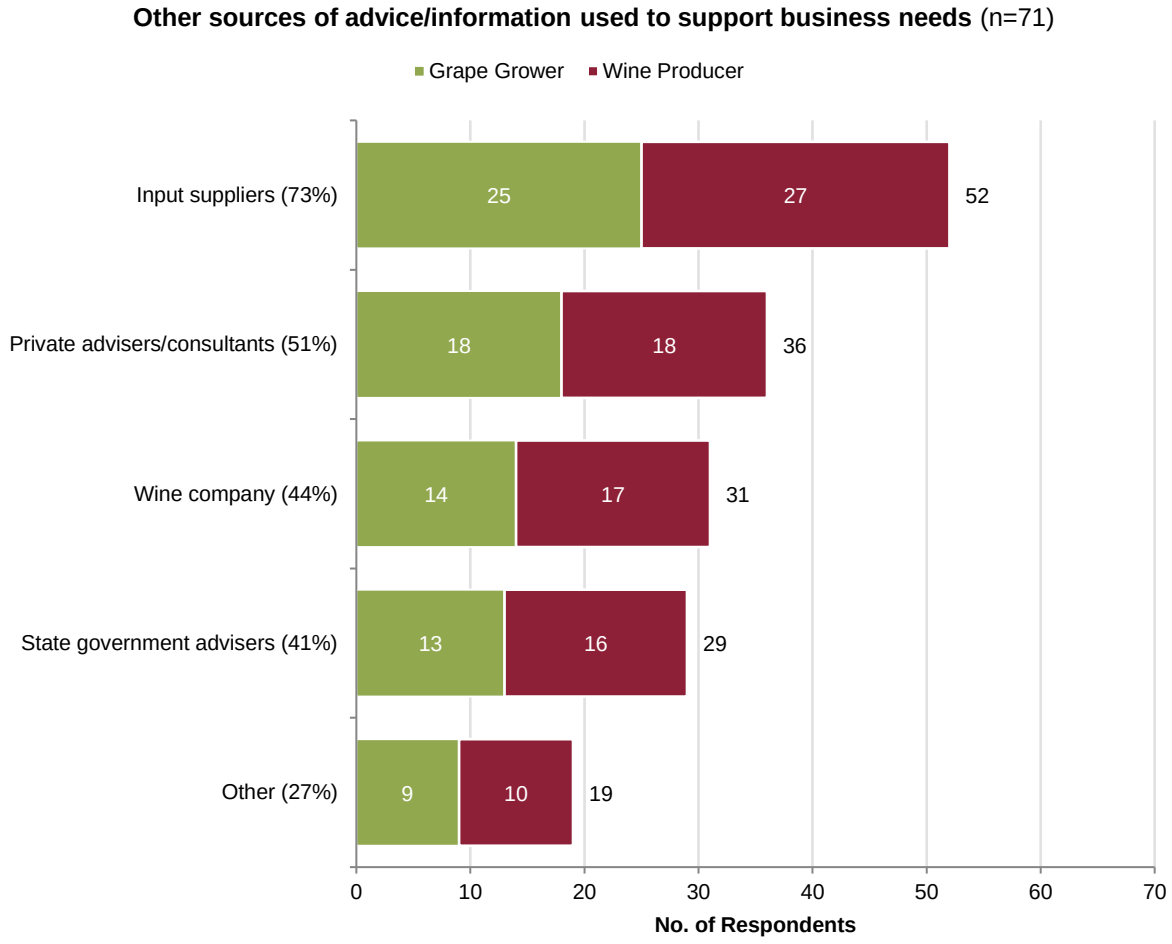
2.5 Final Questions

2.5.1 Other sources of advice/information

***Input suppliers* (e.g. rootstock, fertiliser, or chemical suppliers – 73%) were the most common other source of advice and information used by respondents to support their business needs. Also commonly used were *private advisers/consultants* (51%), *wine company* (44%), and *state government advisers* (41%).**

- A slightly higher percentage of Grape Growers used *input suppliers* (78% vs. 69%) and *private advisers/consultants* (56% vs. 46%) compared to Wine Producers.
- 'Other' sources of advice/information included: local committees/associations/and organisations (4 mentions), universities/researchers (3 mentions), own research (3 mentions – e.g. internet), AWRI (2 mentions), technical conference (2 mentions), industry journals/publications (2 mentions), and neighbours/colleagues (2 mentions)

Figure 21:



2.4.6 Other/final comments

Given the opportunity to provide any other comments about practices and/or research or information needs, many respondents provided general positive comments about Wine Australia (e.g. *happy with the information*), while others made various suggestions on specific information that would be useful (e.g. *disease and pests*) and where Wine Australia should focus their resources (e.g. *increased R&D investment*).

Positive comments:

- General positive comments (10 mentions – e.g. *happy with information, all very good, webinar good, help desk great, needs have been met, value all information I can get, use what is available through Wine Australia,* and *seminar program very good*)

Suggestions:

- Specific information needs: Disease/pests/weeds (5 mentions – e.g. mildew; Eutypa; weevils; kangaroos)
- Specific information needs: Other topics (7 mentions – e.g. *consumer preference mapping, varieties, cooler climate viticulture, yield estimation, grape quality, waste,* and *efficiency practices*)
- Increased R&D investment (4 mentions – e.g. *invest in new PhD students/researchers, more viticulture development and extension,* and *training program and scholarships*)
- Other suggestions (6 mentions – e.g. *more regionally specific information, more resources to answer questions, more education from government institutes, increased organic focus, more technical notes,* and *more regional trials*)

Issues/barriers:

- Barriers to making changes (2 mentions – e.g. *lack of time* and *staffing requirements*)
- Labour costs/availability (2 mentions)
- Too focused on large companies (2 mentions – e.g. *need to be available to small operators* and *unsure how they help or represent small business*)

Issues/barriers (cont.):

- Other issues (6 mentions – e.g. *website usability, lack of extension resources, cost of journals, lack of support in Victoria, reporting issues,* and *personnel issues*)

General comments:

- Comments on information sources and/or decision-making process (10 mentions – e.g. *best practice information from a range of sources, important to keep up with industry changes,* and *most information from other grape growers and winemakers*)

EXAMPLE COMMENTS

The webinars are good and to have them available at all times. The help desk is great.
(Grape Grower SA 16)

The information that comes through is valuable.
(Grape Grower Vic 61)

Learning is very important to keep up with any changes in the industry and maintaining my business.
(Wine Producer Qld 28)

We try to use what is available through Wine Australia and we try to attend seminars.
(Wine Producer SA 14)

It's always good to get more information about downy mildew which is normally our biggest issue.
(Grape Grower NSW 32)

3. APPENDIX 1

3.1 Industry stakeholder interviews

In addition to the Grape Growers and Wine Producers surveyed, eight industry stakeholders were interviewed to gain additional insights.

- Six of the stakeholder were from South Australia, including three company directors/managers, a researcher, a consultant, and a development officer.
- The other two stakeholders were a Tasmanian researcher and a NSW company director/manager.

Awareness of activities and information provided by Wine Australia

8.9

Industry stakeholders were very aware of activities and information provided by Wine Australia. Comments on ratings included:

- Email newsletters/updates (4 mentions)
- Previously involved with/contributor to Wine Australia (3 mentions)
- Active participant in activities (2 mentions)
- Role in disseminating information/research (2 mentions)
- Visit the website (1 mention)

Key R&D outputs and messages from Wine Australia

Stakeholders recalled key Wine Australia R&D outputs and messages including:

Directed towards Grape Growers:

- Disease management (4 mentions – e.g. trunk diseases)
- Climate variability change (3 mentions)
- Other (3 mentions – e.g. biosecurity tests, irrigation, canopy management)

Direct towards Wine Producers:

- Wine stabilisers/quality control (2 mentions)
- Other (5 mentions – e.g. processing efficiency, wine use, bacteria development, tank sensors, marketing regulations)

Awareness of methods used to promote key R&D outputs/messages

Email communication (5 mentions) and workshops/roadshows (4 mentions) were the two methods used to promote R&D that stakeholders were most of aware.

- Other methods mentioned included: technical conference (2 mentions), industry publications (2 mentions), Wine Australia website/webinars (2 mentions), regional program partners, and overseas marketing/presentations

Success of R&D methods used to promote key R&D outputs/messages

The majority of stakeholders were positive about the success of R&D promotion (6 mentions), with comments including: *successful if emails opened, very good, successful for information provision, external work is excellent, fairly successful wide range of media,* and *general research well targeted.*

	Stakeholders also made observations including: • Information delivery is not extension (2 mentions – e.g. *can lack context, interpretation, how to apply, etc.)* • Successful if supported by local delivery partner • Success relies on wide reach of dissemination (e.g. *multiple methods/channels of delivery needed*) • Need to focus on communicating to busy people
Examples or observations where changes/adoption occurred as a result of outputs and messages at the enterprise level	Examples of where adoption had occurred included: • Disease management (2 mentions – e.g. *pruning to manage fungal trunk diseases, management of powdery mildew, timing of sprays*) • Improved water management • Improved fermentation choices Stakeholders also made observations including: • Changes dependent on affordability (2 mentions) • Value of specific resources/tools (e.g. *Dog Book, factsheets*)
Specific output/messages that have made significant inroads in terms of grape growing or winemaking	Messages that were seen to have been accepted by the industry with quick uptake included (5 mentions): • Faults and taints (e.g. *oxygen use in fermentation, managing smoke taint*) • Powdery mildew rule (e.g. *spray early and frequently*) • Pruning to manage fungal trunk diseases • Yield monitoring and strategic irrigation Stakeholders also made observations including: • Role of case studies and technical conferences in facilitating uptake • More research needed on natural ferments for commercial use • Difficulty managing some diseases where the industry is not experienced enough or suffer those conditions enough to action those to manage the damage • Need for caution with rapid uptake (e.g. *long-term access to inputs, reactive changes*) • Industry needs to refer more to key quality issues
Barriers preventing action on outputs/messages	Barriers that were seen to have prevented outputs and messages being acted on included: • Lack of motivation/incentive to change (4 mentions – e.g. *other priorities, too busy, maintaining the status quo, cost and benefits of techniques*) • Need for more extension (3 mentions – e.g. *just giving information does not mean behaviour change, direct personal communication, not enough extension people on the ground*) • Need for regionally relevant/variety specific information (2 mentions – e.g. *different practices for different wine styles, region by region basis*) • Need better translation of research into usable information (2 mentions) • Third parties needed to develop research into end-user products • Economic state of the industry
Impacts or benefits (improved production or	Impacts or benefits stakeholders had observed as a result of changes made included:

quality) as a result of changes made	• Improved disease management (2 mentions – e.g. *preventive treatments for trunk disease, improved understanding of chemical resistance and spray techniques*) • Improved water use and efficiency (and resulting grape quality) • Dealing with environmental issues • Reduction in fermentation problems (e.g. *managing smoke taint*) • Improved understanding of fruit composition • Improvements to fermentation management (e.g. *new strains*)
Future key RD&E needs for the wine making and grape growing industry	Future RD&E needs highlighted by stakeholders included: • Climate change and vineyard productivity (3 mentions – e.g. *soil health, focus on efficiency and productivity with less environmental impact, fundamentals applied in the short term*) • Understanding industry demand for wine styles (2 mentions) • Understanding specific regional viticulture needs • More on-ground/grassroots support to wineries to sell/distribute wines • Co-innovation approach to research - increase/embed Grape Grower involvement in R&D (e.g. *empower Grape Growers to undertake trials and self-monitor*) • Biosecurity (e.g. *multispectral imaging for diseases*)
Other comments relating to Wine Australia, AWRI RD&E or information needs to better support the industry	A few stakeholders made positive comments relating to Wine Australia including (3 mentions): *Wine Australia going great guns, overall they do a good job, pleased with Wine Australia transparency.* Stakeholders also made observations and suggestions including: • Need to understand different regional/industry needs (2 mentions – e.g. *how is production changing, breaking down needs into topics*) • Need for more extension in the regions • Need for clearer understanding of various associations roles • Need for cross-industry collaboration/cooperation on biosecurity issues • Culture of scientists to publish articles instead of going into the field • Issues with AWRI's research strategy • AWRI's commercial focus and future direction