Wine Australia for Australian Wine

Performance Evaluation Report 2017–18



Highlights 2017-18

Positive trends

Australian wine was exported to 128 markets

Australian wine exports 20% grew 20 per cent in value to \$2.76 billion, the highest rate of growth in 15 years. \cap There were a record 2298 active 15% exporters - an increase of 15 per cent. Exports to China (including Hong Kong and Macau) rose 55 per cent 70 per cent of exporters contributed to a record \$1.12 billion 70% to the overall increase in exports. The average value of exports increased by 9 per cent to \$3.24 per litre, the highest since 2008-09.

Chinese wine drinkers' perception of the quality of Australian wine improved from 7.69 out of 10 in 2010 to 8.32 in 2018, according to a Wine Intelligence study commissioned by Wine Australia.

Similarly, in the USA, quality perceptions have seen a significant increase from 7.82 in 2010 to 8.14 in 2018.





The 2018 average grape purchase price was \$609 per tonne, up by 8 per cent on the price of \$565 per tonne for vintage 2017. This figure is the highest since 2008 and above the average price across the past 10 years of \$508 per tonne.

The winegrape crush declined by 10 per cent in volume, returning to longterm averages, and increased 3 per cent in value.

Wine Australia events

Wine Australia hosted 99 marketing campaigns in key markets in 2017-18.



At our events

93% of surveyed exhibitors were satisfied.

98% of attendees were satisfied.

After attending events, participants' perceptions of Australian wine were rated, on average, at 8.99, an increase of 9 per cent on their perceptions before the event.

Wine Australia drew on \$1.5 million from the Australian Government's \$50 million Export and Regional Wine Support Package to partner with Tourism Australia in a marketing campaign in the USA capitalising on the Crocodile Dundee legend. A 60-second advertisement during the 'Super Bowl' reached a TV audience of more than 100 million people.

Vinexpo Hong Kong comments

'I like Australian wines very much. They have purity, are lingering, elegant and complex. It is very good to meet with Australian wineries at Vinexpo.' Qingquan Yu, Cofco Great Wall

'It is very helpful for us because we have never imported Australian wine before, so we are very eager to find Australian wineries, and I think this fair gives us a lot of opportunity to search for new cooperation.'

Emma Yu, Product Consultant China

Export assistance

When we surveyed our stakeholders:

98.9%

94.2%

found our Export Assistance Team very helpful or somewhat helpful.

of respondents found the Wine Export Approval System (WEA) very easy or somewhat easy to use.



of respondents find it very easy or somewhat easy to find the information they need for export.

97.5%

of those who use the Export Market Guides find them very helpful or somewhat helpful. 97.6%

of respondents agreed or somewhat agreed that they learned something helpful during the Wine Australia audit of their winemaking records that they didn't know previously about their regulatory obligations.

92.9%

of respondents agreed that they are likely to contact the Wine Australia auditing team if they need regulatory assistance in the future, 7.1% somewhat agreed.

Information



Developing people



Sixteen members of the grape and wine community graduated from the seventh intake of the successful Future Leaders program.



We offered 6 new postgraduate scholarships and supported travel for 10 outgoing scholars.

Regulatory



We conducted 277 audits to ensure the truth and reputation for truthfulness of Australian wine. A culture of compliance was reinforced outside the auditing program through direct engagement with stakeholders and education initiatives.

We analysed more than 222 Australian wines to monitor compliance with the Australia New Zealand Food Standards Code.

Research, development and extension



We managed 201 research projects during 2017–18, with 47 completed during the period.

We supported 3 researchers in an innovative Incubator Initiative to support early career researchers and foster stronger links between wine regions and R&D.

An independent analysis of Wine Australia-funded research across 5 themes showed an aggregated benefit-cost ratio of 2.6 to 1 on the selected projects.



New projects are investigating the expression of terroir on Australian Shiraz, the use of digital technologies to map vineyard areas, field testing a radical pruning method to eradicate angular leaf scorch, providing new information to improve vineyard spraying and reduce drift and field testing new technologies and software.



Wine Australia funding supported the AWRI in delivering 44 roadshow workshops and seminars, attracting 1037 participants. Survey feedback collected at roadshows and seminars delivered by AWRI indicates

91 per cent of participants rated them as good or excellent.

Chair's report

There are gratifying signs that the Australian grape and wine community is moving into more sustainable financial territory as Wine Australia heads into the fourth year of our five-year Strategic Plan.

During the 2017–18 year, a number of key indicators moved in a positive direction – not only did the value of exports grow by 20 per cent to \$2.76 billion (the highest rate of growth in 15 years) but the average value of exported wine increased by 9 per cent to \$3.24 per litre, the highest level since 2008–09. This growth in export value was accompanied by an increase in the average grape purchase price of 8 per cent to \$609 per tonne in the 2018 vintage – again, the highest level in a decade.

The positive signs were reflected in both bottled wine exports, which reached a record value of \$5.94 per litre, and bulk exports, which increased in average value to \$1.08 per litre.

Research, development and extension

We support Australian growers and winemakers by investing in the research, development and extension (RD&E) that generates and delivers the knowledge to help them to meet challenges and capture opportunities.

During the year, a number of practical applications were delivered from research projects, such as digital applications that allow growers to assess levels of a range of vine diseases. We also implemented a new model for research funding partnerships by executing longer-term research agreements with our key research partners the Australian Wine Research Institute (AWRI), Commonwealth Scientific and Industrial Research Organisation (CSIRO), the South Australian Research and Development Institute SARDI) and the National Wine and Grape Industry Centre (NWGIC). Bilateral negotiations are continuing with the University of Adelaide.

Exports

The future of Australia's wine sector is inextricably linked to export success – 60 per cent of our production is exported.

Wine Australia is vested with delivering the Australian Government's \$50 million Export and Regional Wine Support Package (\$50m Package) to grow exports, particularly in China and the United States of America (USA) and to increase international tourism to wine regions.

The second year of activities saw the launch of the Australian Wine Made Our Way platform, delivery of a hugely successful Vinexpo Hong Kong where Australia was Country of Honour, followed by an equally successful China Roadshow and partnering with Tourism Australia in its cut-through 'Son of Dundee' Super Bowl campaign. We also administered three grants programs and developed programs to grow export and tourism capability. Legislation to effect delivery of the \$50m Package also formalised our name change to Wine Australia, something sought by our stakeholders.



Chair, Brian Walsh



Exports to China (including Hong Kong and Macau) increased by 55 per cent to \$1.12 billion in 2017–18 – with exports to mainland China reaching \$1 billion for the first time. Volume increased by 47 per cent to 184 million litres (equivalent to 20.5 million 9L cases), leading to a 6 per cent increase in the average value to \$6.06 per litre.

While all price points contributed to value growth, it is apparent that the Chinese taste for Australian fine wine is the biggest driver, with exports valued above \$10 per litre more than doubling in the past 12 months.

While the USA remains one of Australia's top five export destinations in terms of both volume and value, we have struggled to regain our pre-Global Financial Crisis success and it is one of the few markets where market share declined slightly in the past year. The story is not entirely negative, with good growth at higher price points, admittedly off relatively low bases, but a welcome trend none the less.

We are working to change the perception of Australian wines and grow sales in the above US\$10 per bottle segment and in 2018–19 we will deliver events and activities in key USA states to reset perceptions and build demand.

After a brief downturn in UK retail prompted by the Brexit decision, 2017–18 saw an uplift in Australian wine sales with increases in both value and volume, to \$384 million and 246 million litres (equivalent to 27.3 million 9L cases). The value increase slightly outpaced volume so that the average value increased by 1 per cent to \$1.56 per litre.

Regulation

The significant growth in wine exports has meant a busy year for the regulatory team.

The regulations guiding Wine Australia's activities in export licencing and label integrity were reviewed and refreshed for the first time in 40 years, in close consultation with the sector and government, with extended powers to protect the reputation of Australian wine exports.

The Board approved significant investment in new custom software for wine export approvals. The new software, to be launched in early 2019, will reduce complexity for exporters and will be easier to operate and more robust than our current ageing system.

Strategic Plan

Within Wine Australia's 5-year Strategic Plan, we set out 2 priorities and 12 related strategies that guide our investment in marketing activities, information provision, regulatory services and RD&E. The performance section of this report records achievements against these priorities and strategies.

The current Strategic Plan concludes in 2020 and, during the coming year, we will be working with our grape and wine community to commence developing the new plan. As part of this process we have commissioned an independent performance review across our portfolio of activities to inform the strategic review.

Our role

Wine Australia is governed by the Wine Australia Act 2013 (the Act).

Our role under the Act is to:

- coordinate or fund grape and wine research and development (R&D), and facilitate the dissemination, adoption and commercialisation of the results
- control the export of wine from Australia, and
- promote the sale and consumption of wine, both in Australia and overseas.

Our five-year Strategic Plan 2015–2020 and our Annual Operational Plan 2017–18 outline our key investment priorities, which are guided by the Australian grape and wine community's priorities.

The Strategic Plan was developed following extensive consultation with grapegrowers, winemakers, sector bodies, government and other key stakeholders. It shows:

- our vision is for a prosperous Australian grape and wine community
- our priorities are to increase demand and the premium paid for all Australian wine and to increase competitiveness.

We seek to foster and encourage a prosperous Australian grape and wine community by investing in research, development and extension (RD&E), building markets, disseminating knowledge, encouraging adoption and ensuring compliance.

We work in partnership with a wide range of stakeholders along the supply chain. WFA and AV are our representative organisations under the Act.

We collaborate with our marketing and other like-minded partners on international engagement. These partners include wine businesses, Australian Government agencies such as Tourism Australia and Austrade, regional associations, state governments and other research and development corporations (RDCs) with market development responsibilities.

The Australian Government is a co-contributor of RD&E funding. We also work closely with the Australian Government to enhance market opportunities and reduce barriers to trade.

Our research providers include AWRI, CSIRO, the NWGIC, universities and state agencies.

We invest with other RDCs in cross-sectoral collaborative research to deliver RD&E benefits to the broader community.

Our governance and operations seek the best possible return on the investment of our RD&E, marketing and regulatory funds.

Our strategic priorities

To achieve our goal of a proseperous Australian grape and wine community, we focus on 2 priorities and 12 strategies.

| Goal: A prosperous Australian grape and win | Goal: A prosperous Australian grape and wine community | | | | | |
|---|---|---|--|--|--|--|
| Priority 1: Increasing demand and the | Strategy 1: Promoting Australian fine wine | | | | | |
| | Asia PacificNorth America | ChinaUK and Europe | | | | |
| | Strategy 2: Protecting the reputation | Strategy 2: Protecting the reputation of Australian wine | | | | |
| | Annual analytical surveyLabel Integrity Program | Regulatory services | | | | |
| | Strategy 3: Building Australian vine o | and wine excellence | | | | |
| | Grapegrowing for excellence Wine provenance and measures of Customer insights | Grapegrowing for excellence Wine provenance and measures of quality Customer insights | | | | |
| Priority 2: Increasing competitiveness | Strategy 4: Improving resource man | agement and sustainability | | | | |
| | Climate adaptability Biosecurity, pest and disease management | Foundation dataSustainable resource management | | | | |
| | Strategy 5: Improving vineyard perfo | ormance | | | | |
| | Enhancing grapevine and rootstocEfficient and sustainable vineyard | k performance management | | | | |
| | Strategy 6: Improving winery perform | nance | | | | |
| | Enhanced yeast and bacterial perf Efficient winery production | formance | | | | |
| | Strategy 7: Enhancing market access | S | | | | |
| | • Market access | | | | | |
| | Developing people | | | | | |
| | Strategy 9: Business intelligence and | a measurement | | | | |
| | Business intelligenceMonitoring and evaluation | | | | | |
| Extension and adoption | Strategy 10: Extension and adoption | | | | | |
| Supporting functions | Strategy 11: Corporate Affairs | | | | | |
| | Corporate Affairs Sector engagement | | | | | |
| | Strategy 12: Corporate Services | | | | | |
| | Finance and administrationPeople and culture | Information and communications technology | | | | |

Performance 2017–18

Financial overview

We achieved an operating surplus of \$10.1 million for 2017–18, \$7.6M of which was driven by timing issues between the receipt and expenditure of the \$50m Package.

Our revenue comes from two main sources: winegrape growers, processors and exporters who pay statutory levies, and the Australian Government, which matches the money raised by these levies when it is invested in eligible R&D activities.

There are three levies: the wine grape levy and the grape research levy, which are based on winegrape production, and the wine export charge, which is based on the free on board (FOB) value of wine exports.

Approximately 33 per cent (\$21.5 million) of 2017–18 revenue came from the 2 levies and the export charge and 22 per cent of revenue (\$13.9 million) from the Australian Government matching contributions.

Revenue from regulatory fees made up 8 per cent (\$5.5 million) of income, and wine sector contributions to marketing activities made up 2 per cent (\$1.4 million) of total revenue for 2017–18.

The \$50m Package made up 30 per cent (\$19.2 million) of total revenue for 2017–18; this was made up of grant income, interest earned and sector contributions.

Net assets were \$23.2 million at 30 June 2018 and financial assets were \$22.1 million, of which all was cash or term deposits other than receivables of \$3.2 million. Payables were \$3.0 million.

Full details of our finances are included in the Financial Statements section of our Annual Report 2017–18.



Strategic plan Targets and outcomes 2017–18

Strategic plan targets

Two key targets are defined in Wine Australia's Strategic Plan:

- 1. The average price per litre for Australian bottled wine exports increases to a point where it is at or near the highest average price per bottle of our global competitors by key markets.
- 2. Australian vineyards and wineries are efficient by global standards.

Priority 1: Increasing demand and the premium paid for all Australian wine

Target 1: The average price per litre for Australian bottled wine exports increases to a point where it is at or near the highest average price per bottle of our global competitors by key markets.

Target 1 is evaluated by tracking the average price per litre for Australian bottled wine exports in Australian dollars (A\$) against that of the top five competitors in the key markets of China, USA, UK and Canada using trade data sourced from the Global Trade Atlas.

2017–18 target: The average price per litre for Australian bottled wine exports increases year-on-year from \$5.42 in May 2017.

2017–18 result: The average price per litre for Australian bottled wine exports reached a record \$5.94 during the year.

The volume and value of Australian bulk wine exports increased by 10 per cent to reach \$1.08 per litre.





Figure 2: Value of Australian export vs competition in China, USA, UK and Canada

Figure 3: Average value of Australian bottled and bulk wine exports from 1991.



Pleasingly the growth in exports and the improved prices have flowed through the sector with grape prices during the 2018 vintage returning to levels not seen since 2008.





Priority 2: Increasing competitiveness

Strategic Plan target: Australian vineyards and wineries are efficient by global standards.

Target 2 is measured in two ways. First, by benchmarking the adoption of five viticultural practices and five oenological practices in Australia to establish a competitiveness indicator. And secondly, through a benefit-cost analysis of selected R&D projects.

2017–18 target: Set benchmarks to measure practice change for the five viticultural and five winemaking practices identified.

2017–18 result: A survey was carried out to set benchmarks for performance. Some 56 per cent of respondents indicated that they had acted on information promoted by Wine Australia.

In addition, a benefit-cost analysis of selected R&D investments was conducted to assess performance in line with the strategic plan.

Benchmarking adoption of viticultural practices and oenological practices

Consultants Coutts J & R were engaged to assess the adoption of 10 key viticultural and oenological practices expected to most significantly improve competitiveness of Australian vineyards and wineries.

The five key viticultural activities identified were pest and disease (including trunk diseases and biosecurity); rootstocks; spray application; vine balance/ grape quality measures; and adaptation to climate change (including delayed pruning, clonal trials).

The five oenological practices were: clarification and filtration (including flotation/cross flow); cold stabilisation; wine efficiency (including Lean principles, ABC tool and energy); fermentation monitoring; and faults and taints (including smoke taint and copper additions).

The consultants found Wine Australia was playing a key role in providing R&D support to the Australian grape and wine community. The survey respondents (71 grapegrowers and winemakers) considered they had a high level of access to information and activities that led to a high level of awareness about key information.

Research on smoke taint had the highest overall level of recall at 63 per cent. The majority of grapegrowers were aware of best-practice treatment of pruning wounds to prevent trunk disease infection, 56 per cent had selected rootstocks for their vineyards and 53 per cent indicated there were other factors preventing their adoption of rootstocks ranging from availability through cost to perceived impacts on wine quality. The majority of grapegrowers had actively taken steps to minimise spray drift (88 per cent) and bunch thinning and leaf plucking were used to achieve wine balance/grape quality. A third of grapegrower respondents had implemented practices to deal with changes in climate and variability.

Wine producers reported they were moderately aware of research being undertaken on wine efficiency, while Wine Australia information tools and extension activities were overall rated as moderately influential in helping them successfully make changes.

Benefit-cost analysis of R&D projects

To evaluate the value of Wine Australia's R&D investments, we commissioned AgEconPlus to undertake an ex-post benefit-cost analysis of five randomly selected projects. The resulting areas of analysis were phylloxera, root zone salinity, lees, extension and market access through the following projects: :

- PGI 1201 Sampling strategies for sensitive, accurate and cost-effective detections of Phylloxera for quantifying area freedom status
- SAR 0902 Managing vineyard root zone salinity and maximising water saving by sub-surface irrigation techniques
- AWR 1307 Removal of lees from underneath wine to reduce wine movements and tank cleaning
- AWRI 4.1.1 The staging and conduct of extension programs, and
- AWRI 2.2.4 Increasing Australia's influence in market access, safety, regulatory and technical trade issues.

The approach followed the general evaluation guidelines that are now well established within the Australian rural research sector including RDCs, Cooperative Research Centres and some universities. The assessments were consistent with the CRRDC (2014) Impact Assessment Guidelines. Comparisons to analyses of previous investments should be made with caution as the latest CRRDC guidelines require practitioners to take a conservative approach to the estimation of costs and benefits. This will result in lower benefit-cost ratios than for analyses of R&D projects in previous years.

Each of the five analyses provides a description of the constituent projects including objectives, outputs, activities, costs, outcomes and benefits. Benefits are described qualitatively according to their contribution to the triple bottom line of economic, environmental and social benefits. While a range of potential benefits of each program are identified, the analysis focused on the most likely and most significant benefit stream. A number of potential benefits therefore remained unquantified and hence the estimated net benefits of some programs may be considered conservative. The analyses were undertaken for total benefits and Wine Australia benefits, including those expected in the future as a result of the investment.



Overall, the estimated benefits and costs of the Wine Australia projects show that the returns on the grower, Commonwealth Government and co-investor monies have been significant. There were mixed results, with benefit-cost ratios ranging from 0.83 to 4.21 and the Internal Rates of Return well in excess of 5 per cent (the discount rate used) for 3 out of the 5 projects. Two of the projects, lees and market access, had benefit-cost ratios of less than one, meaning the benefits were not greater than the costs. The lees project was a relatively high-risk project that aimed to develop a novel method to remove lees from the bottom of a tank and thus reduce costs of production. The project developed fundamental knowledge on the properties and physical characteristics of various lees but was not successful in engineering a novel solution to their removal. The quantified benefits derived from the market access project were also less than the costs. This is in part due to attribution. Success in maintaining market access for Australian wine results from activities across several fronts, not just this project. The quantified benefits for this project also rely in part on there being serious issues to solve; and this is an aspect that we have no control over.

The aggregated benefit-cost ratio on the selected projects was 2.6 to 1.

| Investment criteria | Investment program | | | | | | | |
|--------------------------------------|---|--|---------|---|--|--|--|--|
| | Phylloxera | Root zone salinity | Lees | Extension | Market Access | | | |
| Present value of benefits (\$m) | \$4.21 | \$1.82 | \$0.58 | \$7.28 | \$0.31 | | | |
| Present value of costs (\$m) | \$1.00 | \$1.04 | \$0.70 | \$2.42 | \$0.37 | | | |
| Net present value (\$m) | \$3.21 | \$0.78 | -\$0.12 | \$4.86 | -\$0.06 | | | |
| Benefit-cost ratio | 4.21 | 1.75 | 0.83 | 3 | 0.84 | | | |
| Internal rate of return (%) | 30% | 40% | 2% | 16% | 2% | | | |
| Modified internal rate of return (%) | 10% | 8% | 4% | 9% | 4% | | | |
| Potential unquantified | Creation of a tool that will collect data on phylloxera exotics. | Project findings relevant to other irrigated agriculture. | Nil. | Improvements in public policy formulation for wine industry. | Project findings relevant to industries in other countries. | | | |
| benefits | Growers with new skills in phylloxera testing. | Project findings relevant to industries in other countries. | | Capacity - grape growers and winemakers with new skills | Enhanced Australian wine industry reputation and capacity. | | | |

Table 1: Summary of benefit-cost analysis of selected R&D projects



| Table 2: Expenditure, | by | groupings | and | total, | for | 2017-18 |
|-----------------------|----|-----------|-----|--------|-----|---------|
|-----------------------|----|-----------|-----|--------|-----|---------|

| Groupings | \$m |
|--|-------|
| Priority 1: Increasing demand and the premium paid for all Australian wines | |
| Strategy 1: Promoting Australian wine | 8.70 |
| Strategy 2: Protecting reputation of Australian wine | 1.96 |
| Strategy 3: Building Australian grape and wine excellence | 7.05 |
| Total Priority 1 | 17.71 |
| Priority 2: Increasing competitiveness | |
| Strategy 4: Improving resource management and sustainability | 3.58 |
| Strategy 5: Improving vineyard performance | 5.36 |
| Strategy 6: Improving winery performance | 2.76 |
| Strategy 7: Enhancing market access | 0.64 |
| Strategy 8: Building capability | 0.71 |
| Strategy 9: Business intelligence and measurement | 1.27 |
| Total Priority 2 | 14.32 |
| Strategy 10: Extension and adoption | 4.41 |
| Total Priority 1 & 2: Extension and adoption | 4.41 |
| Supporting functions | |
| Strategy 11: Corporate Affairs | 0.67 |
| Strategy 12: Corporate Services | 4.15 |
| Total supporting functions | 4.82 |
| \$50m Package | 11.58 |
| Other | |
| Board, Geographical Indications (GIs) Committee & Australian wine overseas program | 0.63 |
| Levy collection costs | 0.90 |
| Other total | 1.53 |
| Total | 54.37 |

Key performance indicators

We have nine overarching key performance indicators against which we measure and report on our performance against our strategic priorities and the Australian Government's priorities. These are detailed in Table 3.

Table 3: Performance against Agriculture Portfolio Budget Statements 2017-18 measures

| Key performance indicators | Target | Outcome |
|---|------------|------------|
| RD&E | | |
| R&D projects are funded in line with the approved Annual Operational Plan | 100% | 100% |
| R&D contracts are actively managed through regular and ongoing monitoring of the research | 100% | 100% |
| RD&E newsletter has more subscribers | 1800 | 2386 |
| The number of Regional Program partners is maintained | 11 | 11 |
| Marketing | | |
| Export and Regional Wine Support Package activities are completed in-line with the funding agreement | 100 | 100 |
| The number of user-pays events hosted with wine sector partners to engage influencers in key markets | 42 | 45 |
| The number of Wine Australia-funded activities to engage influencers in key markets increases | 70 | 70 |
| Market Insights | | |
| Improvement in customer satisfaction rating for market insights services, as measured by customer satisfaction survey | 74% | 87% |
| Regulatory Services | | |
| Risk-based audits reinforce a culture of compliance and help protect the reputation of Australian wine | 300 | 277* |
| Market export guides provide accurate information about import requirements for our largest export markets | 32 markets | 36 markets |

* A culture of compliance was reinforced outside the auditing program through direct engagement with stakeholders and education.



| Strategy 1: Promoting Australian fine wine | | |
|---|---|---|
| 2017-18 targets | | 2017–18 achievements |
| Global | | |
| An educational component at 70 per cent of events to promote Australian wine's strategic narrative - quality, diversity, innovation, terroir. | • | 70 per cent target was achieved at all events through master classes, seminars, tasting events and supporting social media content. |
| Strengthen existing relationships and develop new relationships with key in-market wine trade, media and other wine influencers. | ٠ | Media and influencer KPIs were achieved or exceeded for all campaigns with new relationships formed, particularly with lifestyle media and influencers. |
| At least 75 per cent of guests indicate a positive/improved perception change towards Australian wine, captured through post-event survey. | • | Analysis of post-event feedback surveys indicates that 70 per cent of guests left with an improved perception of Australian wine – while below target this is still a very positive result. |
| At least 20 per cent increase in positive sentiment in media coverage and other published content on Australian wine. | ٠ | Positive sentiment in media coverage and other published content on Australian wine has increased by 22 per cent. |
| At least 90 per cent of wineries and distributors who participate in Wine Australia events report that they are satisfied. | ٠ | Post-event surveys of exhibitors at Wine Australia events found 93 per cent of exhibitors were satisfied. |
| Asia Pacific | | |
| Growth in consumer sentiment index in Hong Kong from 6.87, in Japan from 7.47, in Singapore from 7.29 and in South Korea from 6.51. | • | According to a Wine Intelligence study commissioned by Wine Australia, consumer sentiment in Hong Kong improved to 6.94, in Japan to 7.52, Singapore to 7.38 and in South Korea moved to 6.94 on a scale of 1 to 10. |
| China | | |
| Growth in consumer sentiment index in mainland China from 8.26. | • | Chinese consumers of Australian wine rated Australian wine as 8.32 on a scale of 1 to 10. |
| Europe, Middle East and Africa (EMEA) | | |
| Growth in consumer sentiment index in the UK from 8.12. | • | The UK was one of the few markets survey where a slight decline in sentiment was recorded with a decrease to 8.08. |
| The Americas | | |
| Growth in consumer sentiment index in Canada from 8.05 (English speaking) and from 7.92 (Québec) and the USA from 8.13. | • | In Canada, the consumer sentiment index moved to 8.24 in English-speaking markets and to 7.96 in Québec. In the USA, quality perceptions increased significantly from 7.82 in 2010 to 8.14 in 2018. |
| Strategy 2: Protecting the reputation of Australian wine | | |

| 2017–18 targets | | 2017–18 achievements |
|---|---|--|
| Annual analytical survey | | |
| Compliance with the Code is demonstrated through analysis of 300 Australian wines. | • | Analysis was conducted to verify compliance with the parameters of the Food Standard Code set out in standard 4.5.1 that is specific to Australian wine. The results verify that there is strong compliance with the analytic parameters set out in the Food Standards Code. |
| Label Integrity Program | | |
| Any minor breaches of the record-keeping requirements of the Act that are identified through risk-based inspections are remedied, while action is initiated in response to serious breaches. | • | All minor breaches of the record keeping requirements of the Act were remedied. There were no serious breaches identified. |
| Achieved In progress / partially achieved Not achieved | | |

Regulatory services

We will develop and introduce an automated export certification process to (largely) replace the existing manual system.

•

The percentage of licenced exporters using the automated certification system increased. We embarked on a major project to replace the wine export approval system.

| Strategy 3: Building Australian vine and wine excellence | | |
|--|---|---|
| 2017-18 targets | | 2017-18 achievements |
| Grapegrowing for excellence | | |
| First field testing data available from the application of new digital sensor technologies for assessment of canopy architecture, disease management, yield, crop condition and quality estimation. New software tools for routine precision viticulture (spatial) analysis. | • | Field data were collected from vineyards in several regions, using LiDAR sensors, 3D photogrammetry and an RGB camera, for the assessment of canopy structure. |
| | | Data on canopy condition were collected with hyperspectral imaging sensors, as a step towards developing systems for the assessment of leaf composition (nutrition) and early detection of disease. |
| | | Data on fruit condition and quality were collected, to compare hyperspectral imaging with physical and chemical measurements. Field experiments using canopy- penetrating radar to detect fruit began, with work focusing on the choice of appropriate wavebands for reliable bunch detection for yield estimation. |
| | | Development of new, user-friendly GIS tools for precision viticulture applications that can be run from within a freeware GIS platform (QGIS) progressed well. A workflow and suite of tools were beta tested by a selected user group, for further refinement. CSA 1601-1603 |
| Obtain further field data to assess the spatial similarity between patterns of variation in yield and indices of grape quality. | • | Field data were collected from a near infrared (NIR) sensor attached to a harvester during vintage 2018, to map fruit quality parameters against yield and remotely sensed vine vigour, to provide a basis to better understand the yield:quality nexus. CSL 1401 |
| Field data aligning the prediction of the optimal harvest 'window' and grape and wine compositional marker compounds with preferred wine styles. | • | Predictive models of wine style have been developed based on grape berry sugar accumulation profiles (for red varieties) and berry skin colour (for whites), to create a harvest decision framework. NWG 1301 |
| Recommendations and strategies for the application of selected plant growth regulators to control (delay) berry development / ripening. | • | Field and laboratory studies using techniques including sensory analysis and cutting-edge analytics have shown that it is possible to alter veraison and harvest timing through in-vineyard treatments with selected plant growth regulators without yield loss and with little or no impact on wine, except for a (desirable) increase in pepper notes in some Shiraz plots. CSP 1401 |
| A robust assessment on the role of 'vine balance' on wine quality is available to the sector, based on three years of wine compositional data and field tests. | • | A study on Shiraz across three contrasting regions and three seasons showed that while changing vine balance consistently altered the rate of ripening, there was no conclusive evidence that the changes achieved had any significant effect on fruit or wine composition when fruit was harvested at the same sugar ripeness. The results suggested a significant role for bunch environment on fruit and wine composition. CSP 1202 |

| Strategy 3: | Building | Australian | vine and | wine | excellence | |
|-------------|----------|------------|----------|------|------------|--|
|-------------|----------|------------|----------|------|------------|--|

| 2017-18 targets | | 2017–18 achievements |
|--|---|---|
| Initiate a new five-year study that seeks to understand the environmental drivers that relate to physiological changes in grapevines that lead to changes in berry composition and the optimal expression of terroir for Australian Shiraz. | ٠ | Vineyard, grape and wine sampling and analysis protocols have been finalised across regions and research institutions. Environment, vineyard and fruit maturity data including canopy architecture, have been collected and elemental analysis has been performed across the six sub-regional Barossa Valley trial sites. Grape chemistry parameters have been collected, fruit harvested and small lot winemaking completed. UA 1602 |
| New knowledge available on the sensory and chemical properties of wine from Shiraz and Chardonnay grapevine clones grown in different regions. | • | Significant differences were recorded for nearly all sensory descriptors for Shiraz and Chardonnay wines. Regional tasting workshops continued to be well received with favourable comments regarding the overall quality of the wines and the observed clonal variation. The project is in its final stages and results across all seasons are being compiled for reporting and further dissemination. SAR 1303 |
| First season of results available from a new project investigating rotundone and its role in defining terroir in iconic Australian cool climate 'peppery' Shiraz. | • | The first of two consecutive vintage maps of a-guaiene and rotundone for multiple trial sites have been produced. In 2017, sites showed substantial intra-vineyard variability and a clear spatial structure. The 2018 grape samples from the same sites have been collected and analysed. AWR 1701-4.4.4 |
| Improve understanding of the relationship between yield and canopy parameters and vine performance, based on three seasons' data. | • | The 'VitiCanopy' app successfully captured canopy architecture differences that resulted in fruit and wine compositional changes and berry and wine sensory differences. VitiCanopy measurements of leaf area index, canopy porosity and growth rate were highly correlated with vine performance and quality and can be measured early in the growing season, allowing within-season management decisions to be made. These outcomes provide new information and tools that will lead to more informed vineyard management. UA 1207 |
| New smartphone apps beta-tested for application as an in-field tool to assess vine water stress. | • | A range of smartphone-based tools for measuring vine water status in the field was evaluated and benchmarked against conventional methods e.g. stem water potential and stomatal conductance. A thermal infrared smartphone camera system was selected as the most accurate and robust option, and the app was beta tested by a panel of experienced viticulturists. SAR 1501 |
| Progress towards the release of a smartphone-based imaging tool to estimate the optimal harvest window for white wine varieties according to wine style/flavour profile, and berry volume. | • | Development of an Android app is being finalised, following user testing and training of early adopters. An integrated desktop software package (Excel) for temporal and spatial records and analysis of berry volume and colour parameters has been developed. CSU 1501 |
| Proof of concept completed for disease assessment of grapes and the detection of contaminants at the weighbridge, using hyperspectral imaging and/or spectroradiometer probes. | • | Hyperspectral and multispectral imaging were demonstrated in the laboratory to discriminate botrytis and sour rot-infected grapes/bunches (in red and white varieties) and contaminants i.e. material other than grapes (MOG). The method also offers promise for the identification of sunburn and berry shrivel in grape loads. Testing of the imaging method at the weighbridge is planned for the coming season, in collaboration with a wine company. AWR 1601 |

Strategy 3: Building Australian vine and wine excellence

| 2017-18 targets | | 2017-18 achievements |
|---|---|--|
| Wine provenance and measures of quality | | |
| New knowledge available to inform on the relationship between objective chemical measures of grape composition and fruit quality grading. | • | Completed. Final report has been accepted and <u>published</u> <u>online</u> . Objective measures were identified that can be used to distinguish grape grades and support decision making for streaming of grapes to wine styles. AWR 1202 |
| Experimental data to assess the robustness of the use of stable isotope and trace metals assays to discriminate regional source of origin for grape (and wine) samples. | • | Commercial wines have been sourced that reflect the diversity of element geology across the wine-producing regions of Australia and key international regions. Analysis of these wines for the most effective stable isotopes to distinguish regions is underway. AWR 1704 4.4.2 |
| Data from two seasons available to validate objective measures of quality (e.g. GC/MS analysis for off-flavours) and the creation of acceptable thresholds for bunch rot contamination in wine. | • | Spectroscopy (ATR FTIR) successfully discriminated individual grape berries inoculated with the different types of fungi responsible for bunch rots. Each of the fungi investigated produced a different suite of secondary compounds, some of which were implicated in deleterious effects on wine quality. Threshold for botrytis contamination of grapes was estimated to be between 0.3 and 1.0 gram dry weight of fungus per kilogram wet weight of grapes. A final project report is available, summarising these measures of bunch rot contamination of wine grapes. CSU 1301 |
| A metal speciation 'How to' guide is available for winemakers, to assist in the routine measurement and interpretation of the impact of metal ion speciation in wines. | • | A colorimetric method was developed to allow colorimetric determination of copper concentration in wine. A final report summarising the ways iron and/or copper can influence the rate of oxidation reactions and accumulation of reductive flavour compounds in wine is available online. NWG 1401 |
| Assessment of spectroscopy as an objective measure of powdery mildew infection in grapes, increased sector use of an improved diagrammatic key and smartphone app for estimation of disease severity in the field. | • | Completed. Final report has been accepted and published online. The project confirmed that spectroscopy alone is not sensitive enough to measure severity of powdery mildew infection at levels useful to the sector. Based on feedback from users, the smartphone app was upgraded to improve the GPS function and allow assessment of multiple vine diseases and disorders, including bunch rot, insect damage and sunburn. The improved app, Grape Assess, was made available to the sector in June. UA 1202 (COMPLETED) AND UA 1703 |
| Two projects investigate the drivers of Australia's unique terroirs on Shiraz wine style and quality, seeking to understand how to optimally express those terroirs in finished wine. | • | Shiraz wines from Hunter Valley, Canberra, Yarra Valley and Heathcote have been characterised according to key wine styles, regional characteristics and winemaking interventions. Barossa and McLaren Vale wine assessments are underway. A project to understand the drivers of terroir in Barossa Valley Shiraz has been initiated. CSU 1602 AND UA 1602 |
| Disseminate information on consumer preferences for and identity of compounds responsible for 'green' flavour in red wines, including the origins and formation of the compounds and possible amelioration strategies. | • | Final report accepted and <u>published online</u> . Regarding 'green' flavour in red wines, grapevine proximity to Monterey Cypress trees was shown to be a cause, with grape rachis included in Shiraz ferments also a major influence. 'Green tannin' was found to be related to both 'green' volatiles and elevated bitterness, probably related to specific tannins. AWR 3.1.1 |

| 2017-18 targets | | 2017–18 achievements |
|---|---|---|
| Disseminate knowledge via workshops and seminars, on the link between flavour precursor levels in grapes and wines, and their sensory significance in wine. | • | Completed. Final report accepted and <u>published online</u> . This project demonstrated the potential of non-volatile glycosides as flavour precursors during wine consumption. The studies showed the ability of in-mouth enzymes, most likely from salivary bacteria, to quickly liberate volatile aroma compounds from their bound form during wine drinking, enhancing flavour and contributing to a lingering aftertaste. AWR 3.1.3, AWR 3.1.1 |
| Improve sector understanding of the utility and feasibility of new tools and strategies to assess and achieve protein stability in wines, the mechanism of haze formation and the impact of wine colloids and matrix on new protein haze control processes. | • | Completed. Final report accepted and <u>published online</u> . The existing heat test was improved, and the new method has decreased the turnaround time for results from 24 hours to 5 hours without compromising accuracy. Trials explored some natural proteases, protein-adsorbing material including coated magnetic nanoparticles, surface-engineered silica and macrosponges. Pasteurisation of juice (with or without aspergillopepsin enzymes) remains a viable bentonite alternative and magnetic nanoparticles show promise but require some further development. AWR 3.1.4 |
| Greater sector awareness on the influence of metal chelation/removal on the formation of volatile sulfur compounds and factors that regulate their formation by yeast during fermentation. | • | Completed. Final report accepted and <u>published online</u> . The results from this project suggest that differing metal chelation environments can be established using additives and that these can have a significant effect on H_2S generation. It is more desirable to add copper during the final phase of active fermentation rather than at the end. The project identified several yeast markers associated with the formation of important sulfur compounds, such as the 'tropical' thiols and hydrogen sulfide from their precursors. AWR 3.5.3 |
| Preliminary information available from a project that seeks to identify impact compounds responsible for 'autolytic character' in sparkling wine, and results from spectral fingerprinting of juices to determine provenance. | • | Metabolomics data is being analysed to identify molecules associated with sensorially preferred treatments, which showed 'more development' and 'more autolytic' character than the other treatments imposed. For the 2018 season, 183 juice samples from different regions were spectrally assessed and data analysis is ongoing to determine whether provenance can be determined. UT 1502 |
| Proof of concept for chemometric integration of site (soil, clone, region), chemical and sensory markers of quality to identify Pinot Noir provenance drivers. | • | Some 54 representative '2015' Pinot Noir wines from 10 Australian winegrowing regions were analysed. A subset of 25 '2015' Pinot Noir wines was selected based on chemometric results and 5 representative wines for each of the 5 regions has been selected. Analysis of provenance drivers is ongoing. UT 1503 |
| Customer insights | | |
| Submit final report and share with the sector details of current perceptions of Australian wine among global consumers. | • | This was the first empirical investigation of Australia's country image, comprising qualitative and quantitative data collection from frequent wine buying consumers, wine importers and retailers in seven international markets. We <u>published</u> individual country summaries covering China, India, Indonesia, Korea, UK, USA and Vietnam. The findings show that Australians are viewed as bold, exciting, authentic, prosperous, strong, charming, sincere, honest, imaginative/innovative and down to earth. These positive country of origin attributes have significant and substantial influences on spend-related buying behaviour. UA 1206 |

Strategy 3: Building Australian vine and wine excellence

| 2017-18 targets | | 2017-18 achievements |
|--|---|--|
| Extend key findings to the sector synopsising how to effectively use WeChat and Sina Weibo in the China market. | • | Completed. Final report accepted and <u>published online</u> . Guides to the effective use of WeChat and Sina Weibo have been incorporated into the Growing Wine Exports capability building program. UA 1501 |
| Provide information that will assist exporters in the creation of stronger business relationships across the US and UK wine value chain | • | Australian exporting success is significantly dependent on the support and endorsement of wine importers and retailers. This research is in its final stages and explores in some depth the drivers of premium wine sales in the USA and UK along with the strategies necessary to build long- lasting business relationships. An article on this research was published in the <u>Wine and Viticulture Journal</u> Nov/ Dec 2017. FU 1701 |
| Final project results that inform the Australian wine community about what drives choice in the US market, and how Australia and our key competitors perform on these choice factors. | • | An in-depth study with the USA wine trade is underway and will extend into 2018–19. The project will measure the USA wine trade and opinion leaders' views of what drives choices in the USA market and how Australia and its key competitors perform on these choice factors; develop and simulate testing marketing strategies to overcome the issues identified; and develop a simple Excel-based decision support system to allow wine marketers to adjust their strategies to better meet the needs of the American wine trade and opinion leaders. USA 1501 |
| Final research findings that provide information on who to target and how to sell fine wine in China. | • | This research is continuing and will be extended into 2018– 19. The findings will assist Australian wine brands invest in activities and strategies designed to increase volume and value of sales in China. USA 1602 |
| Publish new information on objective measures for Australian sparkling wine style and quality, including insights on consumer preferences for different product segments. | • | Completed. Final report accepted and <u>published online</u> . Other articles include: <u>Insights for Australian sparkling</u> <u>wine</u> , Market Bulletin Issue 40, Dec 2016. UA 1205 |

Strategy 4: Improving resource management and sustainability

| 2017-18 targets | | 2017–18 achievements |
|--|---|--|
| Climate adaptability | | |
| Three seasons of data on how elevated levels of CO_2 and elevated temperature impact the growth and production of Shiraz, including grape quality parameters, and wine sensory and chemical characters. | • | The project showed that seasonal influences and 'weather' generally override any effects of elevated CO_2 and increased temperature. However, results suggest that elevated CO_2 levels in future will not impact heavily on grape and wine quality, and may even enhance yield. Warmer temperatures were detrimental to grape composition, confirming previous studies. DPI 1202 |
| Continue evaluation of new scion-rootstock combinations and new sensor technology for improved water efficiency, reduction in greenhouse gas emissions and reduced costs in the vineyard. | • | A second season of data has been collected on management costs of different scion-rootstock combinations in a 'no-spray' vineyard that does not require sprays for downy and powdery mildew as the scions are resistant to these diseases. These scions not only reduce spray costs but also reduces vineyard greenhouse gas emissions due to reduced tractor usage. New technology being assessed includes ArduCrop sensors that measure the temperature of leaves based on thermal infrared reflectance. New thermal infrared sensors with RGB imaging capability have been custom built and also being evaluated in the field, together with soil moisture monitors. CSP 1504 |

Strategy 4: Improving resource management and sustainability

| 2017-18 targets | | 2017-18 achievements |
|---|---|--|
| Three seasons of data investigating how reduced winter rainfall may impact vine production and wine quality, by analysing vine activity during dormancy. | • | The project has demonstrated vine responses to reduced winter rainfall and a range of irrigation replenishment options. Low or no winter rainfall impacts significantly on yield. Top-up winter irrigation to levels similar to natural winter rain, using either sprinklers or drippers, still resulted in reduced yield, likely due to the pattern of soil wetting influencing root growth and longevity and then vine performance in the subsequent season. Work will continue for a further season to confirm these findings. SAR 1302 |
| Complete evaluation of late pruning as a method to delay grape ripening and spread harvest duration and use of evaporative cooling to alleviate the effect of heatwaves on grapevines. | • | Three seasons of data showed that late pruning of Shiraz was able to delay the harvest date of grapes, with little net effect on yield, grape quality and wine quality. Evaporative cooling, assessed over two seasons, didn't appear to reduce temperature in the vine canopy but improved yield, reduced sunburn damage and improved wine quality at Riverland trial sites. SAR 1304 |
| Additional results on whether in-canopy misters can mitigate the effect of heatwaves on grapevine performance and grape ripening and composition. | • | Following on from the work above, this project collected two seasons of data on canopy cooling systems for mitigation of heatwaves in grapevines. Different cooling approaches varied in their effect on vine performance with season, site and cultivar, making general recommendations difficult. However, any cooling approach had positive effects on vines in the warm inland region. UA 1502 |
| Map climate suitability for key grapevine varieties under current and future climates; compile crop calendars for six case study grapegrowing regions of Australia. | • | The maps of climate suitability have been changed to a more useful 'climate analogy' approach that compares regions under current and future climates. Accordingly, a climate analogue tool has been developed and is being refined. Interviews with key viticulturists in all case study regions have been completed, allowing refinement of crop calendars. The calendars provide a graphical display of climate and weather information, grapevine phenology and climate risk factors for a vintage year. An explanatory guide has been produced to support the use and application of these calendars. UA 1504 |
| Foundation data | | |
| Collect, store and present the supply and demand data. | • | Data is sourced and presented on global and Australian grape and wine supply and demand, through various means such as the National Vintage Survey, the Production, Sales and Inventory Survey, the wine export approvals process, and a range of third-party information suppliers such as IWSR, Euromonitor International, Global Trade Atlas and IRI. Insights are provided via reports on Wine Australia's website, through presentations at sector conferences and workshops, the market insights hotline and the weekly Market Bulletin. |
| Ensure the sector has access to increasingly granular data. | • | Wine Australia provides disaggregated data where possible to help provide greater clarity in decision making. For example, the national vintage survey provides grape price data at the region by variety level and across the price spectrum. Export data is provided by variety and region, by price point and market. Market depletions data is provided at the most granular level possible. For example, for the USA, depletions data is reported by geographic location by country of origin, variety and price point. |

Strategy 4: Improving resource management and sustainability

| 2017-18 targets | | 2017-18 achievements |
|--|---|--|
| Sustainable resource management | | |
| Continue DNA profiling of the major public and private Australian grapevine germplasm collections with comparison of profiles against reference samples provided by international collaborators. | • | There have been delays in securing agreements with international germplasm reference collection holders. These are essential to the success of the project and the timeline will be extended to permit further negotiations and options to be explored. CSP 1501 |
| Progress on the development of a user-friendly 'activity- based costing' tool and a database for use by wineries to assess and benchmark production costs, model the impact of process efficiency improvements and inform decision-making. | • | A robust web-based winery collection system for participant information has been developed and is being populated by wineries. Development of case studies, sector journals, articles, and public reports is ongoing from the data collected. 2XE 1501 |
| Review the previous activities and determine optimal way to continue to support a balanced discussion on wine and health. | • | A review was undertaken, including stakeholder consultation. Final report describing previous activities through AWRI 2.2.3 accepted and <u>published online</u> . No ongoing investment required. A balanced discussion on wine and health will continue through the activities of other agencies. |
| Biosecurity, pest and disease management | | |
| Field test a radical pruning method designed to eradicate the exotic pest angular leaf scorch and include the method in the Viticultural Industry Biosecurity Plan. | • | A radical pruning method was tested at a trial site in New York State over two seasons and shown to successfully eradicate angular leaf scorch. Together with other outputs from the project, this provides a contingency plan for the sector in the event of an incursion, which will be included in the Viticultural Industry Biosecurity Plan to be updated in the next year. SAR 1201 |
| Endorsement by the Subcommittee on Plant Health Diagnostics of five new and two updated National Diagnostic Protocols for high-priority exotic pest threats to viticulture. | • | The seven protocols were submitted to the subcommittee over two years ago but are yet to be endorsed, largely due to a lack of resources. We are attempting to address the delay by working with our counterpart plant RDCs to manage and support the process. Protocols are described in <u>Final Report for DEP 1302</u> available on our website. |
| Provide recommendations to inform national disinfestation protocols following completion of disinfestation trials using alternative treatments to sodium hypochlorite against selected endemic phylloxera strains. | • | Recommendations to update disinfestation protocols were made to regulatory bodies and disseminated to grower groups at several meetings across Victoria and SA. A number of alternatives for treatment of footwear were tested, with one product effective on seven endemic phylloxera strains. This provides a viable alternative to sodium hypochlorite. DED 1701 |
| Outcomes available from an in-field trial using sniffer dogs to screen for phylloxera infestation. | • | A pilot study under controlled conditions using sniffer dogs for early detection of phylloxera showed promising results. The in-field trial has been delayed to evaluate the practicalities of using sniffer dogs in-field in phylloxera areas and the potential of new odour-sensing approaches for phylloxera detection. DED 1701 |
| Disseminate information to the sector on a quantitative real-time polymerase chain reaction assay for the detection of phylloxera DNA in soil, as a primary detection method. | • | A soil sampling and handling protocol for detection of phylloxera DNA in soil was developed. Information on the method has been disseminated to the sector via presentations, grower field days, media releases, newsletters articles and a journal article. Further information will be made available following consultation with state regulators and other relevant bodies and once the method is integrated into existing protocols and systems. PGI 1201 |

Strategy 4: Improving resource management and sustainability

| 2017-18 targets | | 2017–18 achievements |
|---|---|---|
| Deliver workshops and disseminate new information on improved vineyard spraying and drift reduction technologies, to optimise coverage and reduce spray buffer zones. | • | Information on the effects of spray nozzle selection, air velocity and spray pressure, tank mix composition, adjuvants and sprayer design on spray efficiency and drift potential was disseminated to growers at workshops and forums in several regions. Further information and tools will be made available when the current APVMA regulatory reform process regarding 'no-spray' buffer zones has been completed. UQ 1201 |
| Initiate project to develop and evaluate a PACE (pesticide adjusted for the canopy environment) system for vineyards, using LiDAR and 4D canopy imaging sensors. | • | A project initiated within the Rural R&D for Profit Program is testing the performance of a LiDAR sensor on a multi- head spray unit, to develop a PACE system that can turn sprayer heads on and off independently, according to the detection (or absence) of grapevine canopy and can vary the rate of spray application in real time, according to canopy density. Significant chemical savings have been demonstrated on canopies at different developmental stages. UQ 1601 |
| Evaluate in vitro methods for testing botrytis and powdery mildew fitness; provide further information on the relationship between laboratory phenotype and genotype, and how these relate to the field efficacy of fungicides. | • | This project is unravelling the complex relationship between fungicide resistance, fitness, and genetics of fungal grapevine pathogens using a combination of field sites, greenhouse experiments and in vitro testing. The ultimate aim of the work is to use improved knowledge of resistance mechanisms to strategically manage fungicide chemistries in the vineyard. SAR 1701-1.2 and AWR 1701-4.5.1 |
| Initiate project studying the impacts of regional climate diversity on trunk disease (eutypa and botryosphaeria) incidence and management. | • | A new project is building on previous work to develop management strategies for trunk disease in different climates. This includes optimisation of wound coverage and remedial surgery techniques and evaluating the role of grapevine propagation in the spread of trunk disease pathogens. Rootstock and clonal trials have already identified a number of grapevine clones with potential tolerance or resistance to trunk disease. SAR 1701-1.1 |

Strategy 5: Improving vineyard performance

| 2017–18 targets | | 2017–18 achievements |
|---|---|--|
| Enhancing grapevine and rootstock performance | | |
| Further refinement of molecular methods and genetic markers for use in plant breeding trials to incorporate genes for fungal disease resistance, salinity, heat and drought tolerance, and resistance to phylloxera and root- knot nematodes. | • | Marker-assisted selection technology, in combination with the rapid flowering microvine, has been used to rapidly introgress powdery and downy mildew resistance genes from wild Chinese Vitis species into Vitis vinifera breeding lines, which will be used to develop second generation mildew-resistant varieties with increased durability of resistance in the field. CSP 1301 |
| | | Genes involved in sodium exclusion have been mapped and characterised. Candidate genes for chloride exclusion traits have also been identified. CSP 1302 |
| | | Field trials identified three new rootstocks that maintain productivity in replant situations and produce fruit with acceptable composition and are resistant to selected root knot nematode and phylloxera isolates. CSP 1304 |

| Strategy 5: Improving vineyard performance | | |
|--|---|---|
| 2017-18 targets | | 2017-18 achievements |
| Provide information on the field performance of high density plantings of 'no spray', 'no prune' vines, bred for their resistance to mildews. | • | During a three-year trial in the Barossa Valley, mildew infections were not observed on the vines, despite no fungicide sprays being applied at the field site. The 'no prune' scion selections also performed as expected and no pruning or canopy management was required for these selections, either on own roots or grafted onto rootstocks. CSP 1305 |
| Continued development of genetic transformation techniques to test and confirm the role of key resistance genes important in grapevine breeding lines. | • | Development of genetic transformation methods provided vital support for a range of current plant breeding studies on biotic and abiotic resistance traits, allowing testing and confirmation of gene function for a range of stressors. CSP 1306 |
| Efficient and sustainable vineyard management | | |
| Release results and recommendations from a five- year field evaluation of the relative performance of conventional drip irrigation versus sub-surface drip irrigation methods, with regard to rootzone salinity, grape yield and water-use efficiency. | • | Completed. Final report accepted <u>published online</u> . Results showed that under non-restricted irrigation allocations there were no water use savings or improvements in rootzone salinity using subsurface irrigation. The yield from subsurface irrigated vines was significantly lower than the standard drip system. Only under severely reduced irrigation volume was there any yield advantage with subsurface irrigation. This is a significant outcome that is contrary to previous findings. Several trade and newsletter articles published. SAR 0902 |
| New information available on the impact of native under- vine plants, on grape yield and soil microbe populations in the rhizosphere. | • | At four South Australian sites, annual pasture legume and grass undervine cover crops generated yields and financial gross margins equivalent to or greater than undervine herbicide controls. Microbial populations (bacteria and fungi) of soil and the grapevine rhizosphere were analysed by next-generation sequencing. Some significant differences between grapevine rhizosphere populations of different vineyard treatments were observed. Correlations with the observed productivity improvements will be investigated as part of a new project commencing in 2018–19. UA 1303 |
| Complete a field evaluation of yield forecasting software and a prototype smart device for use with a tablet/ phone and compare against best practice 'manual' yield forecasting methods. | • | A system for yield estimation was trialled, using images captured with consumer video and smartphone cameras. The system, based on counting florettes or berries per shoot, outperformed manual yield estimation at all growth stages, achieving 5.5 per cent error at flowering, 14 per cent at pea-sized and 12 per cent at harvest. DPI 1401 |
| Progress towards optimised yield prediction models based on statistical analysis of historic vineyard data. Create a preliminary user interface that combines the models with a centralised database of vineyard phenological and weather data. | • | Development of yield estimation models is well advanced, including testing with data from season 2017-18. The user interface is currently being developed, in collaboration with a commercial partner that provides existing smartphone apps for agri-businesses, across multiple platforms. MQ 1401 |
| Initiate proof-of-concept project to evaluate the feasibility of Raman and FT-NIR spectroscopic scanning methods for the detection of inflorescence primordia (the cells from which the leaves and berries grow) in grapevine buds and investigate their potential for determining bud fruitfulness and providing an early prediction of yield. | • | Following practical evaluation, NIR was the preferred spectroscopic method for continued development in the project, with the Raman method proving unfeasible. An initial model correlating bud dissection and NIR imaging has been developed, with the model predictions correlating closely with the actual values. A prototype portable hand-held UV-Vis-NIR scanning device is being trialled in the field on buds in situ and is producing promising results when compared with bud dissection data to predict final bunch development. UT 1601 |

| Strategy 6: Improving winery performance | | |
|---|---|--|
| 2017-18 targets | | 2017–18 achievements |
| Enhancing yeast and bacterial performance | | |
| Progress towards the development of novel yeast strains and malolactic bacteria for improved fermentation performance and flavour profiles; a better understanding of nutritional drivers and dissemination of new knowledge to winemakers. | • | Final reports for <u>AWR 1301</u> , <u>AWR 1302</u> and <u>AWR 1303</u> and <u>UA 1302</u> have been accepted and published online. A range of ways to improve fermentation outcomes are reported and will translate into further improvements to sustainable and economical wine production with enhanced or consistent wine quality. |
| Disseminate updated information on brettanomyces control strategies and detection methods. | • | Completed. Final report has been accepted and <u>published</u> <u>online</u> and development of extension material is ongoing. AWR 1304 |
| Efficient winery production | | |
| Release a set of practical guidelines for winery wastewater treatment plant operators to help maximise plant efficiency and reduce the likelihood of plant failures. | • | Final report has been accepted and <u>published online</u> and development of extension material is ongoing. |

Strategy 7: Market access

| 2017–18 targets | | 2017–18 achievements |
|--|---|---|
| Market access | | |
| No new unjustified technical impediments to trade are introduced in existing markets and the APEC Wine Regulatory Forum makes progress in all five priority areas by the conclusion of its five-year program in 2018. | • | We identified the analysis and certification regime being contemplated by Thailand as being a significant and unjustified trade impediment and worked closely with international partners to delay the introduction of this draconian requirement. |
| | | The APEC Wine Regulator's Forum proficiency testing program has now undergone three iterations, the model wine certificate developed through this forum has now been adopted, four regulatory compendia have been completed, technical seminars have been conducted and access has been provided to regulators across the APEC region to the technical database established and maintained by FIVS. Thus progress has been made in relation to all five priority areas. |
| No Australian wines that comply with the advice provided through our Export Market Guides are justifiably rejected by international authorities. | • | We have not been made aware of any Australian wine being justifiably rejected by regulatory authorities in international markets. |
| The Australian Government is well informed in any action it takes regarding the restrictive trading measures recently introduced by various Canadian provinces. | • | We have provided support to Department of Foreign Affairs and Trade (DFAT) in the gathering of evidence for action they are contemplating regarding the practices of British Columbia, Ontario, Nova Scotia and Quebec. |
| Provide appropriate advice to the Australian Government in relation to the three key agreements most likely to be progressed in 2017-18: the Regional Comprehensive Economic Partnership and FTAs with Indonesia and India. | • | We have drafted and provided DFAT with a document addressing various technical impediments to the international trade in wine, intended to be used as an Annex to various FTAs currently being negotiated. |

| Strategy 8: Building capability | | |
|---|---|--|
| 2017–18 targets | | 2017-18 achievements |
| Developing people | | |
| At least 15 members of the grape and wine community commence leadership and personal development training in 2017–18. | • | Some 16 members of the grape and wine community graduated from the Future Leaders program in October 2017. |
| The capacity of the next generation of researchers is developed through at least six scholarships for PhD and Masters study; travel support is extended to at least eight incoming or outgoing scholars; and at least six early career researchers work with Australia's wine regions to lead a co-funded locally-focused research project. | • | Six new PhD scholarships were awarded in December 2017. Travel support was extended to 10 outgoing scholars. Three early career researchers finalised regional specific projects under the Incubator Initiative. In June 2018, another five early career researchers were selected to work with our Regional Program partners on projects under the Incubator Initiative. |
| Strategy 9: Business intelligence and measurement | | |
| 2017-18 targets | | 2017–18 achievements |
| Business intelligence | | |
| Produce, deliver and communicate region-specific statistics and reports to support business decisions. | • | The Australian wine sector was provided with a wide range of reports and statistics including: |
| Produce, deliver and communicate market-specific statistics and reports for the sector that guide business decisions and our investments in marketing and RD&E. | | 2017 National Vintage Report the 2017 Small Winemakers Production and Sales Survey Report 2017 Production, Sales and Inventory Report quarterly Export Reports Market Insight reports on key markets such as the UK, the USA, Canada, China and Australia, and regular analysis through the weekly Market Bulletin. |
| Deliver targeted presentations aimed at increasing the awareness of the global wine sector information that is available. | • | Presentations were delivered at various wine sector forums such as the Murray Valley Winegrowers Information Forum, WCA webinars, NSW Innovators Forum, Exporter Update and Regional Roadshows. |
| Provide timely and accurate responses to ad hoc questions. | ٠ | Over 2000 queries were responded to in a timely and accurate manner. |
| Monitoring and evaluation | | |
| At least 75 per cent of stakeholders indicate a high level of satisfaction with the services provided across the business. | • | Some 87 per cent of stakeholders indicated a high level of satisfaction with the services provided across the business. |
| Benefit-cost analysis indicate 75 per cent of programs measured achieve a positive return on investment. | • | Investments in Phylloxera soil sampling strategies, managing root zone salinity and Extension all yielded positive results at a 5 per cent discount rate, with benefit- cost ratios ranging from 1.8 to 4.2. |

| Strategy 10: Extension and adoption | | |
|--|---|---|
| 2017-18 targets | | 2017-18 achievements |
| Extension and adoption | | |
| R&D project assessment criteria includes evaluation of the extension plan and the likelihood of adoption by levy payers. | • | The extension and adoption potential of all R&D project applications submitted in 2017–18 were assessed and this score contributed to the overall ranking of the proposals. |
| The Regional Program delivers at least 80 per cent of the planned activities across the 11 regional clusters. | ٠ | More than 80 per cent of planned activities have been delivered by the regional clusters. |
| At least 85 per cent of survey respondents who attend workshops provide an overall rating of at least 4 out of 5. | ٠ | Survey feedback collected at roadshows and seminars delivered by AWRI indicates 91 per cent of participants rated them as good or excellent. |
| At least 80 per cent of survey respondents indicate that information provided at workshops is useful to their business and/or for their decision making. | ٠ | Survey feedback collected at roadshows and seminars delivered by AWRI indicates 84 per cent found the information useful. In terms of intention to adopt, 56 per cent of participants indicated they would seek further information and discuss adoption with peers and other key influencers. |

2017-18 targets 2017-18 achievements **Corporate Affairs** Timely, fit-for-purpose, accessible and appropriately We continued regular communications with the sector and targeted wine sector information and analysis is available engaged with stakeholders through 86 e-newsletters and to the wine sector through a range of channels. 63 media releases. Our monitoring measured 9682 articles about Wine Australia in print, broadcast and online media. Subscriptions to our RD&E e-news increased by 24 per cent to 2713. Subscriptions to our Weekly News Bulletin rose 178 per cent to 2386. Open and click rates exceed industry averages. We produced and widely distributed brochures for stakeholders explaining how Wine Australia can help their businesses, explaining the levy system and explaining record keeping for the Label Integrity Program. Sector engagement Engage in effective two-way dialogue and understanding We delivered a program of engagement activities across with national, state and regional representative bodies. 2017-18, including state and regional wine strategy development. We provided support to regions involved Increase sector and stakeholder awareness of our in issues that potentially threatened the reputation of activities and outcomes. Australian wine.

Achieved
 In progress / partially achieved
 Not achieved

Strategy 11: Corporate affairs and strategy

| Strategy 12: Corporate services | | |
|---|---|---|
| 2017-18 Targets | | 2017-18 achievements |
| Finance and administration | | |
| Provide the business with timely and accurate reporting to enable effective decision-making, financial management and budgetary control. | • | Value added information, including budgets and forecasts, are provided to facilitate informed and timely decision making. |
| Budget preparation, management and reporting, including quarterly reviews and reforecasting Annual financial statements and audit sign off Internal audit reviews completed as per Internal Audit plan Adhere to operating reserves policy | | Annual financial statements signed off by Audit Committee and Board. |
| | | Internal audits completed in accordance with schedule and identified areas for improvement implemented. |
| | | Balance of reserves at 30 June, 2018 of \$15.4 million were above \$3 million minimum requirement. |
| Ensure our commercial needs are reflected in our contracts. | • | We examined our legal review and procurement processes resulting in the development of a new procurement policy. The new policy encourages the use of simple precedent contracts drafted on fair commercial terms that clearly define deliverables and milestones. Significant efficiencies have been realised by this process. |
| Adherence to Human Resources policies | ٠ | HR policies were reviewed and key policies such as travel amended and communicated to staff. All policies are now available via the intranet. All policies were adhered to. |
| People and culture | | |
| Integrated internal communications are used to build engagement and disseminate information. | • | We share our values, what's happening and what's important using a variety of internal communications tools, including face-to-face and video updates, team and one-on-one meetings, social media and email. |
| Personal development plans completed and implemented by each team member. | ٠ | Personal development plans were developed and a wide range of personal development activities were funded. |
| Compliance with local and international employment legal requirements. | • | All statutory requirements were complied with. |
| ICT | | |
| In 2017–18, we will complete the rollout of Microsoft OneDrive and deliver a new Data Warehouse | • | Microsoft OneDrive and new Data Warehouse were both completed. |
| | | Additionally, a new intranet was launched on our Office 365 platform. |
| Implement a national release of a data collection system. | • | A proof of technology was successfully completed using an alternative data collection system. |
| We will maintain ICT systems for our team. | • | All services were delivered as planned except for an overnight outage during November 2017. |

| Export and Regional Wine Support Package | | |
|---|---|--|
| 2017-18 targets | | 2017–18 achievements |
| Program 1 Accelerating growth in international demand | | |
| Benefit-Cost ratio | | |
| Achieve a benefit-cost ratio (BCR) of greater than 5:1 across the whole package. | • | Current benefit-cost ratio will not be available until the mid-term review is completed. |
| Improved demand for Australian wines in key markets | | |
| Australian wine exports grow by 7-8 per cent CAGR per annum by 2019-20 to A\$2.8 billion overall. | • | Total export growth tracking positively to end of Package target driven predominantly by growth in China (\$2.71 billion at end of 2017-18). |
| Australian wine exports to USA grow by 6 per cent CAGR per annum by 2019–20 to A\$488 million (at 0.85 AUD:USD). | • | Increase in exports of fine wine has been offset by declining USA sales in the sub-\$US10 where Australia has held market share (\$423 million at end of 2017–18). |
| Australian wine exports to China grow by 15–17 per cent CAGR per annum by 2019–20 to A\$980 million (at 5.8 AUD:CNY). | • | Exports to China reached \$1.12 billion at the end of 2017–18. |
| Australia's volume share of the imported wine market grows in fine wine segment (\$US10 a bottle and above) in the USA. | • | International Wine and Spirits Record (IWSR) data shows that share of market had grown from 4 per cent to 5 per cent with the target being 6 per cent. |
| Australia's volume share of the imported fine wine market (CNY90 per bottle and above) grows in fine wine segment in China. | • | IWSR data shows share at end of 2017–18 was 23 per cent compared with the Package target of 18 per cent. |
| Improved bottled FOB value by 2019-20 | | |
| | | |
| Baseline bottled FOB at commencement of Package was \$5.46 with a target of \$5.94 | • | FOB Value growth tracking positively to end of Package target reaching \$5.87, driven predominantly by growth at premium price points in China |
| Baseline bottled FOB at commencement of Package was \$5.46 with a target of \$5.94 Higher winegrape price by 2019-20 | • | FOB Value growth tracking positively to end of Package target reaching \$5.87, driven predominantly by growth at premium price points in China |
| Baseline bottled FOB at commencement of Package was \$5.46 with a target of \$5.94Higher winegrape price by 2019-20At commencement of Package average winegrape price was \$565 per tonne with a goal of \$590 per tonne. | • | FOB Value growth tracking positively to end of Package target reaching \$5.87, driven predominantly by growth at premium price points in China The National Vintage Survey for 2018 reported an average price of \$609 per tonne - the highest level since 2008. |
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Wine Australia for Australian Wine