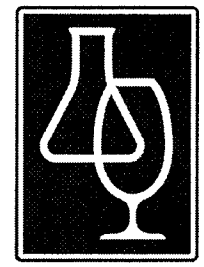

The Australian Wine Research Institute Ltd

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Submission to the Productivity Commission
Review of Rural Research and Development Corporations
June 2010

Scope

This submission focuses on two aspects of the Research and Development Corporation (RDC) model:

1. The effectiveness of the model from the perspective of a major recipient of funds from the Grape and Wine Research and Development Corporation (GWRDC); and
2. A review of investments made by the industry prior to and since the formation of the GWRDC in the industry's own research, development and extension company, the Australian Wine Research Institute (AWRI).

Other wine industry organisations, public and private, most notably the GWRDC itself are best placed to comment on other aspects of the RDC model as it impacts on the wine industry.

About the AWRI

The Australian Wine Research Institute (AWRI) is an organisation dedicated to the advancement of the Australian grape and wine industry. Established in 1955 and governed, operated and largely financed by Australia's grape and wine producers, the AWRI is the engine room of precompetitive research, development, extension and technical innovation for the industry. The AWRI's purpose is *to contribute substantially to the ongoing success of the Australian wine industry*, a purpose that has been constant since AWRI's inception.

The AWRI's activities can be broadly grouped into four key functions:

1. **Research**: Fundamental and applied research into wine composition, quality and sensory characteristics, and communication of the findings. Specific areas of expertise include chemistry, microbiology, engineering, packaging, sensory science, compound analysis, spectroscopy, oenology (winemaking) and viticulture (grape growing);
2. **Development**: Translating and applying research, wherever it is undertaken, into useable applications for adoption by grape and wine producers;
3. **Extension:** Communication of R&D and practical solutions through a range of knowledge-dissemination activities including articles in trade journals and peer-reviewed publications, the AWRI website, regular in-field seminars and workshops in grapegrowing/wine regions (our aim is to visit more than 30 of Australia's major wine regions at least once every year) and technical troubleshooting services.
4. **Commercial:** Fee-for-service analytical facilities, 'market-pull' proof-of-concept studies, product benchmarking and technical validation, export certificates.

AWRI's unique relationship with industry practitioners, academia and other business partners has contributed to the success of the Australian wine industry. The AWRI is currently involved in more than 60 collaborative research projects with private companies, universities and other research providers. The organisation is also part of major collaborative ventures; most recently, the Wine Innovation Cluster (WIC). WIC is the latest physical infrastructure and collaboration concept at the Waite Precinct, bringing together four leading agencies in the grape and wine sector – AWRI, CSIRO Plant Industry, the South Australian Research and Development Institute (SARDI) and the University of Adelaide – with the aim of delivering results for the wine industry that would otherwise not be possible as stand-alone agencies. The collaboration has fostered several research projects of importance to the wine industry including a project which aims to optimise the carbon and water economies of grapevines during challenging climatic conditions.

Effectiveness of the RDC model

From a position of relative obscurity in the global wine world in 1955, Australia has established an international reputation for producing quality table and fortified wines, delivering distinct and consistent wine and achieving major success in export markets. Australia is now the world's sixth largest wine producer and fourth biggest exporter, selling to more than 100 countries[1]. Technical innovation is widely regarded as a major contributor to that success, and research, development and extension are recognised as key competitive advantages of the Australian wine industry. Based on a

[1] Australian Wine and Brandy Corporation WineFacts February 2009.

recent study conducted among consumers in the US, innovation has become a key selling point for Australian wine and an intrinsic part of our national character[2]. Many other wine-producing countries view Australia's grape and wine innovation system, combined with the presence of an industry-owned research, development and extension entity (the AWRI), as being the benchmark standard.

The AWRI has a close working relationship with its RDC, the GWRDC. The two parties operate under a multi-year investment agreement which combines medium-term stability on funding with short-term flexibility on projects, and comprehensive quarterly reporting to provide opportunity for oversight. This model will provide a good template for future agreements between the parties. A summary of recent highlights produced under that investment agreement are provided in Appendix 1.

The GWRDC has the responsibility to balance the research priorities of industry with the broader priorities of Government and the research opportunities arising from the research community. Each individual stakeholder, including industry bodies and industry practitioners have the opportunity to influence – but not control – priority-setting and distribution of research funding. AWRI believes that it is essential that the GWRDC continue to operate from its position of strict impartiality. Furthermore, a dedicated RDC provides both the wine industry and Government with the vehicle to ensure public accountability and independence.

A fundamental question to be asked of all RDC's is 'what value does the Australian Government matching contribution add?' From the perspective of the AWRI, the Australian Government contribution, together with the government's role in setting priorities for RDC's, ensures that 'industry benefit' is not the only driver of research projects – rather, that social and environmental value is critical and that it must be at the forefront in the thinking of organisations like AWRI when envisaging the potential applications of their research and 'a day in the life of the end user'. The public benefit and environmental and/or social impact of AWRI's activities are now more 'front of mind' than was the case previously. This 'spill over' benefit to rural and regional communities and the environment can be directly attributed to the involvement of the Australian Government in the RDC program.

Financing of grape and wine industry research, development, extension and technical innovation

[2] Wine Australia: Directions to 2025 May 2007.

The formation of the AWRI in 1955 marked the commencement of a framework for regular, systematic, precompetitive research for the Australian wine industry.

Financial support for the AWRI came in the form of annual grants from the Australian Wine Board [now the Australian Wine and Brandy Corporation (AWBC)], CSIRO, and interest earned from the investment of £500,000 in the Wine Research Trust Fund set up by the Commonwealth Government. By 1966, the amount invested in the Wine Research Trust Fund was $1,000,000. Funding from the AWBC and CSIRO continued until 1986.

On 1 July 1986, the statutory Grape and Wine Research Council (GWRC) was formed. At that time, the Minister of Primary Industry directed the GWRC to ensure that the "AWRI remained financially viable while it continues to meet the industry's research needs". The GWRC introduced a formal levy system where grape and wine producers paid levies which were matched by the Federal Government. This system spurred the beginning of a major growth period of total beverage wine production by the Australian wine industry (Figure 1). Prior to the introduction of the GWRC, the AWRI, as the only scientific institution specialising in wine science, was the sole recipient of industry research levies. However, following the establishment of the GWRC, an increasingly diverse range of research organisations were engaged to provide R&D services. The level of funds supporting R&D at the AWRI continued to grow, but the relative proportion of available funds allocated to the AWRI began to decline (see Figure 2).

Subsequently, all research councils were corporatised, resulting in the formation of the Grape and Wine Research and Development Corporation (GWRDC) in 1991 under the Primary Industries and Energy Research and Development Act, 1989. By 1991, the proportion of industry funds being invested at the AWRI had reduced to 70% (Figure 2), with the remainder invested in other R&D providers.

The ~20 year period since 1991 has seen a significant growth in the range of R&D organisations receiving investments from the GWRDC. In the 2008/2009 financial year, GWRDC funding was granted to some 25 individual R&D organisations. The AWRI is allocated about 40% of available funds, a proportion that shows a steady decline since the time prior to the formation of the GWRC.

Two important observations can be drawn from this investment timeline:

1. As the Australian wine industry has grown, the GWRDC has engaged an increasingly diverse range of research, development and extension organisations; it has not simply invested in

the industry's-own research, development and extension entity, AWRI. This trend can be clearly seen in the significant reduction in proportional funds allocated to AWRI over time. Widening the distribution of research funding suggests that the GWRDC has i) adopted a risk management approach to its investments by diversifying its investments and ii) operated impartially when making its investment decisions, an important feature of the RDC model, taking into account the priorities of both industry and government – if that was that not the case, it could be expected that GWRDC would've invested more of the available funds in the in industry's own institute, the AWRI. While political forces in industry and in Government have influenced this overall trend, including the investment decisions made on a state or regional basis, the pattern has persisted through several changes in the GWRDC Board and management.

2. The growth in the number of R&D organisations seeking to participate in grape and wine research has seen the development of some niche expertise, facilitating collaboration between organisations with complementary skills (for example the Wine Innovation Cluster on the Waite Campus). Whilst striking the right balance between (i) retaining critical mass in a specialist wine science institute such as the AWRI and (ii) encouraging diversity and accessing skills in non-traditional disciplines is a continuing challenge, the current and forecast downturn in the Australian wine industry's fortunes combined with the concomitant reduction in available funds that result from such a downturn would suggest that the next few years are a time to consolidate and maintain core competencies while reducing the number of providers.

Interestingly, many grape and wine industry practitioners as well as others in government and the general community believe that their entire grape and wine research levy is paid to the AWRI. Many other investments made by the GWRDC are either not as visible or may not be considered immediately useful. The AWRI remains 'the first port of call' in any industry emergency and is held accountable by many for the success or failure of the entire industry's precompetitive investment portfolio. When these factors are considered in light of the 20-year investment trend, it is the AWRI's view that the steady decline in proportional investment made at the AWRI, if continued into the future, runs the real risk of jeopardising AWRI's critical mass and in so doing the risk of diluting the value of the prior investment in the AWRI by both Federal and State Governments and the regional and rural communities.

On balance, the Australian wine industry's dedicated RDC continues to provide an independent, impartial mechanism to invest in R&D outcomes for the industry. Combined with matching

government funds and government input into priority setting, the GWRDC provides a system with public accountability for investment in an industry that supports the economy of Australia, delivering tangible results for the grape and wine sectors and communities across the country.

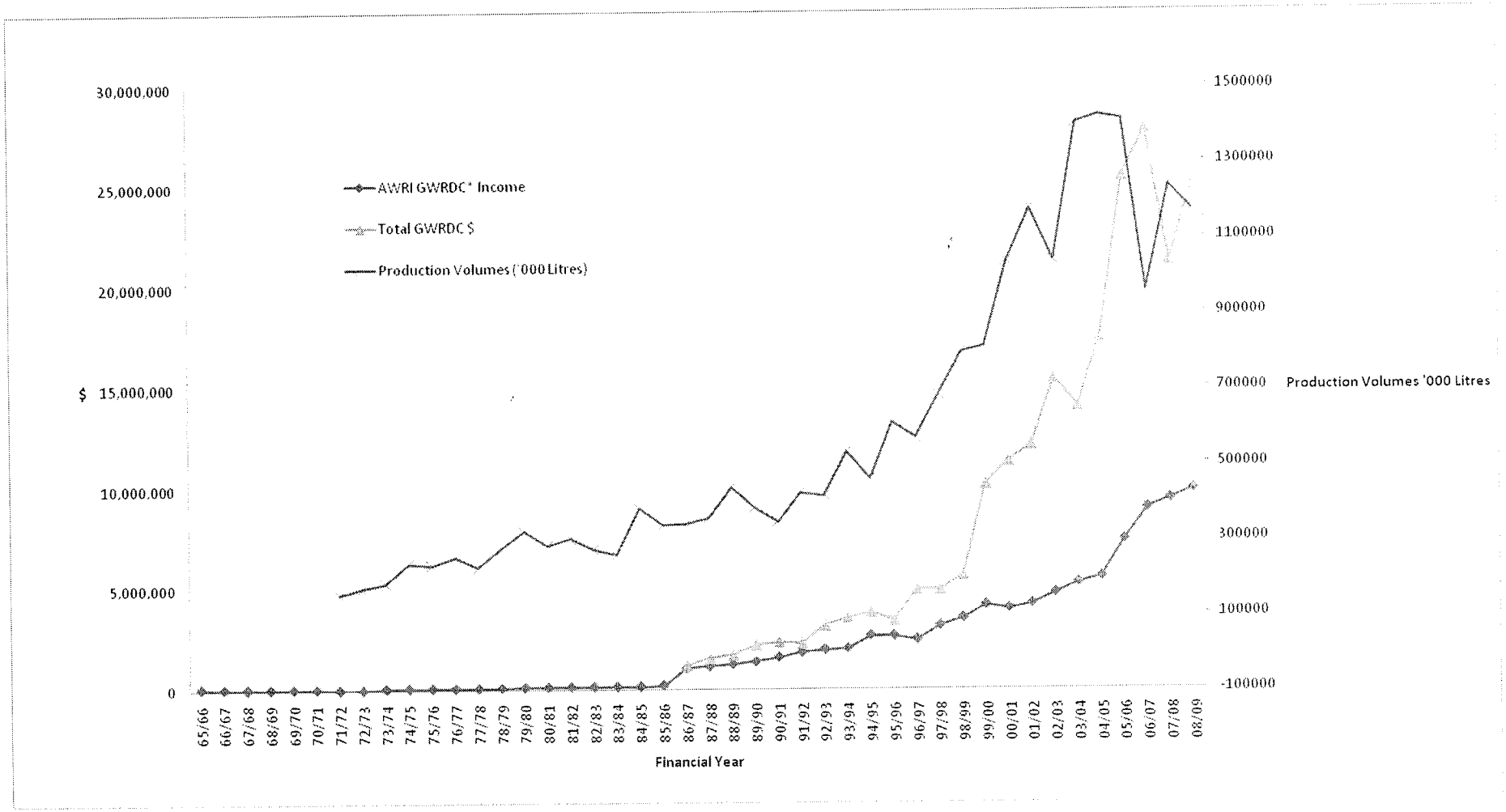

Figure 1. Beverage wine production volumes^, Grape and Wine Research and Development Corporation (GWRDC) funding# and GWRDC funds received by The Australian Wine Research Institute* by financial year (1965-2009).

^Beverage wine production volumes (includes sparkling wine and production from unfortified wine made in the specified vintage year). Figures published by the Australian Wine and Brandy Corporation, 24 February 2010.

Combined industry levies and Commonwealth contributions reported in GWRDC Annual Reports (1986-2009)

* Figures prior to 1986 are income received from the Wine Research Trust Fund and the Australian Wine Board (now the Australian Wine and Brandy Corporation).

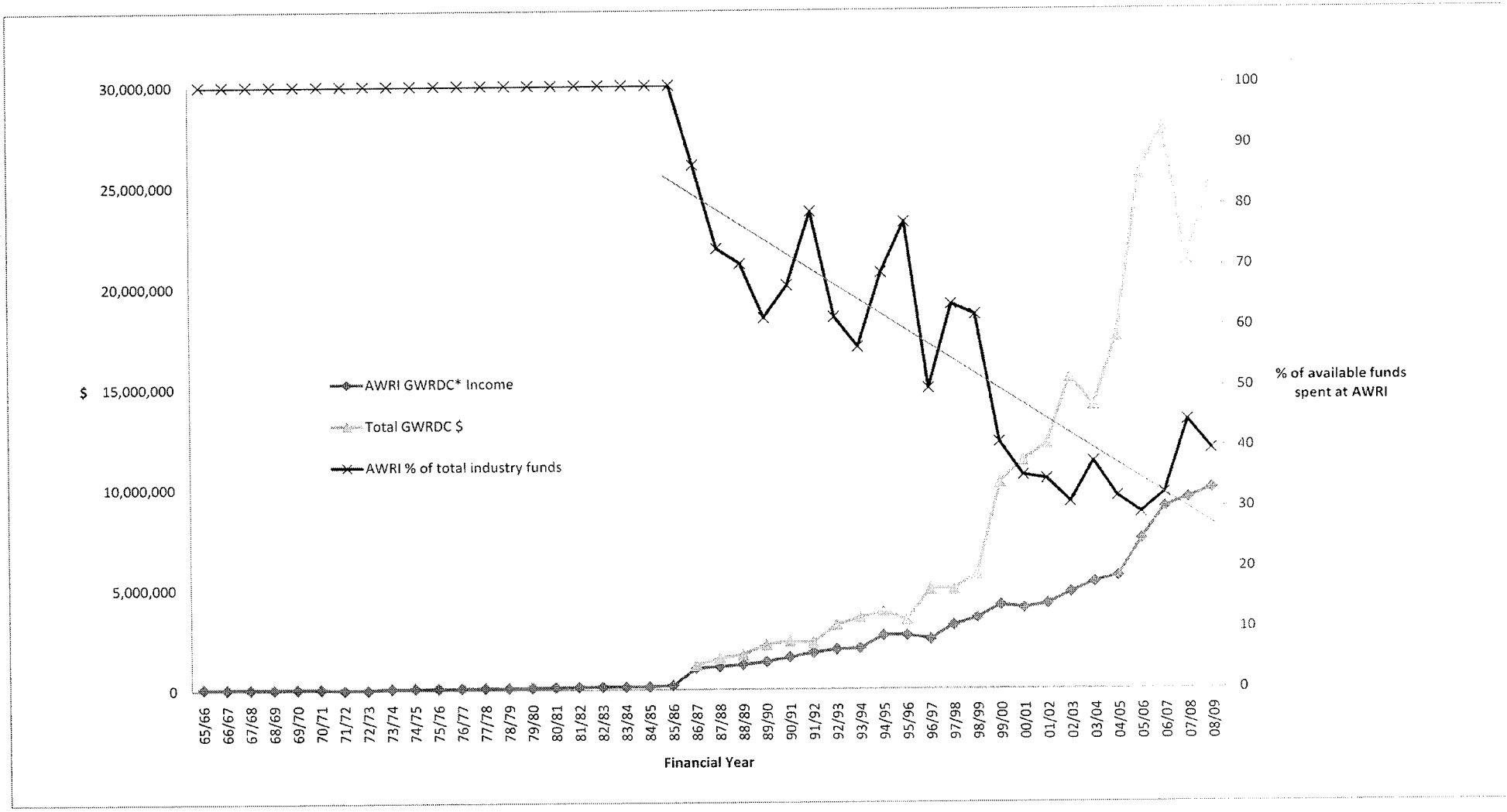

Figure 2. Proportion of Grape and Wine Research and Development Corporation funding invested in The Australian Wine Research Institute (AWRI), Grape and Wine Research and Development Corporation (GWRDC) funding# and GWRDC funds received by the AWRI* by financial year (1965-2009)

Combined industry levies and Commonwealth contributions reported in GWRDC Annual Reports (1986-2009)

* Figures prior to 1986 are income received from the Wine Research Trust Fund and the Australian Wine Board (now the Australian Wine and Brandy Corporation).

Appendix 1. Summary of recent highlights from the AWRI's activities (2006-2009)

- In a world first, the genome sequence of a wine yeast was published by AWRI scientists in 2008. This knowledge is leading to fresh and exciting insights into what makes a wine yeast 'tick', and will provide a powerful resource for wine yeast strain development programs.
- The launch of AWRI's 'tannin portal', a tool to enable Australian wine producers to measure and benchmark tannin levels between varieties, vintages and regions.
- The provision of the routine analysis of low molecular weight 'stinky' sulfur compounds in closure and shelf-life trials, yeast development projects and for external clients.
- Two new approaches to assess smoke taint in grapes and wines. The first measures smoke intensity in a vineyard during a bushfire event and uses the smoke intensity data to assess the extent to which smoke has impacted on grape quality. The second identifies guaiacol precursors in grapes using stable isotope techniques as precursors are good candidates for markers to assess the degree of smoke-affect. It is believed that a combination of the two approaches, along with traditional approaches, will allow winemakers to better understand the likelihood of smoke taint in grapes and resultant wine following bush fires in areas surrounding vineyards.
- The confirmation that proteins responsible for protein haze can be hydrolysed at winemaking temperatures by a protease (BcAP8) from *Botrytis cinerea.* This is a significant accomplishment considering that such a protease has been actively sought by research groups all over the world since the 1960s. This project will enable wine makers to reduce the need for, and cost of, bentonite fining of white wines.
- Calibration models were developed using a portable Bruker ATR-mid-infrared spectrosphotometer for ammonia, yeast asimilable nitrogen (YAN), total soluble solids and pH in juice and fermentation samples.
- Information for grape growers demonstrating that berry composition, wine composition and wine quality can be influenced by pruning treatments in the vineyard and that the smallest berries do not always produce the highest quality wines.
- Using non-GM strategies, novel yeast strains with the ability to ferment robustly while producing minimal or undetectable quantities of hydrogen sulfide have been developed for use by the industry.
- Genetic differences across ten strains of the malolactic bacterium Oenococcus oeni were determined using state-of-the-art gene chip technology;

- Confirmation that proteins responsible for protein haze can be hydrolysed at winemaking temperatures by protease (BcAP8) from Botrytis cinerea. The objective of this project is to reduce the need for, and cost of, bentonite fining of white wines.
- Consumer intelligence on low level oxidation, TCA or reductive flavours which can strongly influence consumers.
- A bottling and storage trial using Sauvignon Blanc wine was competed, providing information about the impact of closure choice on wine development and the effect of copper fining.
- 21 days of roadshows in 11 Australian wine-making zones and regions in 2009.
- >6000 calls for technical advice and troubleshooting in 2009.
- Distribution of 11,000 copies of AWRI's annual publication "Agrochemicals registered for use in Australian viticulture" commonly referred to as the "Dog Book".
- In conjunction with the Australian Wine and Brandy Corporation, the AWRI hosted wine education events in Europe and Asia in 2009 and 2010. These events illustrated the level of innovation and technical excellence to an international audience of wine sector opinion leaders.
- Technical Review published six times per year with 2000 copies being printed and distributed.