

Volume 8 no 1
January-February 2002



COOPERATIVE
RESEARCH CENTRE
for
VITICULTURE

Newsletter



Geoff Kaine, Rob Walker, Deanne Burrows and Denise Bewsell.

Inside

- CEO's Report 2
- Insects the key to healthy vineyard 3
- New approach to nitrogen management 4
- CRCV supervisor wins postgraduate kudos; Fostering new research talent 5
- Research to Practice 6
- Viticare 7
- Minister visits CRCV 8

Cooperative Research Centre *for* Viticulture

Adelaide University

The National Wine and Grape Industry Centre (Charles Sturt University, NSW Agriculture)

The Australian Wine Research Institute

CSIRO

Department of Natural Resources and Environment, Victoria

Primary Industries & Resources, SA

The Australian Dried Fruits Association Inc.

Winemakers' Federation of Australia Inc.

Winegrape Growers' Council of Australia Inc.

Grape and Wine Research and Development Corporation

The Dried Fruits Research and Development Council

Wine Industry National Education & Training Advisory Council Inc.

Survey findings to help water conservation

Results from a survey of thousands of grapegrowers in the Murray-Darling Basin have been compiled and will be used to formulate a strategy for conserving precious water resources.

The research was conducted for the CRCV by **Geoff Kaine** and **Denise Bewsell** from the University of New England (Armidale) and **Deanne Burrows** from Natural Resources and Environment (Irymple) with funding from the Murray-Darling Basin Commission.

CRCV researcher Deanne Burrows said the survey results had given a clearer picture of the irrigation choices being made by growers and their main priorities and concerns.

'Reducing the amount of water used on vineyards is a major aim of this project, but until we had a better understanding of what factors were influencing growers and learned more about their needs, it was impossible to create a suitable strategy,' Deanne said.

The survey was sent to approximately 7000 irrigators in the Riverland, Sunraysia, Swan Hill and Murrumbidgee Irrigation Areas. About one-third of

grape growers completed and returned the survey.

The survey results revealed the age of the vineyard manager played only a small part in the decision to adopt pressurized irrigation and soil moisture monitoring. However there was some evidence that growers adopting Regulated Deficit Irrigation were more likely to have a higher level of education.

The main issues influencing the uptake of water-saving irrigation technologies were time and labour pressures and the grape quality required by the grower. 'Some of the feedback we got from growers was that if they were under time and labour pressures they are more likely to change their irrigation system. And a number of growers who were planning to redevelop their properties said they would install new irrigation systems as they redeveloped,' Deanne said. 40 per cent of growers used soil moisture monitoring to help with the timing of their irrigations. Growers with drip and underwire sprinkler systems were especially likely to use soil moisture monitoring.

continued on page 2

CEO's Report

At the end of 2001 the CRCV completed Stage 2 of the Commonwealth's Second Year Review. The Commonwealth undertakes

reviews of each of the Cooperative Research Centres across Australia during their second and fifth years to provide assurance that the Centre's remain focused on their original aims and objectives.

We will soon receive a detailed report from this Review and look forward to a positive report and recommendations that will improve the abili-

ty of the Centre to meet its industry-focused objectives.

This newsletter highlights the importance of sustainable viticulture. We are striving for outcomes that help growers achieve better grape quality and yield to enable them to remain competitive and viable. At the same time the long-term future of the industry is linked to the way we manage vineyards as part of the greater environmental landscape. Page one reveals the barriers to adoption of high technology irrigation systems. These results stem from a recent survey of growers in the Murray

Darling Basin and during the next year the CRCV will use this information to help growers use precious water resources more efficiently.

On page three you will read about a new biodiversity project and work being done on a salinity module in the CRCV's VineLOGIC computer support package.

The CRCV is supporting the research, training and professional development of a group of PhD students. We expect they will provide a strong technical and scientific support to our expanding industry. Currently we have 14 PhD students looking for professional placements. Industry experience is essential for giving our students a broad skill base and knowledge of the industry. I hope you will support this program and these enthusiastic young students. Lastly, I would also urge readers to revisit the CRCV's website at www.crcv.com.au. The comprehensive site has recently been updated to include a range of new information. Details and updates about all of the CRCV's research and education programs can now be found, as well as links to useful sites and a list of scientific articles.

Jim Hardie CEO



Jim Hardie



Commonwealth Stage 2 Review Panel Members Peter Wall, CRC Program Customer Service Officer Heather Carswell, CRCV Chairman Peter Barnes, Panel Chair Professor John Coghlan, CRCV Visitor Dr Shirley Lanning and CRCV CEO Dr Jim Hardie.

Newsletter

The Cooperative Research Centre for Viticulture Newsletter is produced bi-monthly. All contributions are welcome, especially reports from conferences, seminars and international trips.

Editorial: **Anne Cope & Sally Raphael**

Peter Fuller & Associates

212 Greenhill Road, Eastwood 5063

Phone: (08) 8271 6111

Fax: (08) 8271 6922

Email: anne.cope@peterfuller.com.au

Published by: The Cooperative

Research Centre for Viticulture,

Plant Research Centre,

Hartley Grove, URRBRAE SA

Phone: (08) 8303 9405

Fax: (08) 8303 9449

Your feedback welcome

We are always interested to know your opinions of the CRCV newsletter and its content about the Centre's research and education and training programs.

Please feel free to direct your comments to:

sally.raphael@peterfuller.com.au

or fax them to (08) 8271 6922.

water conservation *from page 1*

The report has identified different groupings of growers to enable research and extension programs to target their various needs. Strategies for assisting these groups to use less water and improve their grape quality are currently being devised for implementation in 2002. Details about these plans will be released soon.

Insects the key to a healthy vineyard

A new CRCV project is delving under ground to establish which insects are indicators of a healthy vineyard and how these insects are affected by various management practices.

The aim, according to CRCV researcher **Dr Linda Thomson**, is to give growers information that will enable them to choose vineyard management practices that do not harm the environment.

‘The project will address how canopy management, vineyard floor management and water management practices affect the health of the vineyard. The goal is to find vineyard practices that don’t compromise the quality of fruit, yield or natural environment,’ Linda said. The project to be conducted at LaTrobe University’s Centre for Environmental Stress and Adaptation Research (CESAR) and researchers including Linda and **Professor Ary Hoffmann** are collecting data to determine the existence of beneficial insects and other soil inhabitants.

‘We already have a fairly good idea about

which insects are beneficial and effective as biological controls. We will be hand sorting samples from vineyard plots to get an idea of what is there and in what numbers so that we can compare this data to different vineyard management practices,’ Linda said.

Data for the project will be sourced from a number of Viticare On-Farm Trial sites in the Yarra Valley. The effects of various management practices will be tested on insect populations and data will also be collected on vine performance.

‘The growers involved in the On-Farm Trials have been very helpful and supportive and have provided us with a great deal of information based on their observations of the insects they see in their vineyards and the fluctuations and changes they have noted,’ Linda said.

As the project was only in its first year, it would focus purely on the Yarra Valley, but may be expanded to include areas such as Sunraysia and the Coonawarra. ‘Because of differences in climate and geography and different problem pests,



Trichogramma carverae male. These small (<1mm) parasitoid wasps are of special interest in vineyards for the control of light brown apple moth and researchers would like to see these in high numbers.

we think it is highly likely that there would be differences in the kinds of insects found in different regions and the best indicators for a healthy vineyard would also vary,’ Linda said.

‘This is an important project because it is vital for us to measure how human intervention has impinged on biodiversity. We need to ensure human intervention is managed for the sustainability of the industry and the environment.’

Computer package to predict salinity impact

Research is on-track to deliver a ‘world best’ computer-based package for predicting the impacts of salinity on grapevines.

The package, being developed by **Dr Xike Zhang** and a team of CRCV scientists and consultants with Murray Darling Basin Commission funding, will be able to test salinity management strategies before implementation. These strategies can range from rootstock selection to irrigation methods.

Program leader **Dr Rob Walker** says that while salinity does not greatly affect maturation of grapes it can have a profound impact on yield of own-rooted vines and cost growers a lot of money. ‘This program means growers will be able to see what an increase in the salini-

ty of their irrigation water will do to their yields and also see how changing things like their irrigation scheduling or their rootstock might be used to increase their yields,’ he said.

Three field sites at Loxton (SARDI), Dareton (NSW Agriculture) and Merbein (DNRE) have been used as data collection sites at various times during the past 10 to 15 years. These results have been used by the VineLOGIC project team to validate the model and make modifications.

Field trial site data has in many instances matched the predictions made by the model. Where the data has not validated the model it has been possible to go back and consider why this is so and make the necessary changes.



Program leader Rob Walker and Xike Zhang.

Further comparisons between field trial results and the model will be made and the enhanced version of VineLOGIC with ‘salinity prediction’ should be available in 2003.

‘It is a tool that should be very useful for growers because it will give them support and confidence to make decisions for the sustainability of their properties and the environment,’ Rob said.

New appointment for transformation project

The CRCV's research project on the genetic transformation of grapevines with improved fruit quality has been boosted by the appointment of a tissue culture specialist.



Caption: Debra McDavid in the CSIRO Plant Industry tissue culture room.

Debra McDavid started at CSIRO Plant Industry, Adelaide, in June 2001 and has been working on the time-consuming task of transforming grapevines and maintaining existing cultures. The project had been delayed searching for a suitable

Technical Officer.

'Because it is a highly specialised position, it can be difficult to find people with the right skills. Debra has been working with tissue culture for 12 years and has spent the past three and a half years at the Yates tissue culture laboratory on the central coast of NSW. We have been very fortunate to attract such a skilled person to the CRCV project,' said Program Three Leader, **Dr Simon Robinson**.

The long-term aim of the project is to produce genetically modified grapevines with improved fruit quality, but in the short term, transformation techniques will mainly be used for research. This research is a powerful tool in unravelling the complex metabolic pathways involved in berry development and ripening. Increasing knowledge of these processes could identify management practices that will improve fruit. Pivotal to the success of this project is the production of transgenic grapevines. 'We have developed procedures for the transformation of grapevines and these are in use at CSIRO and Adelaide University. We are at the point where although the process remains time consuming, we can produce a significant number of transgenic vines,' Simon said. The process involves taking a grapevine embryo culture and transplanting known quality genes into the cell. After spending between 6-9 months in the culture laboratory, the new plant can be potted and grown in a glasshouse. It is another 2-3 years before the vine will produce fruit.

Note: No genetically modified organisms are used in the production of Australian wines.

There will be no commercial use of genetically modified organisms to produce Australian wine until both the industry and consumers can be satisfied that they are safe, of high quality and beneficial.

Model approach to nitrogen management

The browning of Sultana grapes in storage is a problem potentially linked to applying too much nitrogen in the field.

A CRCV research project is comparing a range of nitrogen regimes to give growers better advice on how to avoid this undesirable browning.

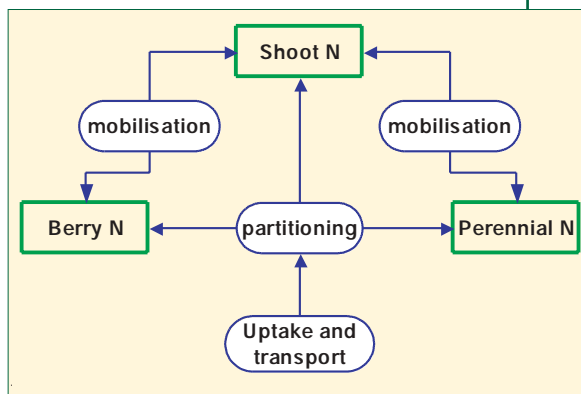
According to project leader **Dr Michael Treeby**, it can be a difficult balancing act for Sultana grape growers – too much nitrogen can lead to negative storage characteristics and not enough nitrogen can hamper yields.

'We are applying a variety of nitrogen regimes at a field site in Dareton, New South Wales and assessing the impact on final grape quality,' Michael said.

Researchers are hoping the results from the field trials will enable them to add greater value and usefulness to an existing nitrogen model that was developed from previous CRCV research findings. 'We have developed a nitrogen model, but there are some gaps we are trying to fill. For example, no two seasons are ever the same and changes in the weather and other conditions need to be factored in when designing a N supply regime for a season,' Michael said.

Ayalsew Zerihun, a CRCV post-doctoral fellow working on the project has been applying nine different nitrogen regimes to rows of vines and variations include applying nitrogen before flowering, not applying any nitrogen at all, applying a large amount and applying in smaller more constant amounts.

Once the data has been collected, the results will be compared with the existing information in the model and adjustments will be made.



Schematic of Nitrogen dynamics in grapevines described in the model being modified using data from a field trial at Dareton.

Supervisor of the Year

CRCV researcher **Dr Eileen Scott** has been named Adelaide University 2001 Supervisor of the Year, awarded by the University's Postgraduate Students' Association. Eileen supervises 14 students who are studying a broad range of research topics including grapevine diseases and management, diseases in horticultural and broad-acre crops and mycorrhizal fungi. She said it was an honour and surprise to receive the award.

'I do my best to help the students meet their expectations of this level of study, meet the expectations of the funding

body, if appropriate, and foster a supportive working environment,' she said. 'I also believe that while University is a time for developing research and written skills, it should also be fun and I am fortunate to have a lively and enthusiastic research group. They deserve much of the credit for the award.'

Eleven of Eileen's PhD students are funded in full or in part by industry, with two holding CRCV scholarships and two being current or recent holders of GWRDC scholarships.

'In addition to three years of research, the two CRCV students will undertake up to 6 months in industry placements and I look forward to seeing how this helps them develop industry awareness and skills to prepare them for future employment in the grape and wine industry.'

Eileen wanted to thank the staff who co-supervise with her, especially Belinda Stummer, Trevor Wicks, Sally Smith and Margaret Sedgley, and the Department of Applied and Molecular Ecology for support.



Eileen Scott

A chance to foster enthusiastic and emerging talent

The CRCV is urging wine companies, grapegrowers and other industry organisations to host a PhD student during the year to foster the industry's enthusiastic and emerging talent and add value to their own businesses. The CRCV has 14 skilled and enthusiastic PhD students seeking industry placements for a minimum of one week and maximum of three months as part of its Professional Development Program.

'This is a fantastic chance for an industry employer to reap the benefits of having a highly knowledgeable young person work for them, and a really valuable learning experience for our PhD students,' said the CRCV's Education and Training Manager **Libby Boschen**.

'As a researcher exploring specific industry issues in detail, the students have the potential to provide a powerful catalyst for innovation and learning in any workplace.'

To accommodate a variety of employer needs, the placement may be full-time or part-time over several weeks or months. Those details, along with a work schedule, will be negotiated between the employer, student and the CRCV.

The work experience a company offers may include activities such as working side by side with a vineyard manager, a viticultural consultant, technical officer or spending time with a winemaker.

Libby said the aim of the CRCV PhD Professional Development Program is to enable the students to gain a greater understanding of how the industry operates and explore future career options. 'We are fully committed to providing



CRCV PhD students.

these students with career development opportunities and we want to encourage and support them to regard the wine industry as their number one career choice,' she said.

Libby said the PhD program was established in response to industry defined needs and she hoped the advantages of fostering young, emerging talent was recognised and supported through this program.

For further information about the Professional Development Program and the students' research topics, please phone Libby Boschen on (08) 8373 7090 or email: libby@winetac.com.au

New sub-licencing agreements for Viticulture Research to Practice®

The success of Viticulture Research to Practice®'s, first sub-licencing agreement with Agriculture WA last season has prompted three new agreements to be signed.

The sub-licencing agreements allow appropriate agencies and private companies to schedule and run workshops and training sessions using materials developed by Viticulture Research to Practice® and in accordance with specified terms and conditions.

Sub-licencing agreements have been signed with Southcorp Wines, Dalby Agricultural College and the Victorian

ages on Integrated Pest Management and parts of the Spray Application module to create a new management package for growers in the area who have been affected by Powdery Mildew. Rob said the advantage was that companies like Southcorp could incorporate their own requirements and policies for their growers.

'Southcorp might have particular quality specifications they want their growers to achieve or their own water use policy for example. They can use the workshops as a medium to teach new knowledge and skills and impart their

workshop in the Viticulture Research to Practice® series needs to have undergone the two to three year development period before it can be sub-licenced.

At this stage, the IPM and Water Management workshops and customised packages are the only ones to be sub-licenced. Spray Application and Grapevine Nutrition will be sub-licenced this year when they move from their development phase.

Although the sub-licencing component of Viticulture Research to Practice® was still in its formulative stages, Rob



LEFT: Dr Robert Sward discusses winegrape quality management with a group at a workshop in Nagambie, Victoria. RIGHT: Participants working on aroma and flavour characteristics of wines in a workshop on Winegrape Quality Management in McLaren Vale, SA.

and Murray Valley Winegrape Growers Council.

According to Viticulture Research to Practice® leader **Dr Rob Sward** the new agreements represent the next stage in the evolution of these popular and respected workshops.

'These agreements ensure that the broad content of the workshops is retained, yet the groups running the workshops on our behalf also have the chance to customise the workshop to their own specific needs or problems,' Rob said.

An example is the Victorian and Murray Valley Winegrape Growers Council who are customising Viticulture Research to Practice® pack-

own standards,' he said, The agreements are currently only for one year and there are a number of checks in place to ensure the quality of the Viticulture Research to Practice® workshops remains consistently high. 'The new sub-licenceses will initially be involved in training seminars to ensure they have the right presentation skills. There are also a range of conditions in the contract we expect them to adhere to and an on-going audit component with them being checked at least once a season,' Rob said.

The Viticulture Research to Practice® team will work with the sub-licenced organisations to update the workshop information each year. Each different

said there were a number of benefits to be gained.

'These licences not only encourage a regional approach to problem-solving, they also are more cost effective and enable growers to take part in workshops that are suited to their needs,' he said.

The Viticulture Research to Practice® program will monitor the new sub-licences and consider taking on more if they prove to be successful.

For further details please contact Rob Sward on (03) 9210 9219.

Viticare – a national approach to delivering regional outcomes

The Bundaberg and District Winegrowers Association represents about 20 growers in this region of Queensland. Helen Wainwright talks about growing grapes in the sun and how viticulture is progressing in this new growing region.

Q: How long have grapes been grown in the Bundaberg region?

Helen: This is quite a new region for viticulture with most vines planted in 1997. We only have one established winery and cellar door in this region, with another one in the pipeline at the moment. Most of the growers have quite small experimental areas of vines to see how they will go in this climate. There are a couple of vineyards that are 14-18 acres but most are very small.

Q: What are the main varieties?

Helen: Shiraz, Chardonnay, Verdelho, Cabernet Sauvignon and Merlot are the main varieties. We have had some very good results with the white varieties - Chardonnay and Verdelho - they seem to do best in the warm conditions and we've produced some excellent quality grapes.

Q: Were most of the growers previously involved in agricultural or horticultural production?

Helen: Most of the growers had cattle or crops and have put some grapes in because they wanted to try something new. There are also some people who are solicitors or electricians and have invested in some property and chosen to grow grapes.

Q: What are the weather conditions like?

Helen: We have a very warm climate here and a high summer rainfall which means we need to be vigilant about mildew. The soils vary from volcanic and granite to poorer quality soils in some of the higher parts of the region. Because it is so warm we harvest here in January

Q: What are some of the issues facing this region?

Helen: Control of pests and diseases in this climate is our main concern, followed by grapevine nutrition. As a region we haven't had too many problems yet which I think is due to the fact that we are aware of the potential for problems and have been careful in monitoring and managing our vineyards. Being smaller producers has allowed us the time to extensively monitor our grapes.

Q: When did the Association join the Viticare Network?

Helen: We joined in November 2000 and have found it to be an extremely useful way of gaining information about the industry and about things like workshops and new management practices. It is great for us to keep in touch with what the rest of Australia is doing because we are a bit out of the loop.

Q: How important is it to keep up-to-date with the latest research and technology?

Helen: The main priority for the growers in this region has been to accumulate experience and learn as much as we can about grapegrowing and the latest practices and research. Our own association has been useful and each of our meetings is at a different property which gives us the chance to see what other people are doing in their vineyards. Because we are a fringe region, many of the management practices used in regions like the Barossa or Sunraysia are not applicable. We've had to make some changes and experiment ourselves to suit the conditions.

Q: Do you think there will be growth in the region?

Helen: Most growers are only experiencing their second vintage and to a point we've been experimenting to see if the region is viable. Most growers are aiming to expand but plan to do so cautiously

and with consideration to their requirements. We're at an interesting stage in our development with some growers developing their own labels, others are selling wine on the internet and some are establishing bed and breakfast accommodation. We are aware that being a small region we need to have a unique selling point. A lot of the growers are interested in organic growing and this could be something that sets us apart if we choose to go down that path. Although the region is in its infancy, the results and interest we've had in the region suggest it can become a notable region and take its place with the best in Queensland.



*ABOVE: Bundaberg and District Winegrowers Association Executive.
BELOW: SunLit Hills Vineyard just prior to its second vintage.*



Major upgrade for CRCV website

Grapegrowers, winemakers, researchers, managers, students and the general public can find a host of useful and relevant information on the CRCV's recently upgraded website. The comprehensive site contains project descriptions for each of the CRCV's research projects as well as an update on the progress of these projects. 'The website now contains the latest research results from the CRCV, allowing people to remain up-to-date and choose the information they are interested in,' said CRCV Chief Executive Officer **Dr Jim Hardie**. The site contains information about the CRCV, its objectives and achievements, participants in the Centre and members of the Board.

The new site also features key dates, including Viticulture Research to Practice® workshop dates and a database of scientific publications. 'The site has been upgraded to make it easier for people to find

what they want and to offer a greater mix of information from brief overviews to detailed scientific information,' Jim said.

The CRCV's Education and Training and Viticare programs now have a much stronger presence on the website, with better resources available for the CRCV's PhD students, training providers and assessors and growers and winemaker associations involved in the Viticare Network. CRCV participants will find their own section on the new site containing the participant's guidebook, internal memos, protocols, a CRCV events calendar and presentation materials.

The website address is www.crcv.com.au



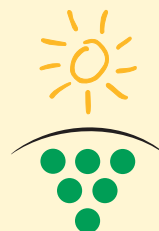
Your CRCV

The Cooperative Research Centre for Viticulture is a joint venture between Australia's viticulture industry and leading research and education organisations.

It promotes cooperative scientific research to accelerate quality viticultural management from vine to palate.

Australian grapegrowers and winemakers are key stakeholders in the CRCV, contributing levies matched

by the Commonwealth Government and invested by the Grape and Wine Research and Development Corporation in the Centre.



Minister visits CRCV



Science Minister Peter McGauran.

The CRCV recently briefed the **Honourable Peter McGauran** MP, Minister for Science, on the achievements of the CRCV, particularly those relating to education and training. CRCV Chief Executive Officer **Dr Jim**

Hardie said the briefing provided an opportunity to emphasise the innovative way the Centre is recognised for the way it is engaging the vocational training sector.

'There is a need to get information quickly and effectively to all sectors of the industry and our education and training program is facilitating this,' Jim said.

'We are always looking for ways to streamline the delivery of information and get the latest scientific knowledge into course curricula and the Minister was keen to learn how we are going about it.'

Jim explained the achievements and management of the CRCV and Libby Boschen (Education and Training

Manager) highlighted some of the training issues facing the industry, which the Minister gave an undertaking to look into and address.

Jim said the Minister was impressed with the briefing and stressed the need for CRCs to be able to quantify the financial value of their outcomes to Australia.

While at the Waite Research Precinct, Minister McGauran also met the Commonwealth Stage 2 Review Panel at the CRCV, toured the CSIRO research laboratories with Dr Simon Robinson and Dr Nigel Scott and was briefed about the major research facilities grant for the wine industry by The Australian Wine Research Institute Director Dr Peter Høj.