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Newsletter

CRC AUSTRALIA

COOPERATIVE RESEARCH CENTRE *for* VITICULTURE

Inside

Cooperative Research Centre *for* Viticulture

The University of Adelaide

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

The Australian Wine Research Institute

CSIRO

Department of Primary Industries, Victoria

Primary Industries & Resources, SA

The Australian Dried Fruits Association Inc.

Winemakers' Federation of Australia Inc.

Grape and Wine Research and Development Corporation

Horticulture Australia Limited

Wine Industry National Education & Training Advisory Council Inc.

Wine Grape Growers' Australia

The CRCV Eutypa research team: (L to R)
Mark Sosnowski, Richard Lardner, Trevor Wicks and Eileen Scott.

Breakthrough to help answer questions about Eutypa dieback

With the incidence of Eutypa dieback increasing in a number of major production regions including Coonawarra, Clare, McLaren Vale and cooler regions of Victoria, there is a significant need for improved management practices to better deal with this disease.

"Eutypa dieback has been around for many years and the problem is getting worse," says Trevor Wicks, researcher with the CRCV's Eutypa dieback team. "There is still a lot we don't know about Eutypa dieback and it's important that we work towards getting some answers because this disease is costing the industry money and productivity."

A recent research breakthrough is helping the team, headed by Eileen Scott, to find out more about how the disease, which is caused by the fungus *Eutypa lata*, spreads in the vine wood and why different grapevine varieties display varying symptoms.

"Our field research has been slowed due to the very nature of the disease," explains Eileen.

"In the vineyard there is a lengthy delay between infection of trunk wounds by the pathogen and symptom expression such as external cankers and foliar symptoms like stunted shoots and chlorotic leaves.

"It can take three or more years for symptoms to be expressed, which means relying solely on field work is limiting because it takes too long to get results."

The team have been trying to develop a bioassay that enables the rapid induction of symptoms. Attempts to use a method reported by French researchers were unsuccessful and prompted them to try another approach.

Isolates of *Eutypa lata* were collected from wine regions in South Australia and Victoria and cultured on agar plates. Agar plugs (5mm in diameter) containing mycelium (the cultured fungus) were inserted into holes drilled in the main stem of vine rootlings and sealed with parafilm. This process was carried out on more than 700 potted

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CEO's Report

CEO column

The CRC for Viticulture, and the Australian Government's CRC Program model in general, is internationally recognised as a major element of Australian competitive advantage.

This has proven to be the case for the Australian grape and wine industry, with the CRCV undertaking industry led and defined research projects and promoting the application of innovative viticultural management for more than a decade. This collaborative approach has strengthened our knowledge and ability to produce high quality grape and wine products.

Jim Hardie

A number of grape and wine producing countries including the US and Chile have expressed keen interest in our cooperative approach to research and development and our ability to work together as an industry. They don't yet have the same kind of collaborative structures but can easily see the advantages it confers.

As the CRCV heads towards its final year of Australian Government funding, we face the prospect of not having a collaborative research model for our industry after July 2006.
The Winemakers' Federation of Australia has recognised this situation and will be leading an initiative to put in place an ongoing organisational system to retain the CRCV-like co-operation between industry and the research organisations. This has been one of the matters highlighted in a comprehensive wind-up strategy endorsed recently by the CRCV members as we approach the end of the funded term in June 2006.

The CRCV's core member organisations have been heavily involved in the development of the strategy and we have recently met to finalise it for implementation.

There will be no additional Government funding after June 2006 but the members will participate in a systematic wind-up the CRCV between June 2006 and 2007. Although the majority of CRCV research projects will be finalised by June 30th 2006, our supplementary projects will continue for additional six months due to the delayed commencement of these projects.

These supplementary projects primarily involve the development of industry products and tools, such as a portable and cheaper NIR machine, and it is important that these projects are given additional time to deliver these products to industry.

The final six months of our term will allow us to provide full accountability for the investment made in the Centre and compliance with legal and regulatory requirements.

I am working with our Program Managers to assess each project to ensure we have an action plan for any that may not be completed by the end date. In these circumstances we have a number of options available, including using an alternative funding source or participants undertaking the activities using their own resources.

We will be working closely with the Winemakers' Federation of Australia Strategy Development Group, who are working to determine opportunities and priority areas for R&D investment by the industry.

The essence of the wind up strategy is that the outputs of the CRCV; the research collaborations, the professionally trained researchers and the knowledge generated by the Centre, continue to have a practical impact and drive further innovation beyond the term of the Centre.

We are conducting a comprehensive audit of the intellectual property generated by the Centre audit that will provide an excellent basis for the evaluation of all current and potential commercial opportunities, such as the CRCV's licensed software applications and Research-to-Practice training workshops.

We are working on strategies to ensure the 'bank' of knowledge such as journal articles, project reports and viticultural fact sheets can be accessed for as long as they are relevant. We are also working with a number of other organisations such as the Wine Industry Suppliers Australia to ensure the Australian Viticultural Innovation Network of suppliers and commercial providers can continue to work with R&D providers.

Finally, we will be developing an impact statement that includes comprehensive evaluation of the outcomes of each of our research, education and extension projects. The investment by the Australian Government, our core participants and the Australian grape and wine industry in the Centre has been very substantial. I am confident that we will demonstrate a very substantial return.

Jim Hardie
CEO

Newsletter

The Cooperative Research Centre for Viticulture Newsletter is produced bi-monthly. All contributions are welcome, especially reports from conferences, seminars and international trips.
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Breakthrough to help answer questions about Eutypa dieback

grapevines (Grenache, Cabernet Sauvignon and Merlot) in February 2004 in a shade house at the Waite Campus. The team inspected the vines in October, the time when symptoms of Eutypa dieback are generally evident, and found significant visual differences between the treated vines and the control and between the severity of visual symptoms of each variety.

According to researcher **Mark Sosnowski**, it was a great success for the project team to see evidence of Eutypa dieback, in the form of foliar symptoms, in just eight months.

Mark said while it was an achievement for the team to induce symptoms in such a short amount of time, the real excitement was the ability to use the technique to learn more about Eutypa dieback in this and future experiments.

"The symptoms, such as chlorotic, cupped shaped leaves with tattered margins, were more severe in the Grenache variety than the other two varieties. This mirrors what we have seen in the field, but now we can try and find out why Grenache is more susceptible to Eutypa dieback."

"Other theories we are trying to find answers to include whether the toxic compounds caused by the *Eutypa lata* travel in both directions in the wood."

"The appearance of symptoms on shoots arising from the stem below the inoculation site suggested that the toxins may move in both directions in the wood, or that perhaps the fungus had colonised the wood beneath the inoculation point faster than we had anticipated."

CRCV researchers were able to rapidly induce Eutypa symptoms in glasshouse conditions.

"When we have dissected the vines we will see if this is the case. This kind of knowledge has important implications for the effective management of the disease. We will also examine the spread of the pathogen in the wood, including the rate of colonisation."

The experiment will also accelerate progress towards the development of an early diagnostic test for Eutypa dieback to be used by growers. CRCV researcher **Richard Lardner**, whose PhD also focused on Eutypa, is analysing leaves from the inoculated plants using HPLC to look for biochemical markers that are indicative of infection by *Eutypa lata*.

"There are different strains of *Eutypa lata* and we need to know if they all produce the same toxins and when they start to produce the toxins. The identification of biochemical markers will help us to develop a diagnostic test that can detect Eutypa before the visual symptoms begin to show," Richard said.

"This is important because it will allow growers to take management steps to minimise the impact of the disease and extend the life of the vine."

The team plans to use the new bioassay to assess the impact of stress, particularly water stress, on the incidence and severity of Eutypa dieback symptoms. This is particularly important because of stresses imposed in the vineyard by reduced irrigation. The technique may also assist in determining the effects of weather factors (such as rainfall, temperature and their interactions) on disease incidence and severity, an area of particular interest for future research.

The project team communicate their findings and management advice to growers each year through workshops coordinated by regional associations and further workshops are planned for 2005.

New appointment for Murray Valley

A new Industry Development Officer has been appointed at the Murray Valley Winegrowers' Inc. to assist growers in the Murray Darling and Swan Hill regions with a range of viticultural management issues.

Liz McGuire is now working with approximately 1,400 winegrape growers to ensure the latest technologies and management practices are understood and being used in the field.

Previously working as a horticultural agronomist for the Mildura Cooperative Fruit Company, Liz has also worked for CSIRO at Merbein and has a Bachelor of Rural Science with Honours in Plant Tissue Culture.

Having worked in Mildura for a couple of years, Liz says she has a good understanding of the major issues facing growers and is excited by the challenge of providing growers with useful information that can be put into practice. Liz will be working closely with the CRCV's Viticare Extension project and will be taking CRCV research outcomes to growers in the Murray Valley.

Collaboration important for trunk disease research

Almost 100 of the world's leading vine trunk disease researchers recently gathered in South Africa for the 4th International Workshop on Grapevine Trunk Diseases and 43rd Southern African Society for Plant Pathology Congress, opening the door for new information exchange and collaboration.

A team of CRCV researchers – **Eileen Scott, Mark Sosnowski, Trevor Wicks, Jacky Edwards, Richard Lardner, Ian Pascoe and Helen Waite** – attended the conference, presenting seminars and posters about their research.

According to Eileen, information about epidemiology, pathogen recognition and management of trunk diseases was of particular relevance to the Australian industry.

"Annual variation in disease symptoms featured strongly in several presentations, she said.

"The environment is likely to be a factor, most likely water stress. These international events give us an ability to compare information on the role of environmental factors and get closer to elucidating their role so we can better manage production loss."

With figures suggesting Eutypa dieback in Shiraz alone costs Australian growers $20m in lost revenue annually, there is a strong need for research in this area.

Mark says Australia is not the only wine producer affected by trunk diseases.

"Trunk diseases are a major problem in South Africa and the US and many other wine producing nations. It is important that we are aware of the research happening and if the results can help us with our own programs."

The trip also provided researchers with the chance to renew existing collaborations and visit a number of research facilities, including:

- ARC-Infruitec, Nietvoorbij, where several of the team viewed vineyards with disease symptoms and learnt about their techniques for disease isolation and identification.
- KWV Vititec, Paarl, which is the largest plant improvement facility in South Africa. Team members saw their vine nursery which hot water treats all material with less than 1% annual loss.
- University of Stellenbosch, where the team held discussions with Dr Paul Fourie about developing a collaborative program due to the similar nature of disease problems between the two countries. The University is also undertaking groundbreaking research into the control of Botrytis bunch rot.

Trevor said although the major outcomes were collaborative links and networking opportunities for the research team, he said the grape and wine industry would also benefit.

"Because grapevine trunk diseases are a common problem in Australia, the CRCV team often present at various grower workshops regarding disease management.

"Being able to draw from a wider range of experiences and compare the Australian experience to what is happening around the world is really valuable and allows us to give growers better advice about how they can manage trunk disease."

Nitrogen findings for dried vine fruit producers

A four-year CRCV research project has provided dried vine fruit producers with a better understanding of the impact of nitrogen, particularly related to storage characteristics, and best practice management guides for nitrogen supply.

The research project assessed the effect of nitrogen supply timing on dried fruit yield and quality from Sultanas on Ramsey rootstock.

The aim was to manage vineyard N supply to achieve high productivity while producing a product with desirable storage characteristics.

High levels of Nitrogen in the final product is associated with poor storage characteristics including enzymic browning and the research project wanted to determine if this was the result of high nitrogen fertiliser inputs.

The research team, led by Dr Michael Treeby, found there was no relationship between berry nitrogen at harvest and browning of dried vine fruit over a 17-month period in storage.

"What it essentially means for dried vine fruit producers is that they can apply sufficient nitrogen to meet vine nitrogen needs and not influence colour stability in storage," Michael said.

Other key findings included:

- Yield was more likely to be constrained by light and temperature at the time of bud initiation than vine nitrogen status.
- Accumulation of nitrogen by berries by harvest time was enhanced by nitrogen supply, irrespective of when the supply was made.
- Dried vine fruit from vines that received nitrogen were lighter than dried vine fruit from vines not receiving nitrogen.
- Dried vine fruit supplied nitrogen before flowering were redder and duller than dried vine fruit receiving nitrogen after flowering.
- Petiole nitrogen status at flowering was as good a predictor of dried vine fruit lightness, yellowness and vividness of colour as berry nitrogen at veraison.

These findings have been reflected in the Australian Dried Fruits Association (ADFA) Dried Fruit Manual and a decision support framework is now included to assist growers manage vineyard nitrogen supply. The section has also been enhanced by the inclusion of a starting point recipe for supplying nutrients by fertigation to vines on Ramsey rootstocks for dried vine fruit production due to the growing adoption of pressurised irrigation systems. Standards for assessing soil fertility are also now included.

For more information, contact ADFA on (03) 5023 5174 or visit the website at http://www.adfa.asn.au/.

A final project report, detailing the project specifics, is available from the CRCV website at http://www.crcv.com.au/research/programs/view.asp?view=3.

Overview of CRCV research outcomes now available

Outcomes from completed CRCV projects are being outlined in a new publication Do you know the latest?

The first edition covers 3 projects within CRCV Program 1- Vineyard management practices to meet grape quality specifications. It outlines objectives and major outcomes for each project, and provides links for further information and the final reports of each project.

If you would like to subscribe to this free publication, send an email with 'subscribe' in the subject field to emma@winetac.com.au

Viticare extension working on regional issues

The CRCV's major extension program, known as Viticare, has undergone a number of changes to ensure major viticultural issues are being addressed.

One of the major changes is significant new collaboration with regional grapegrower and winemaker associations, who are working with the CRCV Viticare team to pinpoint regional issues and to plan extension activities.

According to Gerard Hogan, National Viticare Coordinator, the aim is to provide major grapegrowing regions with information and resources they need to improve their uptake of new technologies and management practices.

"While there are obviously common issues across all viticultural regions, we have been working with regional associations over the past couple of months to establish the most important issues and develop ways in which our national extension project can assist them," he said.

"For example, in the Riverina, the conversion from flood or furrow irrigation to drip irrigation is a huge priority, with government incentives and programs scheduled for the next few years to encourage this change.

"The CRCV has a wide range of expertise in water use efficiency programs and we can help this region with very practical activities such as working with the regions Industry Development Officers and demonstrating how to install the equipment, how to maintain it and the use of soil moisture monitoring through developing the relevant workshops and tools."

In Langhorne Creek, the CRCV Viticare project will assist growers to continue their progress towards long-term sustainability through Environmental Management Systems.

"The growers in this region have been involved in an environmental program for about two years and we will be helping them with related issues such as reducing spray drift and irrigation management."

The CRCV's Viticare project will be coordinating projects in the Riverland, Riverina, Sunraysia, Hunter Valley, McLaren Vale, Heathcote and Langhorne Creek.

In the coming months, extension tools like workshops will be held in each region and 'tool kits', containing a variety of resources such as fact sheets, DVD's and posters will be developed.

The program also involves a training component to build capacity of Industry Development Officers, including learning more about how to evaluate and monitor the progress of their regional extension

WineTech seminars offer viticultural advice

A free seminar series will be held at this year's WineTech trade exhibition, offering a broad range of commercial and viticultural topics.

WineTech is held by the Wine Industry Suppliers Australia Inc (WISA) and will be at the Royal Adelaide Showgrounds from July 20-22 and will feature about 200 exhibitors presenting hundreds of brands.

According to WISA Executive Officer, Philippa Myers, the workshop series has been developed to provide another offering for those attending the event.

"The limited workshops offered at our inaugural WineTech in 2003 were well-received, so we have decided to expand them for this year's event," Philippa said.

"Some of the workshops will be conducted by our exhibitors to further explain their products and technologies, and we also have researchers and staff from the CRCV, SARDI and the SA Wine Industry Association presenting viticultural seminars."

Some of the workshops include:

- Greening the Supply Chain.
- Water management for growers with limited water supplies.
- Climate change - issues for industry.
- New viticultural chemicals.
- Berry colour as a measure of fruit quality for small to medium sized wineries.
- Minimising spray drift in vineyards.

Admission to Winetech 2005 is free and is for anyone involved in grape growing, winemaking, packaging, presentation and distribution of wine.

For more information about WineTech 2005, contact Exhibition Management on (03) 9699 4699 or visit www.winetechtradeshow.com.au.

Viticare Trials Vintage Report

Already considered the busiest time of the year for grapegrowers and winemakers, vintage has also been busy for the CRCV's Viticare Trials team as data is collected from the first season of the trials.

According to Viticare Trials Coordinator, Sheri Robinson, vintage ran smoothly for the Viticare trials team and data was collected at more than 20 sites in South Australia, Victoria and New South Wales.

"Vintage is the culmination of a busy but productive year for the Viticare trials projects. We have developed the trial topics, implemented new management practices and now collected data regarding yield, quality and water efficiency," Sheri said.

"We are currently processing the data we have collected and workshops will be held at each trial location to share the results with the teams of growers, liaison officers and suppliers involved in the trials."

Sheri said the results would also be used to determine any changes for the trials in their second year.

The first year of trials has focused on the use of native and broadacre cover crops, irrigation and water use efficiency as well as pruning and canopy management.

Cover crop trials and demonstrations have been conducted in McLaren Vale,

Coonawarra, Clare, Riverland, Griffith and Mudgee. In the warmer climate regions the trials are assessing the native and broadacre species for their ability to establish effectively in the dry climate, compete with weeds and also to create ground cover to cool the vineyard floor and hopefully the canopy. In cooler climates, trials are focused on the water use and competitiveness of the cover crops for moisture, weed competitiveness, soil health benefits and in one trial site the crops ability to lower vine vigour.

"Each of the trials has a different focus to suit each regional need. For example in the warmer climates the heat in recent years along with the use of dip irrigation instead of furrow or flood has meant that new management strategies are needed to manage the vine mid row. Whilst cooler climates are looking at strategies for their environmental management systems (EMS) and have shown an interest in natives and their ability to perform as cover crops whilst keeping the desirable traits for mid row management"

Water use efficiency and irrigation management is another major emphasis, with trials in the Riverland, Heathcote, Sunbury, Eden Valley, Swan Hill and Griffith. The trials are varied and include; assessing the use of mulch to maintain soil moisture; irrigation scheduling to maximise post-veraison yield and quality; and a site demonstrating conversion from flood to drip irrigation.

"In all areas we have utilised precision viticulture technology and these results are being used to understand the vineyard variability and to further refine the trials. In the Eden Valley we have focused on the impact of irrigation and variability on Riesling quality. We have already seen irrigation efficiency as an issue that is causing variability and next season we might look at practice changes to further address variability."

Pruning and canopy management to reach yield and quality targets is another topic of interest, with trials in Swan Hill, Robinvale, Cowra, Gundagai and Riverland. The trials are comparing pruning practices for efficient management and cropping levels to determine practices that will provide ideal canopies for quality and returns.

"In Robinvale canopy management to prevent sunburn was of regional concern, growers have experienced rolling which has resulted in high exposure in previous seasons and so in this trial fixed foliage wires have been implemented to see if this will prevent the canopy roll."

Full 2004/05 results for Viticare trials will be available in coming months and more information about each of the trials is available from the CRCV website at www.crcv.com.au/viticare/trials.

Brief News

Book now for CRCV Symposium

The CRCV Symposium is an opportunity for project teams, industry reference groups, CRCV staff and members to get together, share results and learn from each other. The 2005 Symposium will be held at the Sunraysia TAFE in Mildura, June 6-7.

The Symposium program has just been released and covers many important viticultural topics including water management, vineyard variability, trunk diseases, berry development, biodiversity, wine and grape quality and genetic regulation.

Each session will be chaired by prominent industry experts including: Richard Hamilton from Southcorp; Vic Patrick from Beringer Blass, Phil Laffer from Orlando Wyndham; Doug Young from the Winemakers' Federation of Australia; Peter Stephens from McGuigan Simeon; Michael DePalma from Murray Valley Winegrowers'; Jim Caddy from CCW Cooperative; Paul Chambers from the Winemakers' Federation of Australia; Graeme Wellman from Dorrien Estate; and Prue Henschke from Henschke Wines.

Numbers are limited for the symposium, so please book early. A full program is available from the CRCV website, along with details regarding bookings and accommodation at http://www.crcv.com.au/calendar/.

For more information contact Bronwyn Weeks on (08) 8303 9405 or email Bronwyn.weeks@crcv.com.au.

CRCV Symposium Poster Display and Competition

A poster display and competition will be conducted at the CRCV Symposium. It is an open category display, so all posters are welcome.

Symposium delegates will cast their votes for the best posters, with awards and prizes to be announced at the Symposium dinner.

If you would like to submit a poster, please register your interest by email to Brownyn Weeks at the CRCV bronwyn.weeks@crcv.com.au. Printed posters will need to be delivered to CRCV Head Office (PO Box 154, Glen Osmond SA 5064) by May 30th.

Winery Technology and Information Needs Survey

A recent market research survey has indicated small and medium sized wineries are looking for an affordable and reliable way to measure colour/anthocyanins in addition to current testing for brix, acidity, pH and taste.

This finding came from a survey of small and medium wineries regarding their technology and information needs. Commissioned by the CRCV in late 2004, the survey was conducted by Mark Dignam & Associates and assessed their current quality parameters and testing processes and general information use and attitudes.

Survey respondents were chosen from the Wine Industry Directory and were chosen to represent a variety of sizes and all grapegrowing states (Western Australia, South Australia, Victoria, New South Wales, Tasmania and Queensland).

It found wineries want to be able to conduct their own sampling, but the major barriers to colour testing were cost, lack of equipment and shortage of skills.

The CRCV are currently working with Sydney based company Integrated Spectronics to develop a benchtop NIR (near infrared) machine for measuring colour and have taken the survey findings into account.

A download of the survey results is available from the CRCV website (in the Additional Resources section) at http://www.crcv.com.au/viticare/resources/.

Diary Dates

24-25 May

Mildura Horticultural Field Days

Mildura

Contact: Sharni Blore

Email: Sblore@adfa.asn.au

The Mildura Horticultural Field Days are a must for all Sunraysia-based grapegrowers, with an expansive range of viticultural suppliers demonstrating and providing information about their goods and services.

18-20 May

CRC Association Conference

Melbourne, Hotel Sofitel

Email: crca2005@icms.com.au

Web: www.crca2005.com

A networking and professional development conference for CRC chairs, CEO's, education and training managers, business managers, communications managers and companies involved in CRC's.

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

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