MATRAVINA

Summer 2003

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Coming to a town near you – Riversun gears up for a series of workshops on vine health

Riversun's on the road

Traveling road shows may sound like a thing of the past, but Riversun's upcoming regional workshops on how to build and maintain your vineyard are guaranteed to be right up to the minute.

Slated for Gisborne, Hawkes Bay, Marlborough and Central Otago, the mid-November forums are sponsored by Riversun with the support of each region's Winegrowers Association. They offer grapegrowers and winemakers a rare opportunity to hear not only about the latest research but how to apply it in the vineyard.

Taking to the road are a crack panel of experts: Professor Giovanni Martelli, the recognised world authority on grapevine viruses; Dr. David Jordan, a highly respected viticultural consultant whose work is known throughout New Zealand and Australia; Dr. Roderick Bonfiglioli, technical director of Linnaeus Laboratory; and Nick Hoskins, Riversun's own notable viticulturist.

The November workshops, the first in a series planned by Riversun, will focus on plant material and vine health. Topics will cover a broad range of issues, including the commercial implications of unhealthy vineyards, the spread of virus in New Zealand, laboratory testing techniques, and what certification can and should mean. Each workshop will have plenty of opportunity for questions from those in attendance.

For more information on the time, place and registration details for each event, see inside this issue of Matravina.

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From the top

by Geoff Thorpe

Managing Director

This is a busy time of year for everyone who works the land. For Riversun, October marks the end of one season and the beginning of the next. Last year's vines have now been dispatched, and we're fast approaching the half-way point in another landmark grafting season.

Our vine quality truly is "better than ever." Recovery rates are at all-time highs, and we're receiving great feedback from clients. As Matravina goes into the post, we will have just wrapped up the International Chardonnay Challenge for the third consecutive year as Gold Sponsor.

We're still in the mood to celebrate, because in November we have the honour of hosting Professor Giovanni Martelli, the world's foremost authority on grapevine virology and certification. While in New Zealand, he will review our operations in the Bay of Plenty and Gisborne, as well as lead the regional workshops described elsewhere in this issue.

Professor Martelli's visit marks an important milestone for Riversun. In the late 1990s, when we first envisaged our vine certification programme, we asked for guidance from internationally recognised experts such as Jean-Michel Boursiquot (director of ENTAV, in Montpellier, France) and Professor Martelli (chair of plant virology at the University of Bari, Italy).

Over time, those relationships have flourished. Earlier this year, Riversun received its first accessions of ENTAV-INRA® rootstock and scionwood into our new post-entry quarantine facility. More recently, Linnaeus Laboratory has joined forces with Professor Martelli to investigate grapevine virus problems both in New Zealand and overseas.

Riversun and Linnaeus are not just about growing excellent vines, but more importantly about growing excellent people. International exchanges of this kind are vital – we look forward to seeing you at one of the workshops.

Power through PCR

Linnaeus launches a new diagnostics service

As the New Zealand wine industry comes to terms with the effects and spread of grapevine viruses, the need for a "full-service" diagnostics facility has become ever more apparent.

Linnaeus Laboratory, already recognised as a world leader in the application of ELISA testing on grapevines, has now met that need, becoming the country's first – and only – commercial laboratory dedicated to the full range of viticultural virus-testing and plant diagnostics.

"Until last year, all of our PCR testing of grapevines had to be sent overseas, at considerable cost and inconvenience," says Dr. Roderick Bonfiglioli, who oversees the laboratory as Riversun's technical director. "Given the nursery's need to regularly test its certified source-blocks, it made sense to bring the technology and expertise in house."

As it turns out, Rod brought the expertise to Linnaeus himself. Before crossing the ditch from Australia to work at Riversun, he helped to establish the Waite Diagnostics Laboratory for the detection of virus diseases in grapevines at the University of Adelaide.

"PCR is advantageous in that it's between 100 and 1,000 times more sensitive than ELISA and can be used to test for a much wider range of viruses," he explains. "But you need both techniques to provide a thorough yet cost-effective diagnostics service."

After purchasing the necessary equipment in 2002 and undergoing a thorough staff training period on the new technique, Linnaeus initially focused on testing its own sourceblocks.

This September, however, the lab integrated PCR testing into its commercial service, establishing a pricing structure and information on how to sample, store and transmit vines for testing.

The Linnaeus team (from the top) – Rod Bonfiglioli, Sue McGregor, and Fran Edwards

"We are now using PCR to test for 13 viruses," says Fran Edwards, laboratory manager at Linnaeus, "and already have orders under way."

Hunters in the night

Two scientists, half a world apart, track down a new virus

When Dr. Antonello Pantaleo traveled from Bari, Italy, to Gisborne last August, his mission was seemingly straightforward – he would help Linnaeus Laboratory set up a new grapevine virus-testing programme using a sophisticated DNA molecular technique known as Polymerase Chain Reaction (or PCR for short).

The research scientist had been instrumental in helping the lab plan its equipment purchases and testing protocols, so it was a natural choice to use his expertise during the set-up and training as well.

"We already had strong links with Antonello's lab at the University of Bari," says Dr. Roderick Bonfiglioli, technical director at Linnaeus, "and we were eager to have him on board as we began our routine testing of Riversun's sourceblocks."

Research partner Antonello Pantaleo

The installation of PCR technology also brought with it new opportunities for conducting research, and Rod was ready with a subject that had been puzzling him for some time.

For the past three years, Riversun viticulturist Nick Hoskins had observed what appeared to be a graft incompatibility problem on Merlot 481 vines in young vineyards. The vines, purchased from several New Zealand nurseries, were reddening early in the season, and, in the worst cases, showing signs of severe stress.

While Antonello put in full days at Linnaeus, he began spending most of his evenings over at Rod's house, where the two men would theorise into the wee hours of the morning over what they suspected was an as-yet unidentified virus.

For want of a name to attach to their quest, Antonello began referring to the problem as "the Alfie Virus" – in honour of Rod's black and white sheepdog. In late September, he returned to Bari and his own investigations into how viruses replicate, but the scientists continued their discussions via e-mail and telephone.

"The time difference meant our conversations were usually conducted between 8 o'clock and midnight New Zealand time," Rod recalls.

From those rather casual beginnings, a hunt began to isolate and identify what was causing the graft incompatibility. Using primers designed by Antonello and Rod, lab manager Fran Edwards began PCR testing samples from problem vines and reporting the findings back to Rod, who then verified

Rod Bonfiglioli and Alfie – not every dog has a grapevine virus named after him

sections of DNA sequence using the powerful BLAST algorithms on a database at the National Centre for Biotechnology Information in the United States.

It was painstaking work, but by early 2003 the scientists realised they were looking at something that closely resembled two closteroviruses – Grapevine Leafroll associated Virus Type 2 (GLRaV-2) and Grapevine Rootstock Stem Lesion associated Virus (GRSLaV) – both of which are known to cause graft incompatibility problems.

Their investigation led to an invitation for Rod to present his findings at the 14th meeting of the International Council for the Study of Virus and Virus-like Diseases of the Grapevine held in September in Italy. That same month, their research was published in *The Australian & New Zealand Grapegrower & Winemaker* (and can be read on Riversun's website, www.riversun.co.nz).

"Like much recent research into grapevine viruses, our work is still in its infancy," says Rod. "Linnaeus will continue to investigate the Alfie Virus – with Antonello's participation – because the wine industry everywhere will eventually benefit from our findings."

What Linnaeus can do for you

As New Zealand's only commercial laboratory dedicated to viticultural virus-testing and plant diagnostics, Linnaeus offers fast turnaround times and competitive prices for all of the following tests, with client confidentiality guaranteed:

ELISA – Enzyme Linked Immunosorbent Assay – an efficient antibody-based technique that can diagnose a broad spectrum of viruses, bacteria, fungi, and phytoplasmas.

PCR – Polymerase Chain Reaction – an ultra-sensitive assay developed from molecular biology that we use to diagnose 13 major grapevine viruses, including Grapevine Leafroll associated Viruses 1, 2, 3, 4, 5, 7, and 9.

Fungal & Bacterial Diagnostics – The laboratory can isolate, culture and identify a broad range of fungi and bacteria.

Vineyard warrant of fitness – A customised report that assesses a vineyard's virus health status for owners and potential purchasers, using Linnaeus Laboratory's sampling and testing protocol.

For more information, contact Fran Edwards, Linnaeus Laboratory Manager
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Reece's niche

The man behind your order

Halfway through this year's grafting season, Reece Needham is very much in demand. As Riversun's production and logistics manager, he's responsible for managing the budwood and rootstock combinations on order, the sizing and harvesting strategies to ensure that materials are on hand to meet clients' requirements, and overseeing the production facility processing the vines for grafting and dispatch.

With contracted orders requiring more than three million grafted vines this year, Reece is the one who works out the schedules and decides when to start the extra shift in the shed, how many hands will be needed, and what variety combinations to plant in the nursery blocks located from Gisborne to the eastern Bay of Plenty.

The spring has been a wet one on the East Coast, as it has for many wine-growing regions in New Zealand, so the logistics are tougher than usual.

"Every season has its own challenges," he says. "That's a given in the nursery business."

Reece is a Riversun veteran (having worked for the company for the past six years), and he knows more than a thing or two about rootstock – he and his wife Anna grow 1,100 vines of 101-14 and Schwarzmann for the nursery on their own property at Riverside Road.

Over the years, Reece has seen clients' orders reflect the changing trends in New Zealand viticulture.

"Naturally, we're continuing to graft lots of Sauvignon Blanc and Pinot Noir," he says, "but we're also seeing plenty of new interest in Pinot Gris and Viognier, which have shown great promise."

In the vineyard

with Nick Hoskins

Riversun's viticulturist

I observed a number of problems in newly planted vineyards around the country last season (2002-2003), and I believe that frost may have had more of a role to play than first thought.

The problems concerned slow, irregular budburst – in some cases, vines failed to push a bud at all. The cooler soils and irregular spring temperatures in 2002 meant that buds were slower to move than usual, and that in turn created additional problems for a number of growers.

If the bud is not growing, a newly planted vine is especially susceptible to drying out, as no moisture is being taken up and transported through to the bud. The longer the situation continues the less chance the vine has to get the bud to grow.

While drying out is still the main reason why a vine will fail to push a bud, I now believe that frost may have compounded the situation in some vineyards. As we learned at this year's Bragato conference (in a presentation on how to minimise spring frost damage prepared by Steven McArtney, Darren Chatterton and Maria Good from HortResearch), frost can kill the primary bud. This will almost certainly happen if the frost is lower than -3°C and the bud is at the DS3 stage – that is, the cotton bud stage.

If the primary bud is killed by frost, then the vine becomes very susceptible to drying out until a secondary or tertiary bud is able to grow. This scenario seems to fit the slow and uneven budburst observed in 2002, when some vines were still breaking bud as late as December.

I have cut open numerous vines that failed to grow or had very poor growth. In most instances, the roots had made some new growth before dying off because no bud had grown. The above-graft portion was usually dry and dead. In other instances (especially inside spray sleeves), the vines had dead tissue on one side of the rootstock. Sometimes, the bud had made a limited amount of growth, but the vine was essentially dead on one side and unlikely to recover as a result.

Bearing in mind that newly planted vines are at ground level – in the coldest temperature zone – growers can lessen the risk of frost damage in several ways:

- In my opinion, green plastic spray sleeves promote early budburst and should be left off until the danger of frost is past. They should be pulled or folded down rather than lifted and moved to one side. In the latter case, they may still promote early budburst and/or interfere with frost protection (it will also be easier to simply pull them up rather than trying to re-install over new shoots). The same may apply to other spray guards as well.
- Weed control is very important during the period of frost risk, so that heat can be absorbed during the day and released at night. For the same reason, mulch should not be applied until after the danger of frost has past.
- Later planting may also be an option, say a week or two before the danger of frost is over. In some areas, this may mean mid-to-late October; I have even seen dormant vines perform very well when planted in November.

Feel free to call me on 027 248 7724 if you have any questions regarding vine growth.