www.walnuts.org.nz

NZ Walnut Industry Group newsletter

Issue 6: Winter 2004

News

NZWIG Successful in Funding Round

The MAF Sustainable Farming Fund has approved our new application for research funding.

This will enable NZWIG to further develop the research in blight control. The research is being conducted in association with Agronico in Tasmania and contracts scientific expertise from Dr Tim Jenkins of the Biological Husbandry Unit, Lincoln and HortResearch.

James Hill, Researcher for Agronico, Tasmania, speaking on the blight research project to a field-day in March this year.

The research is investigating issues around timing and alternative products for chemical control of blight, and the possible use of virus's (bacteriophages) that kill the blight bacteria.

So far the findings are promising. Detailed results are published regularly in *Health in a Shell.*

Other research projects underway include planting some new cultivars for testing, trialling specific rootstock, a pruning/training trial and developing a benchmarking protocol.

Current NZWIG Membership

NZWIG currently has 113 properties represented through its membership. 36 copies of the *Information Pack* were sent out in the year to the end of March. Five of those receiving packs have become members.

Website Proves Popular

The number of visits to the NZWIG website continue to increase. Between 600 and 800 pages from the site are viewed each month. Key articles are now being put on the site and each newsletter is available there. Updated information about field-days and other events will be posted on the site, so it is worth checking it out from time to time. Have a look at the photo's from our events – you may be in one! www.walnuts.org.nz

NZ Tree Crops Association 30 Years Old

We celebrate 30 years of NZTCA promoting tree cropping in New Zealand. NZWIG had its beginnings in the association and many of its members belong to both organisations. The anniversary will be marked by a special programme in Canterbury on Saturday 31 July and Sunday 1 August. It will include a visit to the Lincoln University trial blocks, a dinner, and visits to *A Cracker of a Nut – Nor'West Walnuts* and Quality Tree Company.

RSVP immediately to:
Bill Ellery (phone 03 312 6730, fax 03 312 6736), or
Mike Caldwell (email: m.m.caldwell@xtra.co.nz)

Growers' Manual

At the time of writing, we had sold 117 copies of the first edition.

Work on the second edition continues. It is expected to be published in the spring.

Benchmarking Project Lays Foundations

Right now, hundreds of trees are being measured from trunk to crown. Any factor or management decision that made them what they are today is being recorded. Beginning in Canterbury, the walnut orchard benchmarking project is comparing block with block and orchard with orchard.

Benchmarking is a practice used in a diverse range of industries. At its most basic, benchmarking is designed to help us learn from others. For the walnut industry of New Zealand it enables us to learn from each other.

By comparing the wide range of management practices already present in orchards we will essentially gather results in a very short space of time, rather than collecting data from an experiment that would take more than a decade if we started from scratch. To set up such an experiment would yield results too late to be of use to us now and the cost would be astronomical. However, with this project, even in the first year we will have begun to define best practice for some of the establishment

and management techniques for our trees. This is the power of benchmarking.

In the simplest case, benchmarking is used to find best practice models that can be adopted in a walnut orchard. This walnut orchard benchmarking project will achieve:

- best practice models for the establishment and maintenance of orchards by providing a framework for growers to compare the growth and productivity of their trees with those of other orchards with similar characteristics.
- methods for assessing walnut performance and management inputs such that any orchard can contribute to future data and compare itself with best practice models; and for those best practice models to be improved.
- a knowledge of factors contributing to walnut blight incidence and other issues.
- the ability to convert good luck, bad luck and doubtful decisions into decision making tools.

If we have sufficient orchards in the first year it will also enable us to conduct a comparative experiment using the latest identified walnut blight control regimes. This will give orchard-scale weight to the current blight research project.

Horticultural examples of successful benchmarking include highly specific projects such as predicting apple yield from spring temperatures through to more general projects on Australasian grape production and on the financial performance of vineyards.

If your orchard is within a 40 km radius of Lincoln University and you are willing to be part of this worthwhile project, we are interested in hearing from you as soon as possible [find out more]. Our thanks go to those who have already responded. The results will be beneficial for all in the walnut industry and especially so if your orchard is one of those included.

Invitation to Walnut Growers – Join the Benchmarking Project

We are seeking growers to take part in the benchmarking project that will provide a wide range of valuable information to present and future growers.

In order to obtain statistically valid benchmarking data for the walnut industry we need 15 growers (preferably within 40 km radius of Lincoln University) at or close to the nut production stage to take part in this project.

This will involve a one hour survey of your past and current management practices, and then for a sample of a variety of your cultivars to be measured annually for a range of growth parameters such as tree diameter, canopy volume, shoot extension, etc.

Other data to be collected on an annual basis would be such things as a percentage estimate of blight, leaf analysis, fertilizer application, annual harvest, and so on.

It would also be useful if a record of rainfall, temperature and other relevant climate information (which you probably collect anyway) is kept.

A possible extension to the project is to implement findings from some of the latest blight research in selected orchards to observe long-term effectiveness.

Apart from a couple of minutes a day to record temperature etc. we estimate that your time involvement, over and above your regular orchard management would be minimal.

Similar projects undertaken in other horticultural industries have proved invaluable in improving production practices and optimizing individual orchard performance.

If you are able to help, please contact Robyn Adams (robynadams5@hotmail.com), Jane McKenzie (jane_charterisbay@hotmail.com or phone 03 329 4290), or Tim Jenkins (Lincoln University, phone 03 325 3684, jenkint2@lincoln.ac.nz).

Research Up-date

One of the early findings from the blight control research is that *Mankocide* appears to be more effective at controlling the blight bacteria than the *Kocide* which most growers have used until now.

We asked Dr Tim Jenkins to contribute the following article to guide growers in the safe use of mankocide and provide information on any health or environmental risks.

In publishing this information on a ‘new’ treatment for blight, we note that the more familiar *kocide* copper spray is also considered a chemical that is dangerous to both human health and the environment.

In considering the warnings Tim offers us in relation to *mankocide* we need to make sure that as growers we are following best practice in our handling of all toxic sprays, and carefully assessing impacts on health and the long-term sustainability of the environment.

Mankocide: for control of walnut blight

Currently, most growers spray against walnut blight using kocide (active ingredient copper hydroxide). Recently it has been shown that mankocide (a

combination of copper hydroxide and the fungicide/ bactericide mancozeb) is more effective than kocide in reducing blight levels. Mankocide was trialled, along with a number of other sprays, in the NZWIG Sustainable Farming Fund walnut blight project. We found 55% less walnut blight on trees sprayed with mankocide, as compared to those sprayed with kocide.

Dr Tim Jenkins briefing members on aspects of the blight research.

The treatment included only 90% of the amount of copper used in the kocide treatment, but gave 2.3 times the level of control. This means that it is very likely that we can drop the rate of copper and still achieve at least the same level of control as with Kocide. That would be a very positive result in terms of environmental sustainability.

The main environmental concern in management of walnut blight is the potential accumulation of copper in orchard soils.

We have also shown there is potential to use a lower rate of copper, while still achieving blight control, if we adopt reduced but strategic spray timings.

It should be noted that mankocide is not allowable in organic orchard systems, whereas kocide is allowed in restricted amounts. In Australian trials Bordeaux mixture was the most effective of the sprays acceptable under organic certification.

The mancozeb component of mankocide is a common fungicide used on a wide variety of crops. Its active ingredient is dithiocarbamate. Application to walnut trees is an "off-label" use but is allowable as long as the residue in the kernels is no greater than 7 ppm. We collected walnuts from trees sprayed fortnightly with mankocide throughout the 2003/2004 season, and sent the kernels away for testing at Hill Laboratories. There was no detectable residue of dithiocarbamates (detection level is 0.02 ppm, two orders of magnitude below the permitted level).

The rate of application used so far in New Zealand trials is 205 g per 100 L (equivalent to 380 mL per 100 L), sprayed to runoff. Australian research has indicated that a higher rate (approximately twice the concentration) is more effective, probably due mainly to the amount of copper applied. This higher rate will also be tested in the upcoming New Zealand growing season.

The increased effectiveness of mankocide over kocide is likely to be due to: (1) the toxic effect of mankocide on copper tolerant/resistance walnut blight bacteria and/or (2) one of the active ingredients makes the bacteria more susceptible to the other ingredient. We are therefore assessing the potential of ingredients other than mancozeb that might be used in combination with copper to enhance walnut blight control.

Potential health effects are generally considered minimal if appropriate precautions are taken. The related product maneb was found in a rat trial (in combination with paraquat) to cause damage to the brain in the same area as is affected in sufferers of Parkinson's disease. There is also a case of the development of Parkinson's disease in a man, seemingly related to prolonged, unprotected exposure to large amounts of maneb. Through animal trials, mancozeb is described as having low toxicity to mammals including humans, and is considered non-carcinogenic and to have no reproductive inhibition or mutagenic effect. The breakdown product ethylenethiourea (ETU) has been linked to reduced thyroid function and thyroid tumours in an animal study involving feeding with mancozeb. Some websites that discuss potential health effects include…

http://www.health-diets.net/research/parkinsons.htm

http://www.cnn.com/HEALTH/library/DS/00295.html

http://infoventures.com/e-hlth/pestcide/mancozeb.html

(The third of these is the most comprehensive and also lists potential environmental and other effects).

While pointing out potential health risks, it should be noted that dithiocarbamates are very common sprays worldwide and in New Zealand. As with most other sprays protective clothing, masks with effective respirators, goggles and gloves should be worn, and spray drift should be avoided, especially onto unprotected people. A recommendation on the third website is not to enter a treated area until 24 hours has expired unless wearing suitable gear to avoid skin contact. Note it is an irritant to eyes and skin and one source indicates it can cause permanent corneal (eye) damage in severe cases. Rinse thoroughly in the case of eye or skin contact (use soapy water for 15 minutes on skin). Seek medical attention.

To minimise environmental impacts, avoid spray drift and do not dispose of wash water into waterways as the mancozeb component is toxic to fish. Predatory mites (that can control plant pest mites) are also susceptible to mancozeb. More detail of potential environmental impacts and ways to address them are given in the third website.

In summary, mankocide provides significantly better control of walnut blight than does kocide, when

applied at the same rate of copper per hectare. We will be working to reduce this rate while retaining blight control effectiveness, by strategic spray timing and other possibilities. Mankocide (the mancozeb component) has a wider range of potential health and toxicity effects as compared to kocide but the risks are minimal if normal precautions are taken while spraying.

Tim Jenkins

Member Profile

Extracts from an article in the January 2004 issue of FACTS, a monthly newsletter published by Williams & Kettle Fruitfed Supplies for growers around New Zealand and reproduced with their permission.

Good future for walnuts

By Kate Gordon

With about 15 per cent of the local demand for walnuts met by local producers, Paul Visser, president of New Zealand Walnut Industry Group (NZ WIG), says local walnut growers can feel pretty confident there will be good demand for their produce for many years to come.

….

"About 560 tonnes of walnuts are imported each year, mostly for commercial use, so with about 80-90 tonnes produced locally, we've got some way to go before we can met local demand. Often there's encouragement for export, but generally we see a lot of potential to satisfy more of the local market with gourmet-standard walnuts and value-added products such as walnut oil. That's one of the reasons we've introduced a Quality Standards trademark."

Paul's own property, Walnut Grove, was established on the outskirts of Christchurch in 1998 with his wife Leigh with the long-term objective to derive a lifestyle/retirement income from the walnuts.

"Originally we were looking at another property and thought walnuts might provide an economic use. That's how we first got in touch with Jenny and Malcolm Lawrence of **A Cracker Of A Nut**, two of our walnut industry pioneers and users of the quality standard trademark. When we bought this eight-hectare Newtons Road property, we went to Fruitfed Supplies for the irrigation design and installation, which was completed before we planted three varieties of grafted walnuts – Rex, Meyrick and Purple, a purple-fleshed gourmet variety.

"Planting was in 1998 in a 10x10 with one in the middle formation. The grafted trees don't grow as large as regular walnuts, as we've seen on Lincoln's research block where their 15-year-old trees are about 4-5 m tall. We have cut the catkins off for the last two years to encourage growth into the trees, pruning for a strong central leader. We're aiming for about 40 kg of fruit in the shell off each tree at 20-years-old but that's still an unknown reality."

… "People like the Lawrences from **A Cracker Of A Nut** did a lot of experimenting to successfully cold-press walnuts for oil. They were left with this "biscuit" of crushed walnut flesh on the press. Research has shown this can be ground to make excellent gluten-free flour. The crushed shells can be used for non-abrasive sandblasting and there is a lot of research into the health benefits of walnut oil, which is low in cholesterol. We can't promote this too vigorously yet as we don't have the volume of produce, but it's all very positive for the walnut industry."

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Paul sums up by saying: "The quality of fruit being produced by grafted walnut trees in New Zealand is second to none, and we're focused on continuing to develop top quality produce that makes our Quality Standard really meaningful."

Events

WORKDAY AT LINCOLN UNIVERSITY WALNUT BLOCK

10 am SUNDAY 15 AUGUST

Assistance is required in the pruning and selective removal of some trees.

There will be Group leaders to give directions, so don't feel you have to know precisely what to do. Please bring along tools which may be required.

Better to have too many on hand than not enough.

NZWIG's ongoing interest at the Lincoln Orchard is much appreciated by the University, and is essential for the future operation and research there, so please make some time available if at all possible.

Sat 27 - Sun 28 November

Keep these dates free. More information soon.