



COASTAL FRUITGROWERS' NEWSLETTER

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NSW Agriculture

Fruitgrowers' Newsletter
Edited by Sandra Hardy
Design & Layout -
Cathryn McMaster

No. 53 Winter 2004

Dear Growers

Welcome to the Winter edition for 2004.

In this issue there are a number of articles bringing citrus growers up-to-date with important results from industry funded projects and study tours. There's also some field day reports from recent events run by Low Chill Australia on the north coast of NSW.

Once again there's items of interest for all growers in the ''News in Brief'' and ''What's On'' sections.

There is also important information on the next Central Coast Cittgroup field day on Page 18.

North Coast citrus growers will also have a Cittgroup field day on Wednesday 28 July (see page 23).

Happy reading.

Sandra Hardy

Central Coast Cittgroup Field Day
Tuesday, 27 July, 10.00am at Kulnura
See page 18 for details

The information contained in this publication is based on knowledge and understanding at the time of writing. However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up to date and to check currency of the information with the appropriate officer of New South Wales Department of Agriculture or the user's independent adviser. Inclusion of an advertisement or sponsor's symbol in this publication does not necessarily imply endorsement of the product or sponsor by NSW Agriculture.

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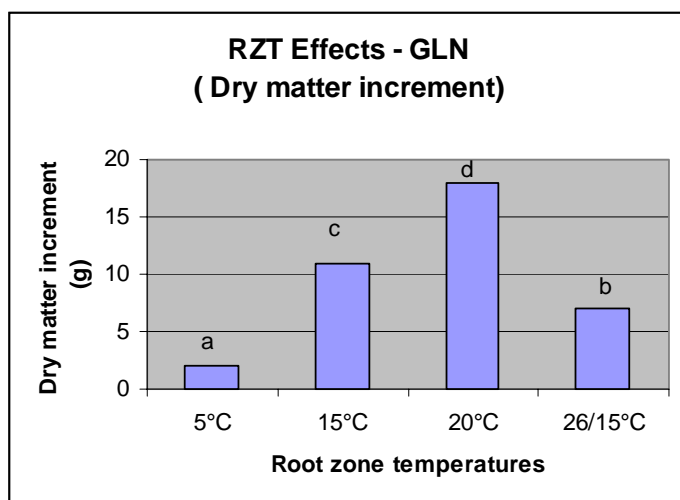
Root Temperatures and the Growth of Stone Fruit

**Peter Malcolm, District Horticulturist,
NSW Agriculture, Windsor**

Although most stone fruit growers realise how important air temperatures are in achieving sufficient winter chilling for adequate floral and vegetative bud-break and how damaging out of season frosts are, few orchardists know about the effects of root zone temperatures (RZT) on plant growth and leaf development.

Recent trials with Green Leaf Nemaguard (GLN) peach plants found that RZT independently of air temperatures and light levels significantly affected plant growth. Plants whose RZTs were constantly maintained at 20°C, grew significantly better than plants whose RZT were maintained at constant RZTs of 5 and 15°C. Growth in plants, whose RZT fluctuated between 26°C during the day and 15°C at night, was also retarded compared with plants whose RZT were maintained at a constant temperature of 20°C (Figure 1). This was despite average daily RZTs for both, being almost identical.

Figure 1. Mean ($n = 10$) dry mass increment of Green Leaf Nemaguard rootstock seedlings after being subjected to various RZT treatments for six weeks. The plants were actively growing at the time the treatments were being applied. Means followed by the same letter are not significantly different at the 5% level



It was also found that rates of leaf development were particularly sensitive to RZT and this was reflected in there being significant differences

between RZT treatments, in both leaf area and leaf numbers. (Table 1). This is of particular importance in the spring, when soil temperatures normally lag behind air temperatures. Low soil temperatures at this time retard new season leaf development and prolong the time the plant is dependant upon stored reserves for fruit development rather than photosynthates produced by the leaves. This is particularly important in the early stages of fruit development and may affect yields and the timing of fruit maturity.

	5°C RZT	15°C RZT	20°C RZT	26/15°C RZT
Total leaf area (cm²)	206 (a)	633 (b)	873 (c)	533 (b)
Final leaf number	48 (a)	121 (b)	159 (c)	128 (b)

Table 1. Mean leaf area and leaf numbers ($n = 10$) of Green Leaf Nemaguard rootstock seedlings after being subjected to various RZT treatments for six weeks. The plants were actively growing at the time the treatments were being applied. Means followed by the same letter are not significantly different at the 5% level

Further trials examining the RZT response of 5 different peach rootstocks demonstrated that higher soil temperatures also reduced tree growth. Figure 2 illustrates the detrimental effects of prolonged exposure to RZTs of 29°C during the day followed by RZTs of 20°C at night, compared with plants whose RZTs were kept constantly at 19°C. This finding may be significant to stone fruit growers in inland parts of Australia where summer soil temperatures, particularly during the day, can be quite warm.

These results illustrate the importance of RZT on growth and leaf development in peaches and nectarines. They suggest that orchard cultural practices which raise soil temperatures in the spring or which reduce diurnal fluctuations in RZT, maybe beneficial to growers of stone fruit, particularly those growing early maturing varieties with a short fruit development period. These results also suggest that the beneficial effects of thick layers of organic mulches on plant growth, may in part, be

due to their mediating effect on RZT and not solely their effect on reducing water evaporation losses from the soil.

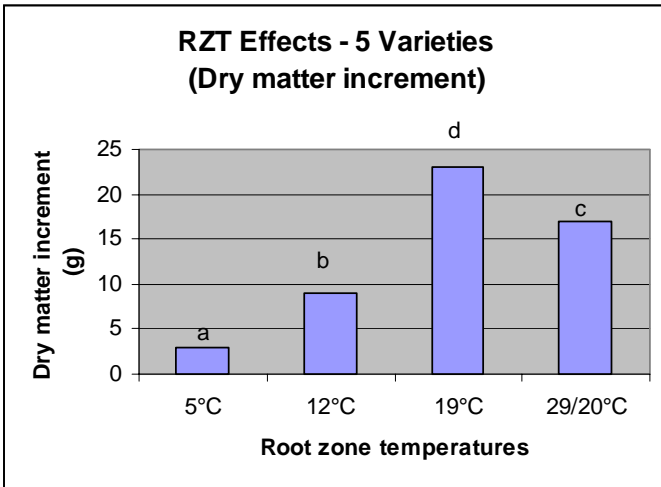


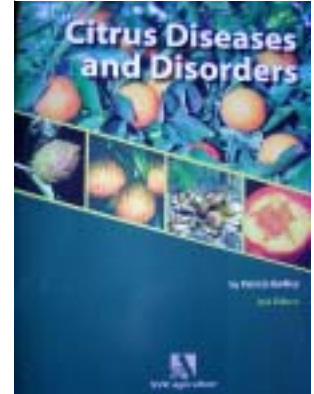
Figure 2. Mean ($n = 20$) dry mass increment of 5 different varieties of peach rootstock seedlings after being subjected to various RZT treatments for six weeks. The plants were actively growing at the time the treatments were being applied. Means followed by the same letter are not significantly different at the 5% level



Out Now

The 2nd edition of **Citrus Diseases and Disorders** has just been released.

This 44 page colour book written by Pat Barkley provides information of all the major diseases and disorders affecting citrus in Australia.



The book contains information on diseases of fruit, leaves and twigs; root and trunk diseases; viruses and physiological disorders.

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WHEREVER WE GO, WE MAKE IT GROW

Understanding and Controlling Coastal Diseases of Citrus

Presented at the 1st Coastal Citigroup Field Day.

**Nerida Donovan, Citrus Pathologist,
NSW Agriculture, Camden**

Melanose

Melanose is an important disease of citrus being a major cause for down-grading of fruit from coastal orchards. All species of citrus are susceptible to this disease that attacks immature tissue of fruit, leaves and small twigs.

Cause

Melanose is caused by a fungus *Diaporthe citri*, producing fruiting structures on twigs that have recently died and becoming established in the dead wood. Melanose is a serious problem in older trees, especially those that carry a lot of dead wood. Fungal spores are released from the fruiting structures by rainfall and splashed or dripped onto the fruit or leaves situated beneath the source of inoculum. Long periods of continuous wetness are required for spore production, dispersal and infection. At 25°C a continuous wetting period of 9 to 12 hours is needed for spore germination and infection, but below 20°C longer continuous wetting periods are needed for infection to occur.

Symptoms

Fruit

Citrus fruit are susceptible to infection for 3-5 months after fruit set. Where fruit is infected at an early stage and spore numbers are high the spots grow as the fruit develops, forming large lesions



that may coalesce and crack to produce a pattern described as mudcake melanose. Infection at a later stage of fruit development produces small, raised, superficial, dark brown to black spots, often referred to as fly speck melanose. The distribution of melanose spots on fruit can depend on the way in which water containing spores settles or flows over the fruit surface, for instance a tear streaking pattern may form due to water carrying spores as it flows down the fruit. Melanose lesions may become darker and rougher after the application of copper sprays.

Leaves

Citrus leaves are resistant to infection once they are fully expanded. Leaf distortion and dieback can occur if shoot apices are infected while leaves are unfolding. The effects are less severe where infection occurs at a later stage of shoot development, with smaller, mostly discrete lesions and minimal leaf distortion or size reduction.



Control

- Disease occurrence can be reduced by pruning out dead wood to reduce the spore load in the trees. Dead wood is more common on older, unthrifty trees so improving tree health and vigour can reduce melanose problems.
- The application of a copper fungicide at petal fall and again 6 weeks later can reduce severity of disease. In higher rainfall areas on the north coast of NSW an earlier spray may be needed. Timing of sprays can be difficult in warm coastal areas where lemons and limes can have many bloom periods.

Lemon scab

Cause

Lemon scab is caused by a fungus *Sphaceloma fawcettii*. Fungal spores are produced directly on scab pustules on leaves and fruit and are spread to new susceptible fruit and leaves by rain splash, overhead sprinkler irrigation and during spraying operations. For germination and infection to occur the scab spores need a wetting period from rain, overhead irrigation or spraying of at least 4 hours continuously or 1-2 hours followed by 3-4 hours within the next 24 hours. Dew may cause spores to be released from the pustules but the limited splashing action means there would only be localised dispersal. Some dry spores can also be spread by wind.



Symptoms

Symptoms of lemon scab infection are raised, irregular scabby areas on the fruit, leaves and twigs, called pustules. The pustules are grey/brown or pinkish in colour and darken with age. Lemon fruits are susceptible to infection by the scab fungus until they are 3-4 cm in diameter (up until approximately 3 months after petal fall). Lemon foliage is susceptible to infection when the new growth flush is less than 25% expanded.

Control

- Disease control can be achieved using copper sprays applied at ¼ to ½ petal fall and 4 - 6 weeks later.
- The removal of infected fruit, including the button, and infected foliage, especially summer leaf flushes which are often severely attacked, can reduce the spore load in the orchard.

- The severity of infection by citrus scab depends on the amount and frequency of wetting periods whilst the growth flush and fruit rind are susceptible to attack. The extended bloom period in lemons makes accurate timing of sprays difficult. Avoiding overhead irrigation can reduce the length of wetting periods, thereby reducing the level of infection in an orchard.
- Rough lemon rootstock is very susceptible to scab so when planting new trees use clean nursery stock.

Pink disease

Cause

Pink disease is caused by a fungus, *Erythricium salmonicolor*. Citrus and many other woody plant species can be affected.

Symptoms

Pink disease can be severe in tropical areas with high rainfall; it mainly affects tree trunks and branches of mature trees. The fungus spreads rapidly along the bark under humid conditions, forming a smooth, pink encrustation of hyphae (fungal strands). Over time the fungus penetrates and kills the bark which dries and fades to a grey colour. Affected branches show signs of gumming and death and may often be ring barked, leading to death of major limbs or entire trees.



Control

- Pruning out and burning of affected limbs followed by copper fungicide sprays may be effective in controlling pink disease.
- Problems can also be reduced by improving light penetration and air circulation in the tree canopy. This may be achieved by thinning out the canopy and elimination of rank weed growth from underneath the tree.

2004 Spain Study Tour

“Window into the future”

Steven Falivene, District Horticulturist, NSW Agriculture, Dareton and John Chavarria, Mildura Fruit Company

A citrus study tour to Spain, sponsored by the Mildura Fruit Company, was undertaken in early February 2004. Crop yields in Spain are on average 25% higher than Australia and many of the farms visited indicated that small fruit size was not a major issue. All of the farms visited were using a fertigation system that enabled them to have excellent control of nutrient application. Fertiliser rates in Spain are about 75%-100% higher than in Australia. Good nutrition management using fertigation was a key element in maintaining high levels of production.

The majority of fruit grown in Spain is exported to EU countries, with Germany being an important market followed by France. The industry comprises 40% oranges (Navels & Valencias), 40% mandarins and 20% other citrus types (lemons and grapefruit).

There were four main citrus growing regions in Spain, the cool northern region, mid Valencia region, Murcia region and the Sevilla region. The cooler northern region consisted of the Castellon, Alcanar and Tortosa districts. This region predominantly grew mandarins. The mid region of Valencia mainly grew mandarins and oranges. The Murcia region is recognised for its lemon production and is increasing production of mandarins and oranges. The warmer region of



Figure 1: Growing regions in Spain

Seville and Huelva grew a mixture of oranges and mandarins.

Many of the new plantings are being grown on marginal low fertility and low water holding capacity soils. The use of drip irrigation and fertigation is seen as a key aspect in being able to grow citrus on these marginal soils.

Irrigation

The technically advanced orchards visited all used drip irrigation. No under-tree sprinklers were used because drippers are seen as a more efficient and effective mechanism to deliver accurate amounts of water.

Daily irrigations were conducted in the summer period. Some growers split their daily irrigation into two daily pulses. The pulsing of irrigation is seen as important especially in soils with very low water holding capacities (rocky shales and sands). Daily irrigations ensured that the soils were consistently held near field capacity throughout the growing season.

Crop Monitoring Practices

Many of the farms were using various methods to monitor crop development. All of the growers visited used leaf analysis as a nutrition management tool. Leaf analysis was conducted at the normal time, but also was undertaken monthly all the way through the crop development stages (flowering to harvest). Growers have developed their own leaf analysis standards for the monthly leaf sampling program.

Many growers also used soil water extractions to monitor the amount of fertiliser available in the soil and nutrient movement in the soil. This information is used to adjust fertiliser programs.

Fertigation systems

Every grower had a different fertigation system. The majority of farms all used high levels of fertiliser. Fertiliser rates for mature trees were about 180-400 units of Nitrogen, 50-80 units of Phosphorus, 70-230 units of Potassium, 20 units of Magnesium and 20 units of Calcium. The fertigation system is the vehicle to deliver these high fertiliser inputs. By applying the nutrients with each

irrigation, the impact of nutrient load can be spread evenly across the season.

About 20% to 50% of all the nitrogen is applied by petal fall and about 65% to 85% applied by the end of the fruit set/fruit drop period (mid December in Australia.) Calcium is focussed towards during the late spring/summer period when temperatures rise and water use increases. Phosphorus is applied early in the season. Some growers applied potassium towards the second half of the season (cell expansion stage) whilst others applied it in the first half of the season.

Growers focussed on pushing the trees to the maximum canopy size as early as possible for higher production levels. Although many growers applied micronutrients via fertigation, foliar micronutrient sprays were also regularly used throughout the season.

Varieties and Production

Afourer mandarin plantings are increasing. Afourer is a late maturing easy peel that is very low seeded when grown in isolation. The early navel variety


Fukumoto is currently being planted hopefully as a replacement for Navelina.

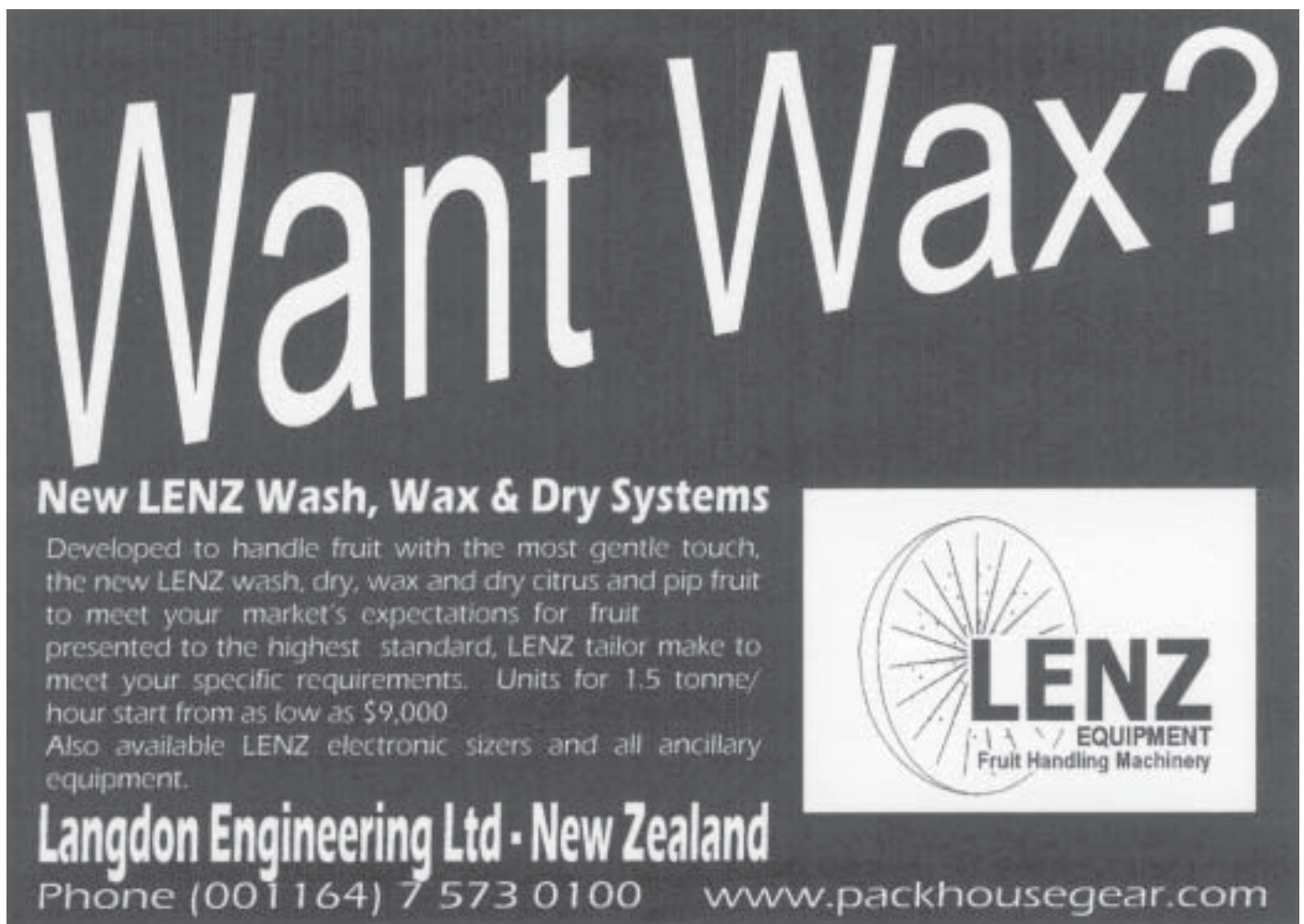
Growers are also increasing plantings of late navels including some varieties from Australia. Average production levels from well managed orchards at standard density (400-500 trees/ha) using drip irrigation and Citrange rootstocks are about 40-45T/ha for Lane Late, 50-60T/ha for Valencia and 40-50T/ha for various mandarins.

Pruning & Growth Regulators

Annual pruning is considered normal practice on all varieties. The majority of trees are no more than 2.5 metres in height.

Numerous growth regulators are used to increase fruit size and regulate flowering. Growth regulators used in Spain include: GA (2x 10ppm) at flowering to increase set, Dichlorprop (24DP) and Triclopyr (3,5,6-TPA) to increase fruit size and winter GA to regulate flowering.

Some growers also used a nutrient based plant health promoter "Brotomax" to increase tree health and to regulate cropping. 



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Delivering Solutions to Postharvest Citrus Problems

Peter Taverner, SARDI

Extracted from the Packer Newsletter, Volume 74, April 2004.

In September 2003, a national citrus postharvest research & development meeting identified six priority areas. These were: Packingline processes; Technology transfer; Pre-harvest treatments for postharvest outcomes; Market access; Environmental issues; and Storage and transport.

A program was developed to look at the following issues over the next 4 to 5 seasons.

Decay control. Aim to develop treatment standards for decay control (especially for sour rot) in early season fruit. The development of treatment standards should take into account different fungicide application techniques and aim to minimize the incidence of mould sporulation on export fruit.

Product evaluation/Food safety. Recently registered 'generic' fungicides and sanitisers will be evaluated for efficacy and compatibility in various combinations.

Market access. Systems approaches (eg. oil and high pressure washes) will be developed for non-fruit fly pests (eg. LBAM.).

Packer Newsletter/workshops and surveys. Continue these extension activities with an emphasis on flexibility and responsiveness to national issues, and important regional problems.

An important part of the new program will be a Postharvest Steering Committee. This committee will periodically review the issues, needs of the citrus industry, and will be able to advise on new research directions. A degree of flexibility to respond to emerging issues is important provided the main 'game plan' is retained.

The Packer Newsletter is available online at www.sardi.sa.gov.au/horticulture/index.html



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Vibrex Horticare will keep your produce looking fresher and provide improved shelf life into supermarkets and retail outlets. Application of **Vibrex Horticare** on picking, packing and storage bins will eliminate the problems associated with unwanted fungal spores when being picked transported or stored.

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Degreening Using Ethylene

Peter Taverner, SARDI

Extracted from the Packer Newsletter, Volume 74, April 2004.

The external colour of citrus can relate more to climatic conditions than maturity. Many citrus cultivars can be quite palatable while their peel colour is still green. The consumer associate green colour with immaturity and ethylene degreening is a legitimate method to improve the visual quality of mature fruit.

Ethylene effects on the orange

Ethylene is a natural growth regulator produced by most fruits as a response to stress or during the natural ripening process. Under conditions of mild stress, such as cold nights, citrus degreen naturally. The postharvest use of ethylene seeks to chemically hasten the degreening process.

Ethylene effects on decay

The temperature and humidity required for ethylene degreening provides ideal conditions for the development of postharvest disorders. The level of ethylene used in degreening is also very important.

Ethylene levels above 5 ppm. do not hasten degreening or improve colour, but may cause serious losses from anthracnose (sometimes known as 'gas burn').



Anthracnose

Beat 'Gas Burn'.

The following procedures should minimise the risk of disorders for Navels intended for gas colouring, especially when cold wet conditions occur prior to harvest.

- Routine autumn sprays of copper should be applied to prevent infection with anthracnose washed onto fruit from dead twigs.
- Fruit should be dipped after harvest in an appropriate fungicide to control moulds and anthracnose. Button retention is assisted by the use of 2,4-D.
- Gas for degreening should not exceed 5ppm. The trickle system of controlled ripening should avoid "gas burn" especially in mandarins.
- Packingline treatment should include a fungicide to control anthracnose.

These procedures are also applicable to fruit intended for export and which are not gas coloured. Anthracnose has been the cause of considerable losses of fruit when harvest follows a period of cold, wet weather. 🌳

*** OUT NOW ***

Growing Lemons in Australia - A Production Manual

The manual is a key result of the recently completed levy funded project 'Production of quality lemons for the premium local and overseas market' (CT97005).

The manual comprises 23 chapters providing a comprehensive overview of all facets in lemon production. Chapters include climatic requirements, varieties, rootstocks, orchard establishment, nutrition, canopy and crop management, postharvest handling, pests, diseases and much more.

The manual will be available electronically on line on the Australian Citrus Growers website at www.austcitrus.org.au.

For more information contact Sandra Hardy on 0243 48 1916 or sandra.hardy@agric.nsw.gov.au

National Evaluation of Valencia and Common Orange Varieties

Graeme Sanderson, Research Horticulturist, NSW Agriculture, Dareton.

This information is from the final report of Project CT98023

Valencia clones and rootstock performance

During the 1990's the demand for Valencia oranges for orange juice concentrate production was greatly reduced and some trees were removed. However there were still good returns available for growers who supplied good quality fruit to processors for the production of fresh juice.

Returns and grower profits would be significantly increased if they used the clone of Valencia orange best suited to local growing conditions and the rootstock best adapted to local soils.

A research program commenced in 1996 with the aim of gaining the information needed by harvesting two existing rootstock and clonal field trials at a much later time in February and April. Both the trials had been planted in 1984 to identify the best rootstocks and clones of Valencia oranges.

The rootstocks trialled included *Poncirus trifoliata*, Benton citrange, Carrizo citrange, Troyer citrange, Cleopatra mandarin, Emperor mandarin, Sweet orange, Rangpur Lime, Rough lemon and Swingle citrumelo.

- Swingle citrumelo, Carrizo and Troyer citrange gave the largest yields and the best returns. The average yields from four harvests showed that Swingle citrumelo produced 75.9, Carrizo citrange 67.3 and Troyer citrange 65.8 tonnes per hectare.
- Carrizo, Swingle, Troyer, Emperor and Cleopatra mandarin were in a group which produced fruit of the highest juice content. 48.4, 47.8, 47.5, 47.3 and 47.0% respectively (compared with Rough lemon 40.7%).

In the clonal comparison trial 14 Australian clones of Valencia orange, considered at the time, to be the best performers were compared side by side for the first time. The clones were from New South Wales, Victoria and South Australia.

- In summary, Smith, Chaffey or Newton Keenan T2 are the preferred Valencia clones for late season fresh juice production.
- Newton Keenan T2 produced the best yield followed by Chaffey and Smith. Coats, Hoyles and Thompson were the poorest yielding clones with Newton Keenan T2 producing 81% more fruit than Coats.
- Chaffey and Smith fruit had the highest fruit juice content, followed by Coats, Jacobs, Newton Keenan T2 and Casey. Appleby and Oliver consistently produced fruit with the lowest juice content in both harvests.

Results show very large differences between clones and hence there is a large financial incentive to use only the best clones in future plantings. Over four February harvests the best clone yielded 73% more fruit than the poorest clone and in April the difference between the best and poorest clone was 100%.

In summary, results from the last four years show that in February, Newton Keenan T2, Chaffey, Morris and Smith were the best performers; and in April, Smith, Newton Keenan T2, Chaffey and Newton Keenan T1 were the best performers.

Auscitrus supplies high health status budwood of Newton Keenan 3125 (T1) and 3126 (T2). Budwood is also available of the early Valencia selection Benyenda and late hanging Valencia, Berri.

Delta Valencia, Midnight Valencia and common orange varieties with fresh juice potential.

The fresh orange juice market has continued to expand in recent years and has stimulated a renewed interest in orange varieties suited to juice processing. The seedless Delta and Midnight Valencias from South Africa were introduced to Australia primarily for the fresh fruit market. Fruit not sold on the fresh fruit market would be used by the processing industry as the internal juice characteristics are suitable for fresh juice production. Other juice varieties have been accessed from Brazil and Spain along with 3 local

Valencia selections. The four evaluation sites are in the Riverland region of South Australia (Waikerie), Riverina region of NSW (Griffith, Leeton) and the Sunraysia region of northwest Victoria and southwest NSW (Dareton).

The Delta Valencia has been the better performing selection with larger tree size and higher initial yields than Midnight Valencia. Delta and Midnight are early maturing Valencia selections reaching acceptable, minimum internal maturity for fresh juice in mid October at Dareton, NSW. Midnight has shown earlier maturity than Delta Valencia on Trifoliata rootstock and larger fruit size due to its much lower crop load. Both Valencias have demonstrated the near seedless characteristic reported in overseas literature. The poor performance of Midnight Valencia, as young trees, at trial sites in Sunraysia and the Riverina suggest there should be no major plantings of this Valencia selection until several more years of observation are conducted on trial plantings.

The evaluation of common oranges and Valencia has also demonstrated that the Valencia season can be extended by selection of early maturing (Benyenda) and late hanging (Berri) clones. The Pera clones from Brazil have not created much commercial interest because of their maturity overlap with Valencia, elongated fruit shape and erratic flowering habit. Limeira was the highest yielding Pera clone at Dareton and Leeton. Similarly, the late maturing Natal was seen to be competitive with late held Valencias and would not have any maturity advantage. The Lima variety can reach Brix:Acid ratios of 120 to 1 and proved almost unpalatable in taste panel assessment. Minor plantings of the variety may occur to supply a high sugar blend for late held or early season Valencias.

Commercial interest from Berri Ltd saw the fresh juice evaluation project begin in 2000, on three year old trees. The June to September period is a difficult time for a company to supply high quality fresh juice. Late held Valencia and de-bittered navel juice are typically used to fill this mid season gap, but juice quality can be less than ideal. To address this problem, juice quality assessments were conducted over a three year period (2000-2002) on 14 orange selections at Berri laboratories in Leeton, NSW and Berri, SA. Taste panel testing was also conducted at the Berri lab in SA. The juice assessment in 2002

only concentrated on varieties of commercial interest to Berri Ltd. These were the mid season varieties Salustiana, Parson Brown, Hamlin and Pineapple that mature in the June to September period. Delta and Midnight Valencias were also tested as they are seedless, early maturing and will probably be planted for the fresh fruit market with overrun fruit available to juice companies. Auscitrus budwood sales for mid season oranges have increased 140 fold since 2000.

Both Berri Ltd and Golden Circle are negotiating long term juice contracts with growers to supply juice type oranges. There is also a regional development initiative in northern NSW to plant juice oranges to supply, under contract, the P & N juice company. All these larger scale developments are looking at the mechanisation of the harvesting operation within the next 10 to 15 years.

There is a need to access high quality, juice oranges from overseas breeding and selection programs. A gap still exists in the May to early June period for a sweet, juice type orange. A Chinese variety has been identified that fits this maturity niche and will require rapid evaluation when it leaves Australian quarantine. A second variety, Earlygold, has also been selected from Florida and should be available within the next 3 years.

A full copy of the report can be obtained from Horticulture Australia, phone (02) 8295 2300.



What's new on the Web in Publications

◆ **Proceedings of the 3rd National Herb, Native Foods and Essential Oils Convention**

Go to www.rirdc.gov.au/reports/EOI/04-059.pdf

◆ **Papers and presentations from the Australian Citrus Growers 56th Conference held recently in Mildura.**

Go to www.austcitrus.org.au

◆ **Postharvest treatments for improving eating quality and delaying stonefruit mealiness** **Project SF02012 Update**

John Golding, Postharvest Research Horticulturist, Gosford.

The aim of this two-year project was to adapt the controlled ripening technology used successfully for peaches and nectarines in California to Australian conditions. The sale of control ripened fruit in Woolworths' retail stores in Sydney and Adelaide was conducted during a four-week period from late January to March in the 2002-03 and 2003-04 season. This project led to the acceptance of controlled ripened peaches and nectarines by Woolworths after only one year's experience and other retailers can be expected to adopt this class of fruit as they have done with controlled ripened pears and avocados.

At present the monitoring of ripening is dependent on destructive penetrometer readings. These tests are time consuming and costly. Two commercially available non-destructive instruments were investigated. They work by recording vibration signals generated by gently tapping the fruit and by electrical signals. The data show that the changes in acoustic properties of the fruit as they approach the required firmness are not generally large enough to enable automatic measurements on representative batches of fruit. Further development of this technology may enable us to predict the correct time of terminating pre-ripening.

The storage life of peaches and nectarines is limited to 2 - 3 weeks at about 0°C. This short storage life limits the use of sea freight to nearby SE Asian markets. Some reports have indicated that adding ethylene to the cool room during storage of peaches and nectarines can increase storage life by delaying the development of mealiness. In 2002/3 tests with three varieties of peaches and nectarines showed either no or only slight benefits and also that there were no adverse effects from adding ethylene. Recent published reports confirmed our observations.

In 2003/4 an invitation was received to evaluate a prototype portable Near Infra Red (NIR) spectrometer for measuring Soluble Solids Content (SSC) non-destructively. Accurate handheld NIR measurement will enable SSC measurement, especially of fruit still on the tree. Excellent correlations between the nondestructive NIR predicted and actual refractometer SSC were found. However more work is required to improve the data and calibration of the NIR for use by the summerfruit industry.

◆ **Summerfruit Quarterly extended**

Summerfruit Quarterly, the industry technical bulletin has had funding extended by three years. You can subscribe for \$65 per annum or if you are a registered levy payer get it free. Contact Jo Solly 02 6622 2000 for details.

◆ **Fees to drop**

Warren Truss has announced a 'significant reduction' in Australian Quarantine and Inspection Service (AQIS) export certification fees. He said that exporters and rural communities will benefit from the new fee structure through lower fees, simpler charging arrangements and greater equity in the way AQIS administers its programs.

◆ **Summerfruit levy**

The 1st of April signals the introduction of changes to the Summerfruit statutory levy. After nearly a year of process including a postal ballot of industry the statutory levy for fresh stone fruit will alter to have 0.55 cents per kilogram collected for R&D and 0.45 cents for Marketing. The levy is collected under Commonwealth legislation and like taxes and GST is applicable to all growers, with no exception for individuals, groups or states.

◆ **National Summerfruit Conference** **4-6 August 2004, Melbourne**

For more information see page 23.

◆ **Alternatives to copper for disease control in the Australian organic industry**

Extracted from *Organic News*, Volume 1, Issue 5, May 2004.

Copper has traditionally played a significant role in organic systems for combating some fungal diseases. More recently, however, organic standards have discouraged the use of copper for diseases. It has, therefore, become clear that alternative products and technologies are required to maintain productivity and profitability in the organic food industry.

Organic farmers often make use of 'alternative' products for pest and disease control. Their decision to use these products is frequently based on anecdotal (as opposed to scientific) evidence, as to their efficacy. These alternative products are usually unregistered or are sold without sound data. The key limitation of alternative products is that their efficacy of disease control, especially when compared to registered chemical fungicides, is often lower. Because of this, commercialisation and registration of these alternate products in conventional horticulture is often not undertaken. Manufacturers of these products may also view the organic market as not large or profitable enough to warrant the expense associated with bringing these products to registration.

A recently-completed project conducted by NSW Agriculture and commissioned by the Rural Industries Research and Development Corporation (RIRDC) has been investigating the availability and efficacy of organically-acceptable alternatives to copper disease control products; both internationally and within Australia. The soon to be published report provides:

- A comprehensive review of data and literature available on alternatives to copper for disease control.
- Some conclusions on the potential efficacy of these alternative products and for their possible use in the Australian organic industry.
- Recommendations for increasing the availability of these products to organic farmers in Australia.

Part of the project involved a 'National Call for Expressions of Interest' to provide information on products available in Australia. Approximately 27 companies or individuals responded and were interviewed regarding the use of their products. From the interviews, it became clear that many products and technologies are not being pursued to commercial availability. Reasons for this included the strict registration requirements in Australia coupled with the limited market for these products.

The report ranks alternate disease control technologies according to the number of refereed publications and the confidence/significance of the data presented. Three categories for ranking technologies were chosen:

1. Technology highly-relevant.
2. Technology shows promise.
3. Not enough information currently available.

Technologies considered **highly-relevant** for disease control include:

- Selected biological control agents
- Compost
- Inoculated compost
- Surfactants and biosurfactants
- Anti-fungal compounds.

Technologies that **show promise** include:

- Compost tea
- pH modifiers and bicarbonates
- Foliar calcium and silicone
- Milk products and other organic amendments (molasses)
- Essential oils (tea tree)
- Polymer coatings.

Those technologies where **not enough information is currently available** include:

- Vermiculture products
- Plant extracts excluding essential oils (rhubarb)
- Seaweed extracts
- Colloidal silver
- Potassium permanganate
- Vinegar
- Household antiseptics.

In addition to the products that have been reviewed, other technologies, including induced and genetic

News in Brief

resistance, cultural control, and integrated pest management (IPM), are seen as highly-relevant to reducing disease in organic horticulture.

Generally, very little scientific evaluation of alternative products is being undertaken in Australia, even though a range of products/technologies claim to reduce plant diseases.

This report strongly urges that better scientific evaluation of promising products is undertaken and also suggests that the organic industry itself should investigate methods for bringing these products to commercial availability. This would probably include the requirement for licensing the product through the Australian Pesticides and Veterinary Medicines Authority (APVMA) part of the National Registration Authority (NRA).

Researchers for this project are: Melissa Van Zwieten¹, Gordon Stovold², Lukas Van Zwieten^{1*}

¹Environmental Centre of Excellence, NSW Agriculture, Wollongbar. ²Centre for Tropical Horticulture, NSW Agriculture, Alstonville.

*Corresponding author

For more information, contact: Lukas Van Zwieten, Wollongbar Agricultural Institute, Wollongbar, phone (02) 6626 1126. E-mail: lukas.van.zwieten@agric.nsw.gov.au 

◆ **Starting a business? Thinking of exporting? Try these organisations for help.**

Robyn Neeson, Organic Advisory Officer, NSW Agriculture, Yanco.

Extracted from *Organic News*, Volume 1, Issue 4, April 2004.

NSW Government Assistance

Department of State and Regional Development

The New South Wales Department of State and Regional Development (DSRD) provides information and contacts to assist new businesses to establish in NSW. Follow the following links for information on:

- What to do before starting a business.
- Business structures — sole trader or partnership.
- Buying an established business.
- Renting premises.

- Writing a business plan.
- Identifying technology that will help your business.

There is a wide range of tools and information about starting a business on DSRD's Small Business website.

Agsell is the international export marketing arm of NSW Agriculture providing crucial access for foreign businesses to the enormous resources of the Australian agriculture and food industries. Agsell coordinates long-term grower contracts between the buyer and producer, and introduces investors to NSW agricultural industry contacts. Growers who already export may still need help with identifying new markets or increasing their sales to their existing markets. Go to www.agric.nsw.gov.au/agsell to find out how Agsell can help.

Federal Government Assistance

New Industries Development Program (NIDP) helps people in the agricultural, processed food, fisheries and forestry industries turn innovative business ideas into competitive, profitable and sustainable commercial ventures. NIDP encourages and supports Australian agribusinesses as they commercialise new market-driven products, services and technologies. For more information, check the website: www.affa.gov.au/agribiz

Austrade and TradeStart offer a package of free services designed to assist small and medium-sized Australian companies develop their business overseas and make their first export sale. The TradeStart program gives Australian businesses the best possible start to exporting, by providing a wide range of free services to new exporters including advice and information about getting into exporting, export coaching and assistance on the ground in foreign markets.

To find out more about TradeStart and what the export advisors and Austrade's international network offers, go to www.austrade.gov.au 

◆ **Budwood Orders**

Closing date for Spring Budwood orders is 31 July 2004.

To ensure that we can provide budwood requirements, and to highlight any potential problems with budwood supply. Auscitrus needs notice advance developments and subsequent budwood orders. If you are involved in developments that will be requiring large quantities of a particular variety, please contact Tim Herrmann at the Auscitrus Dareton office to discuss bud numbers and time frames.

◆ **Variety Evaluation – assessing new varieties with possible commercial potential**

Horticulture Australia recently approved funding to Auscitrus for a 5 year project to import, evaluate new varieties (both local and imported) and maintain foundation trees.

Evaluation of the horticultural performance of new varieties will be carried out by Graeme Sanderson at NSW Agriculture, Dareton. The testing will also be expanded to include a network of sites and collaborators in the Central Burnett, Riverland, WA and Riverina. As many of the new varieties are patented, public access to the sites will not be available until after the release of the first nursery trees.

The aim of the project is to allow growers to compare, perhaps very similar varieties or clones in their region, so that they are not buying “sight unseen” from a catalogue, or relying on information from overseas or from a region that is climatically different.

◆ **Patented Varieties Released from Post Entry Quarantine**

Eleven varieties imported by ANFIC (the Australian Nurserymen’s Fruit Improvement Co), have now been released from Post Entry Quarantine. These include the patented varieties from Israel (Mor and Nectar), Nouvelle mandarin, Pomelit and the Eureka seedless lemon from South Africa and Tacle

and Cami mandarins and four numbered Tarocco hybrids from Italy.

ANFIC will commercialise these varieties within Australia and collect the royalties, but Auscitrus will be multiplying them for ANFIC. The varieties will be independently evaluated by Graeme Sanderson at Dareton and if Horticulture Australia funding becomes available, in selected regional evaluation sites at Mundubbera, Gin Gin (WA), Monash (SA) and in the Riverina.

In addition, the mandarin variety Gold Nugget, patented by the University of California, and imported by Jempi Pty Ltd was released from quarantine and will be multiplied by Auscitrus.

◆ **Sterilizing Nursery Tools**

To prevent transmission of pathogens such as exocortis by nursery tools (eg secateurs and budding knives), it is advisable to dip the tools between different budlines or varieties in a 10% solution of household bleach. Make sure the label on the brand of bleach you use states that it has 12.5% available chlorine. Bleach rapidly loses its strength in heat and sun and in the presence of organic matter. So it is important to store the undiluted bleach in a cool place out of the direct sunlight and to make up fresh solutions for dipping tools several times a day. A momentary dip of tools is sufficient. Bleach is corrosive and tools should be then dipped in clean water and at the end of the day’s operations, sprayed or dipped in oil to prevent rusting.



National Plantings Database Update

Crop reports and farm maps have now been completed for the North Coast region of NSW.

All growers surveyed in December 2003 should now have received their property plans.

If you have any changes or question contact Andrew Thompson at Australian Citrus Growers (ACG) on (03) 5023 6333.





APVMA - Australian Pesticides and Veterinary Medicines Authority

Dimethoate & Omethoate review


The APVMA review scope document on Dimethoate & Omethoate has been released for public comment. You can read the draft report on the APVMA website at www.apvma.gov.au/chemrev/dimethoate_scope.pdf

Endosulfan review

The APVMA draft final review report on the pesticide endosulfan has been released for public comment.

You can read the draft report on the APVMA website at www.apvma.gov.au/chemrev/endosulfan_draft_final.shtml

Carbaryl review


The APVMA draft report of its review of the pesticide, carbaryl, has been released for public comment. You can read the draft report and the media release on the APVMA website at www.apvma.gov.au/chemrev/carbaryl.shtml 

AgChemical Update

Kevin Bodnaruk, AKC Consulting

Benomyl. The suspension of benomyl is still in place awaiting the finalisation of the toxicology review. With the import prohibition in place stocks of benomyl have been depleted.

Fenthion. The review of fenthion has been delayed awaiting the review of dimethoate so that both products could be assessed in parallel.

Dimethoate. The review of dimethoate has been announced. The specific areas identified for evaluation are toxicology, OH&S, trade and residues. The scoping document can be found at www.apvma.gov.au/chemrev/dimethoate_scope.pdf 



Know-how for Horticulture™


◆ HAL restructure

HAL is changing its structure to improve the level of service it provides to industry. Under the new structure HAL will be in a better position to apply our across-industry knowledge and expertise to benefit each individual industry. The new structure has established two key teams to manage industry programs. They are:

Industry Services – this team will work with industry on planning and developing programs. They will be the main point of contact for industry. Industry Services representatives will work with multiple industries. The groupings for these industries have been based on natural synergies that exist in industry programs. The average number of programs HAL manages for each industry has also been considered. The industry services person for Citrus is Ross Skinne, for Avocadoes is John Tyas and for Summerfruit is Bradley Mills.

Professional Services – this team will manage programs identified by industry and the Industry Services team. The Professional Services team will facilitate the delivery of outcomes back to industry. They will work across areas of specialisation covering HAL's entire R&D and marketing activities to ensure synergies across industries are captured to the benefit of individual industries.

These teams are supported by Corporate Communications, Business Management and Corporate Governance/HR.

Industry will receive a better level of service and will benefit more from the knowledge and expertise HAL has gained from working across industries. HAL will have a stronger focus on industry planning needs, will be better able to deliver commercial benefits to industry and will be improving communication to industry. 

◆ Seasonal Work Australia

www.seasonalwork.com.au is an exciting new website which will link backpackers, other travellers and students etc with seasonal employment opportunities around Australia.

To recruit staff consider listing details on the seasonalwork Australia website. 

Monitoring Pesticide and Cadmium Residues in Fresh Fruit and Vegetables: Preliminary Results 2002-2004

**Sandra Hardy, District Horticulturist,
NSW Agriculture, Gosford.**

NSW Agriculture and Sydney Markets Limited (SML) continue to fund the Pesticide Residue Survey which was started in 1989. Between 1989 and 2001 more than 5800 samples of produce were tested. Of all samples tested more than 97% met the MRL standard. Following is a brief summary of the results from the Pesticide and Cadmium Residues Monitoring Program in horticultural commodities distributed through the Sydney Markets from February 2002 to February 2004.

Some 1000 samples, comprising 45 different fresh fruit and vegetables, were purchased from Sydney

Markets between February 2002 and February 2004. The samples were analysed for residues of 28 pesticides with some samples also tested for the heavy metal, cadmium.

Pesticide residues were either absent or complied with the Maximum Residue Limit (MRL) in 98.4% of samples. Only sixteen samples (1.6%) contained pesticide residues which exceeded the MRL, with another seven samples with residues between 50% and 100% MRL. Of the 143 samples analysed for the heavy metal cadmium, none were above the Maximum Permitted Concentration (MPC) for cadmium.

	Fruit	Vegetables	Total + % of total
Number of samples	467	533	1000
Number of Samples with no detections	380	482	812 (81.2%)
Number of residues > Limit of Detection to 50% of MRL	94	101	195
Number of residues >50% MRL to the MRL	5	2	7
Number of samples over MRL	4	12	16 (1.6%)

Central Coast CITTgroup Field Day

When: Tuesday 27 July, 10.00am for a 10.30 start.

**Where: Ray Gibsons property,
RMB 2345 George Downes Drive, Kulnura.**

With special guest speakers from Dareton.

- **Graeme Sanderson** (Research Horticulturist) speaking about the latest results from the National Variety Evaluation program. The latest information (with fruit samples) on navels, mandarins and varieties for fresh juice.
- **Tahir Khurshid** (Research Horticulturist) speaking about the latest results from research into crop manipulation using Ralex® and the fruit size prediction model.
- Inspect the National Lemon Variety and Rootstock trial and hear the final results on yield and fruit quality measurements.

Morning tea and lunch provided.

For more information contact Sandra Hardy on (02) 4348 1916.




Report on Winter Pruning of Stone Fruit Field Day at Bangalow NSW – May 2004

Phillip Wilk, District Horticulturist, Alstonville.

Extracted from the **Low Chill StoneFruit Grower**, No. 2, June 2004.

Low Chill Australia and NSW Agriculture held a stone fruit winter pruning field day at Heavenly Valley Orchards, Bangalow in May. The take home messages were:

1. Trees need to have fruit evenly spaced so they will receive adequate light, give even skin colour and avoid wind rub. Laterals need to be pruned by at least one half their length to be strong enough to support the required number of fruit. Growers should be removing about 80% of the new wood produced the previous season. It is false economy to prune lightly as the fruit and flower thinning costs will be much higher later in the season.
2. Prune to a formula. Count the number of laterals you need when pruning to hang the estimated number of fruit. This will save you money on fruit and flower thinning labour.
3. "Each time I pick a piece of fruit I tell myself it's another \$1.00 in my pocket" Growers need to think about pruning as an economic exercise. This quote from Robin Hood makes growers really think about the economics behind pruning and picking. On average a mature palmette tree should return about \$100 per season. To save time during pruning; "if in doubt cut it out!"
4. Keep your laterals close to the main leaders. This keeps the laterals sturdy, keeps the tree at a manageable size for picking and reduces the overall quantity of wood. Remove any competing laterals close together. 

Most production costs are associated with pruning, thinning and picking/packing. Anything that will minimise the amount of labour needed will reduce production costs. For early season fruit measure the tree's butt circumference 400mm above the ground level. For each one centimetre of tree butt circumference you should expect 6 to 7 pieces of fruit. Each lateral should produce 1.5 to 2 pieces of fruit.

Nufarm **ILLICO** NON-SELECTIVE HERBICIDE

ILLICO Herbicide from Nufarm

This is the weed killer you've been waiting for. With two powerful herbicides working together, ILLICO has been specifically formulated by Nufarm to control the hard-to-kill weeds in Vineyards and Orchards the others leave behind.

The unique combination of active ingredients, formulated with a proprietary mix of surfactants, gets deep into the roots of weeds, providing slow, sure results - the best kind. Commercial trial users in Australia have reported ILLICO to have an anti-germinating effect on weeds, helping Vineyards and Orchards stay weed-free for longer.

Go for double barrel weed control - use ILLICO Herbicide.

Further information is required before use in stonefruit is recommended.

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A member of IHD Independent Horticultural Distributors

Low Chill Stonefruit

“Sustainable Soil and Tree Health” Seminar



By Phillip Wilk, District Horticulturist, Alstonville.

Extracted from the Low Chill Stonefruit Grower, No. 2 June 2004.

Low Chill Australia organised and ran a successful Sustainable Soil and Tree Health seminar at Bangalow in April.

A range of biological soil inoculums as well as soil ameliorants, mulches and foliar sprays were discussed. These soil additives are reported to improve soil and tree health, improve fruit quality and finally, improve a grower's bottom line.

Key questions from growers who attended were:

1. Are the product claims based on proper science?
2. Do the products do what they claim?
3. Will the products improve my profitability?

The changing views on soil

Until recently, common practice amongst growers, rural suppliers and agency personnel focussed mainly on the physical and chemical aspects of soil health.

The 'crop nutrient replacement strategy' is commonly recommended. This strategy advocates that whatever is removed from the orchard in a season as fruit or prunings needs to be replaced in the form of measured doses of nutrients contained in animal manures or NPK fertilisers. These nutrients are strategically applied to meet a tree's nutritional demand at different times in the growing season.

This strategy is based on published research findings which minimised the effects on the environment of over fertilising tree crops. It is extremely useful and reduced many of the fertiliser application recommendations of the previous decade by half without any negative effects on tree health or production.

The next development in the soil health debate is focused firmly on soil microbiology and the mix of mycorrhizal fungi to bacteria. Without soil fauna and flora there would be no cycling of nutrients.

Organic matter binds both soil particles and nutrients, regulating uptake by plants by means of a slow trickling effect. Nutrients are released into the soil slowly.

Green manuring before planting has been promoted as a means to build soil organic matter. In reality, it has been a method of increasing the numbers of soil microbes and soil fauna which stimulates nutrient turnover. This process of nutrient turnover is dependent on temperature and moisture.

In many soils earthworms are a good indicator of soil health. They are highly dependent on moisture. The absence of large soil fauna such as earthworms is not necessarily an indicator of poor soil health. Other soil organisms such as springtails or nematodes may be better indicators of soil health due to their relatively large numbers in most soils and a less dependence on soil moisture.

The recent field day highlighted the plethora of commercial products available to growers on the market today. They are designed specifically to build up soil microflora and fauna and reportedly improve soil and tree health. Soil is now seen as a living medium.

If you identify a product that you think could be useful, find out as much as you can about it to determine whether it will work on your particular crop, soil type and microclimate.

Points to consider when choosing soil health products

- *Contents or ingredients.*

Analysis details are evidence of quality assurance in its preparation. Products sold as fertilisers are required by law to quote NPK content and heavy metal content. Lead should be less than 100mg/kg, cadmium less than 10mg/kg and mercury less than 5mg/kg. Remember that organic fertilisers tend to be applied at much heavier rates and high levels of other metals like copper and zinc can be a concern over time.

- *Storage conditions*

Products containing live microbes, enzymes or organic compounds can degrade easily. High temperatures, sunlight and airborne spores can

shorten the already limited shelf life of these products.

- *Application rates*

Many factors affect the persistence of microbes in the field, including temperature, rainfall, soil pH, organic matter and agricultural chemicals. Instructions for correct application methods, rates and conditions are vital. The required frequency of application can help you estimate the cost efficiency of the product.

- *Safety instructions*

Even 'natural' preparations can entail certain risks for users. Concentrates can have high levels of natural toxins and microbial products may involve some chance of infection or allergic reaction. Under Occupational Health and Safety legislation, handling instructions are always required to minimise risk to the user.

Many unregistered products include personal farmer endorsements to encourage their use. While it is good to hear individual recommendations for a product, endorsements should be considered carefully as many factors may influence the effectiveness of a product. Soil type, rainfall, crop type and even varieties can lead to differences in results.

Any production benefits need to be measured and compared with untreated areas in the same block, since differences from one year to the next can be due to good or bad seasons rather than the product. If you have found a product you think may be useful to your particular situation, you may decide to conduct a trial. Field trials are a good way to evaluate a product, but there are some important planning steps to avoid the chance of getting misleading results.

Trialling new products on your property

A useful field trial can be designed in five steps:

1. Control

It is important to treat a number of areas as the result obtained may or may not be due to your treatment. It could be due to good rains, fewer pests or diseases or obtaining the required winter chill units. If you compare a treated area simultaneously with an untreated area then the difference is much more likely to be due to the

new treatment. The untreated area is called the control.

2. Replicate

It is much better to divide your orchard into several test blocks with each block being a pair of treated and untreated areas. This will minimise the variation across a block or the effects of obstacles such as windbreaks or access roads. This is termed replication and saves you having to do a large number of samples.

3. Randomise

Randomising is scattering the test blocks so there is no pattern. For example, don't have all your blocks along a track or road as the runoff might provide some benefit to trees. This will remove any doubts about the results and give you a better idea of how the treatment performed.


4. Measure

This is perhaps the most difficult step and it is vitally important to decide what you are going to measure before you begin. This is also the most time consuming part. Decide the parameters you will measure whether they be sugar levels, yield, or fruit size. Visual assessment is notoriously unreliable. The treatments and controls will need to be harvested and assessed separately to the rest of the crop.

5. Cost effective

Finally, will the change improve your return over and above what you have been receiving without the treatment? If the difference is small and it results in no overall benefit either financially or environmentally, then it probably won't be worth adopting.

If these trial guidelines are followed and the treated area outperforms the control then growers can be fairly confident that the product is effective. Accurate records need to be kept. As with all new products and practices it is necessary to cost the total operation, including the time it takes to implement the change. Ideally, trials need to be conducted over a number of seasons to account for any long term effects.

It is also important to remember that no product is a substitute for good orchard management. 

Survey of peach and nectarine growers to help develop product standards for composted mulch for peach and nectarine orchards



What is the survey about?

The survey is to collect information from growers to develop product quality standards for composted mulch for application to peach and nectarine orchards in NSW (Sydney region).

The product quality standard will be based on the existing Australian Standard which defines broad compost product categories, and specifies requirements for product maturity and for the thermal destruction of pathogens and weed seeds that may have been present in the original plant materials. The product standard for peach and nectarine orchards will be more specific, providing product specifications and application guidelines that provide maximum benefit to peach and nectarine growers. The product characteristics specified in the *composted mulch for peach and nectarine production* standard will be designed to meet the performance requirements of peach and nectarine growers, as specified by the survey results.

The survey will be undertaken through:

- Regional grower groups; and
- NSW Agriculture District Horticulturalists.

Who we are?

The *Recycled Organics Unit* (ROU) is a technical unit located at *The University of New South Wales* (UNSW). The ROU is a joint partnership between the *Department of Environment and Conservation* (NSW) and the UNSW to provide a NSW centre for organic resource recovery, management, research & development, demonstration and training.

What is composted mulch and its benefits

Mulch refers to composted products that are used as surface application around plants and are not

incorporated into the soil. A range of benefits that can be achieved from use of composted mulch are provided below:

- Significantly reduces weed growth, thereby reducing use of herbicides.
- Reduces fluctuations in soil temperature, retains soil moisture and reduces plant stress. Reduced plant stress decreases risk of crop failure and can increase crop yield.
- Reduces water evaporation from the soil surface, increasing water conservation and resistance to drought, particularly in non-irrigated areas. Reduced evaporation in irrigated areas result in more efficient water use and reduction in irrigation water requirements.
- Supply essential macro and micronutrients for plant growth, reducing the use of mineral fertilisers. Nutrients are supplied in a slow release form. Composts make mineral fertiliser programs more effective.
- Significantly reduces erosion thereby preventing land degradation.
- Add organic matter to the soil; increase soil organic matter; improve soil structure, water retention, water infiltration, root penetration and deep drainage; reduce surface crusting; improve erosion control, and other soil properties.
- Can improve soil health and land productivity (improve yield and fruit quality).
- Decrease some soil borne pest and diseases.

If you require more information or want to be involved in the survey please contact:

Dr Girja Sharma: email girja@unsw.edu.au or phone 02 9385 5708, or

Mr Angus Campbell: email a.campbell@unsw.edu.au or mobile 0414 385 226.



What's on

◆ **16-17 July 2004**
Mudgee Small Farms Field days.

◆ **19 July 2004**
NSW Farmers Horticulture Annual Conference.

This year's Horticulture Annual Conference will be held on Monday 19th July 2004 in Sydney. The Association Annual Conference will be held from Tuesday 20th July to Thursday 22nd July at the Wentworth Hotel, Sydney.

◆ **20-22 July 2004**
Horticulture Annual Conference.

This year's Horticulture Annual Conference will be held on Monday 19th July 2004 in Sydney, with the Horticulture Section dinner being held on Monday evening. The Association Annual Conference will be held from Tuesday 20th July to Thursday 22nd July at the Wentworth Hotel, Sydney.

◆ **26-30 July 2004**
Australian Cherry Growers National Conference, Young.

Phone 0427 824 959.

◆ **27 July 2004**
Central Coast CITTgroup Field Day, Kulnura.

For more information see page 18.

◆ **28 July 2004**
North Coast CITTgroup Field Day

For more information phone Sue Braz 0266 87 1540.

◆ **31 July 2004**
What's new in postharvest care? 4th Annual Information Day for cut flowers growers.

Contact Alan Merriman on 0408 267 728 or Bettina Gollnow (02) 4640 6437.

◆ **2-5 August 2004**
Salinity Solutions Conference, Bendigo.

Information on the conference is available at the website www.cdesign.com.au/salinity2004

◆ **4-6 August 2004**
Summerfruit 2004 National Stone Fruit Industry Conference, Melbourne.

Day 1 is "Industry Affairs" with provision for industry and private business meetings.

Day 2 is "Sweet Summerfruit Fun" a healthy lifestyle symposium exploring the current and potential involvement of the summerfruit industry in the healthy eating and social marketing campaigns. As well promotional opportunities for summerfruit.

Day 3 is "Showcase 2004" a forum covering other important issues and latest trends in the summerfruit industry. New varieties, controlled marketing, new regulatory compliance issues (EMS), soil and tree health, new product developments including ready to eat summerfruit.

Further program and registration details are available on www.melbsummerfruit.com.au or www.summerfruitaustralia.com.au or contact Debbie McPhee on 0419 004 474.

◆ **22-27 August 2004**
Apple and Pear Australian National Conference, Adelaide.

Phone (08) 8349 4556.

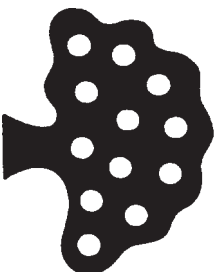
◆ **21-24 September 2004**
NewCrops 2004 2nd Australian Conference, Gatton.

Phone: Rob Fletcher on 07 5460 1311.

◆ **19-21 October 2004**
Australian National Field Days, Orange.

For information phone (02) 6362 1558 or go to www.anfd.au

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COASTAL FRUITGROWERS' NEWSLETTER

The Coastal Fruitgrowers' Newsletter is a quarterly publication distributed in Spring, Summer, Autumn & Winter. It is available free to all commercial fruit growers in the Sydney Basin, Central Coast, Hunter Valley, South Coast & North Coast areas.

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ALWAYS READ THE LABEL
Users of agricultural chemical products must always read the label and any Permit, before using the product, and strictly comply with the directions on the label and the conditions of any Permit. Users are not absolved from compliance with the directions on the label or the conditions of the Permit by reason of any statement made or omitted to be made in this publication.

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