

COASTAL FRUITGROWERS' NEWSLETTER

ISSN 1446-0513

No.60 Autumn 2006

Dear Growers

Welcome to the Autumn edition and the first for the new year.

In this issue there's a brief report on a recent study tour to some of the citrus growing countries in Europe.

If you are considering converting to drip irrigation then check out the article on page 6 to get a brief overview of what's required.

There's also another one of those interesting articles from the soil biology basics series.

Don't forget to catch up with all the latest news in the News in Brief section.

To keep up with what conferences are coming up in the world of horticulture go to page 23 for details.

Happy reading

Sandra Hardy

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Coastal Fruitgrowers' Newsletter
Edited by Sandra Hardy
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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 NSW Department of Primary Industries 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 Department of Primary Industries.

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Study tour looking at new citrus varieties in Spain, Sicily, Corsica and California

P. Barkley (former National Citrus Improvement Manager, Auscitrus) and G. Sanderson, NSW DPI, Dareton.

The study tour to Spain, Italy, Corsica and California allowed the timely viewing of a large proportion of the new varieties recently introduced to Australia, but not yet fruiting or still held in quarantine. It also allowed access to key research personnel involved in the breeding and evaluation of citrus varieties.

The Australian variety introduction and assessment programs are equal to the programs seen in the countries visited. At this point in time, Australia has access to the current 'crop' of new citrus varieties being commercialised in the northern hemisphere.

Spain

Spanish Citrus Industry

Major problems facing the Spanish citrus industry are:

- Globalization, large production units, large exporters, demand for fruit all year round, land purchases in Portugal by Spanish corporations for planting expansion.
- Large exporters doing deals with the supermarkets at the expense of smaller growers.
- Urban encroachment onto horticultural land with ensuing competition for water resources between urban and agricultural use.
- Over production of Clementines with a price crash in 2005.
- High cost of production compared to Morocco, Turkey and Egypt. (Imports of citrus products from Magreb countries into Spain, most specifically from Morocco and Egypt, have increased by 82% compared to the previous year, limiting purchases of citrus in the Valencian field. Half of the Valencian citrus harvest remained on the trees).
- Ageing population of growers forcing the employment of labour and increased costs of production.

More than 100 independent citrus growers and 25 of the most important citrus companies from Valencia have decided to join forces and to

collectively defend their interests through the creation of a Producer Organisation that will be named Cítricos Transformados de la Comunidad Valenciana.

Varieties and Trends

There is a 3000 ha increase in citrus in Spain per year, but production is <20t/ha.

Growers are eager for new varieties such as the early maturing Australian M7 Chislett selection of Navelina orange. Navelina has had huge sales this year, as many trees were killed in Southern Spain last year. In 1990-2002 mandarins were predominantly planted but in 2005 twice as many oranges were planted as mandarins. 700,000 buds of Powell summer navel orange were propagated in 2005. This elevated Powell to the third most popular orange budline sold in Spain after Lane Late and Navelina in 2005.

Satsuma mandarins and lemons are not being planted.

Fortune mandarin is no longer planted due to the recent appearance of Alternaria brown spot in Spain. Similarly, Ortanique and Nova are in decline, but Nova remains an important variety for the Spanish industry. 15 million trees of Orogrande and Clemenules have been planted.

Sicily

Citrus Industry in Italy

In the last decade the popularity of Avana mandarin and the Monreal Clementine in the Italian citrus industry has progressively declined as a consequence of the seedless Clementine selections Comune, Nules, Oroval, Oronules, Hernandina etc. Now the Clementine growers of the Calabria region are complaining about serious economical difficulties and are asking the regional government for help. The main problem is that for two years the Clementine sale price has been lower than the production cost price. In addition production units are small and expensive to operate. Consequently the industry is contracting in size.

Citrus tristeza virus is becoming widespread, 80% of orchards are on the CTV intolerant sour orange stock and growers don't have the money to replant on other stocks.

Varieties and Trends

Clementine mandarins have been over-planted in Italy. Afourer is not being planted.

2%- 4% of easy peel Taroccos are exported to Japan, but the variety is characterised by poor transport and storage outcomes.

Moro blood orange plantings have decreased with Tarocco selections dominant.

Corsica

Citrus Industry in Corsica

The Corsican citrus industry is approximately 2000ha in size with the predominant citrus type being clementine mandarin. After wine grapes, Clementine production is the most important agricultural enterprise.

The main rootstock used is Poncirus trifoliata, which suits the heavy acidic soil types and often cool North Mediterranean climate. The Corsican climate does not suit commercial orange production, but Salustiana orange is grown successfully. Good quality clementines are a characteristic of the industry, with France the main destination for the fruit.

California

Californian Citrus Industry

There are 18,000 acres of mandarins in California with approximately half planted since 1999. Large growers such as Sun Pacific and Paramount have established significant clementine plantings and are dominant components in the Californian industry. Paramount is focusing on varieties that have a good shelf life and are convenient for consumers. They are also looking at the potential for vertical integration, so they can grow, process and market the crop themselves. They decided to grow clementines, even though seediness is a problem in the San Joaquin Valley.

Market development and consumer promotion have enabled both W. Murcott Afourer (Delite) and Clementine mandarins to become significant new citrus commodities in California. There has tended to be displacement of navels by clementines in the market place. The Cara Cara navel has gone against this trend with fruit receiving a premium due to inherent good fruit quality and market promotion on the apparent health benefits of consuming this orange.

Australian late navels are popular in California with yields from Autumn Gold receiving favorable

comment at an industry meeting at Lindcove Research Station in December 2005. Summer Gold performance has been disappointing and significant future plantings appear unlikely as it competes directly with Washington navel. The Californian Citrus Research Board is helping to fund the establishment of an upgraded, Sensory Evaluation lab at the Kearney Research & Extension Centre, University of California. There is industry recognition that consumer research and the quantification of citrus sensory attributes is necessary for marketing current and new citrus products.

Varieties and Trends

- Fukumoto is the earliest of the navels grown in California, followed by Early Beck. Early Beck is a Californian selection, is earlier maturing, has a more intense orange skin colour and is less thorny than the Fukumoto released in Australia.
- Tree decline of Fukumoto navel in California is characterized by poor growth especially of the scion, profuse sucker growth at the bud union and sparse yellow canopies. The decline occurs on trifoliolate or trifoliolate hybrid rootstocks, especially C-35. Fewer problems occur on rough lemon or *C. volkameriana*.
- Low seeded W. Murcott Afourer (Tango) will be released to the Californian industry in June 2006. There will be a 3 year gap before Tango can be commercialised by countries outside the US.
- The Mandarin sub committee of the Californian Citrus Research Board have a goal of establishing a varietal mix in California that can supply low seeded, easy peel mandarin style fruit for 12 months of the year. Currently supply extends to 10½ months per year and that could be stretched to 11 months with development of coastal and desert plantings.
- The Citrus Research Board is also supporting research on fruit quality parameters and consumer acceptance of citrus, the aim being to modify the current 8:1 minimum Sugar to Acid ratio which is set by State Legislation.
- Large citrus producers such as SunPacific and Paramount are having a strong influence on the Californian citrus industry.
- Commercial scale plantings of the TDE (Temple x Dancy x Encore triploids) mandarin hybrids are occurring across California.



Sanitiser compatibility with fungicides containing guazatine

Nancy Cunningham, Karolina Steciuk and Peter Taverner, SARDI (Extracted from the Packer Newsletter, vol. 81, January 2006)

When citrus packers are packing fruit for the domestic market – many switch to using fungicides containing the active constituent guazatine. These fungicides are very effective in the control of infections from *Penicillium* but are especially effective at controlling sour rot. Currently no other fungicide is registered to control sour rot and during the export season packers often use sanitisers as a means of removing spores from dump tanks and recirculating washes. The use of sanitisers during the non-export season is primarily to keep lines clean and act as protection against food safety pathogens (such as salmonella).

Guazatine is a non-systemic contact fungicide and its mode of action is to disrupt the membrane of fungi that it encounters. Guazatine (guanidine) belongs to the unspecified X group of fungicides. Formulations are available as a water-soluble liquid. Guazatine is not as effective at controlling sporulating *Penicillium* spores as other fungicide groups and is rapidly decomposed in highly alkaline environments.

The fact that it is not compatible with highly alkaline solutions makes its use with some postharvest sanitiser groups inappropriate. In this article we are looking at the

compatibility of 3 different formulations of guazatine with 4 commonly used postharvest sanitisers. The indicator for compatibility is the concentration of the sanitiser over time. If the concentration drops rapidly compared with the water only control – the products are considered to be incompatible.

Table 1 below shows that calcium hypochlorite, Nylate® and Vibrex® will lose some measure of activity over a period of 24 hours. Tsunami® at 80ppm remained stable over the whole 24 hr measurement period. The most adversely affected chemical – calcium hypochlorite loses a significant amount of its concentration within 5 minutes of mixing.

To mix or not to mix

In Packer Newsletter Volume 80 we discussed the issues surrounding general compatibility between fungicides and sanitisers. One of the most important issues raised was that citrus packers must seriously consider whether mixing was appropriate for the conditions they have in their shed. Another was to explore different possibilities such as more frequent dumping rather than using sanitisers. More importantly – READ THE LABEL!! If it says that it should not be mixed with certain chemicals, following those instructions are very important to ensure that you are getting the most out of your fungicide and sanitiser. 🍇

Table 1. The change in the concentration of the sanitiser over time after mixing with fungicides is an indicator of the relative compatibility of the two products

Fungicide	Sanitiser	pH(▲)*	Concentration of active ingredient (ppm)					
			Initial	30 sec	5 min	1 hr	4 hr	24 hr
No fungicide	Cal hypo	10.1	100	100	100	100	100	100
	Nylate®	5.7	30	30	30	30	30	30
	Tsunami®	3.8	80	80	80	80	80	80
	Vibrex®	3.4	5	5	5	5	5	5
Panoptine®	Cal hypo	9.3	100	50	50	25	25	25
	Nylate®	5.6	30	30	30	18	12	6
	Tsunami®	4.9	80	80	80	80	80	80
	Vibrex®	5.0	5	5	5	5	4	0.5
Zanoctine®	Cal hypo	9.2	100	50	25	10	10	10
	Nylate®	5.6	30	30	30	18	12	6
	Tsunami®	4.8	80	80	80	80	80	80
	Vibrex®	4.9	5	5	5	5	4	0.5
Guazacure®	Cal hypo	8.9	100	20	20	20	20	20
	Nylate®	6.6	30	30	18	18	12	10
	Tsunami®	4.4	80	80	80	80	80	80
	Vibrex®	3.6	5	4	4	3	1.5	0.5

* The pH marker indicates the reading of the solution after mixing has occurred and the ▲ indicates it's reading in relation to reverse osmosis (RO) water at pH6.5±0.3

An introduction to using drip irrigation in Citrus

Prepared by Sandra Hardy from information in the book Drip Irrigation: A Citrus Growers Guide.

The use of drip irrigation in citrus has become more popular in the past 10 years. Probably one of the best known advantages of using a drip system is that quite often it results in a reduction in the total amount of water used, when compared to other systems. This reduction in water is a result of better water use efficiency. Trials have shown savings of 30-50% in water efficiency in mature drip irrigated citrus orchards.

Good management is essential for successful operation of a drip irrigation system. With drip

irrigation there is typically a smaller amount of water stored in the soil – so water stress can occur more quickly especially if the system is not well managed or breaks down.

Water

For drip irrigation you need access to a good quality and reliable water supply. You need to irrigate more frequently and during peak water use periods daily access to water is needed.

Good quality water is essential as drip systems are more prone to blockages. Prior to installing a drip system your water should be tested for its quality. Testing for salinity, sodium, pH, suspended solids,

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iron and calcium carbonate are all important. Drip systems can normally use higher salinity water compared to other systems because the water does not contact the plant foliage. Soluble iron and high levels of suspended solids can cause blockages and damage equipment. Testing water quality prior to installation allows you to determine and plan for any management or treatment needs.

Design

All irrigation systems should be planned prior to installation. Details about the water supply, soil type, variety, rootstock, root zone depth, emitter type, discharge rate, spacing, filtration, fertigation needs, pump, power supply, and peak daily water requirements all need to be identified. Remember to also include any plans for future expansion in your design.

A soil survey is critical for good irrigation design and management. Soil type, texture and depth are used to determine how much water the soil will hold and in ensuring an even application of water throughout a block. The management of your irrigation system is also dependent on soil type. For example sandy soils will normally require more frequent irrigation applications than heavy clay soils.

Use a professional accredited designer. Contact the Irrigation Association of Australia (IAA) for information on Agricultural Drip-Micro Certified Irrigation Designers (CID).

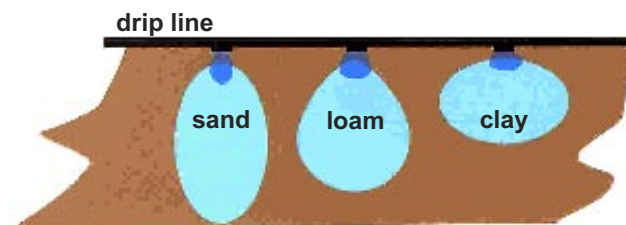
Emitters and the importance of soil type

There are many types of emitters including online, inline, pressure compensating, non-pressure compensating, non-draining and no suck drippers. Each type has different characteristics suited to different applications. The more important properties of emitters include their operating pressure and discharge rate.

Soil type is the main factor affecting emitter choice, discharge rate and spacing, which in turn affect the soil wetting pattern and application rate. Drip irrigation systems today are designed to provide a continuous wetted strip along the tree row. This wetted strip may not always be visible on the soil surface but occurs below the surface.

Soil type affects the wetting pattern underneath the dripper. Generally in sandy soils the wetted pattern

is usually long and narrow, because there is very little lateral movement of water in the soil. In clay soils the wetted pattern tends to be shallower and wider.



Dripper wetted patterns in different soil types.
Extracted from Drip irrigation, A Citrus Growers's Guide

The length of the irrigation application and dripper discharge rate also affect the size and shape of the wetting pattern. A longer irrigation time and higher discharge rate produces a wider zone of saturation. Another technique commonly used by drip irrigators today is pulsing. For pulsing the irrigation is set to turn on and off for short periods (eg. 1 hour on 1 hour off) throughout the irrigation event. Pulsing creates a wetting pattern that holds more water higher in the profile and is especially useful in sandy soils.

The discharge rate of a dripper is selected to match the soil infiltration rate so as to reduce run-off. For light soils a discharge rate of 2.5-4 L/hr is suitable, but for heavy clays it is normally lower, around 2 L/hr.

Soil texture is important for determining dripper spacing. Drippers are spaced to create a continuous wetted strip along the tree row. Commonly for lighter soils it's around 0.5-0.6m and for heavier soils up to 0.75m.



A young citrus planting set up with drip irrigation.

For newly planted trees a single drip line is initially used and in the 3rd year a second drip line is installed. The drip lines are placed on each side of the tree and as the tree grows the line is moved away from the butt to prevent wetting the trunk. The final position of the lines is commonly 0.5-0.75m from the tree trunk, however for trees planted on mounds the drip line is normally closer together.

Monitoring soil water

Drip irrigation systems require accurate scheduling and monitoring of soil moisture. Drip systems wet a smaller volume of the soil, so there is less room for error in irrigation timing.

Irrigation frequency is dependent on the water holding capacity of the soil, plant needs and weather conditions. The wetted soil volume varies not only with soil type and volume of water applied but also with the initial wetness of the soil. Dripper placement and discharge rate also have an

impact. As the clay content of the soil increases so does the water holding capacity of the soil. Sandy soils generally have a low water holding capacity and irrigations are more frequent.

Irrigation frequency is also dependent on plant needs and weather conditions. Trees need water but there are specific times in the annual growth cycle of citrus where adequate water is essential for citrus. Good soil moisture is required from flowering until mid-March. Weather conditions are also important in determining irrigation frequency with peak demand usually occurring in the summer.

When using drip you need a reliable method of monitoring soil moisture levels in order to accurately schedule irrigations. There are many different tools available including tensiometers, gypsum blocks, capacitance probes and neutron probes. Tensiometers are one of the most simple to use and measure soil water content as a tension or negative pressure, so as the soil dries out the reading increases.



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Tensiometers are used to monitor soil moisture levels.

Maintenance

All irrigation systems require regular maintenance, including flushing, cleaning and performance monitoring. Drip systems including filters, mains, submains and laterals should be regularly flushed throughout the season, in the order of water flow. Flush prior to the first irrigation of the season, several times throughout and at the end of the season.

To reduce blockages due to organic matter, bacteria and algae, periodic chlorination (1 and 4 times a season depending on system needs) can be used to flush the system. The chlorine compound sodium hypochlorite is most commonly used. About 10-15 ppm of chlorine is injected into the system to obtain between 0.5 and 2 ppm of detectable free chlorine, which can be checked using a swimming pool test kit. The handling and use of chlorine solutions can be dangerous. Follow all recommended safety precautions and wear the correct protective clothing. Direct contact between chlorine and fertilisers can be explosive, do not use a tank that has been used for fertiliser unless it has been thoroughly cleaned.

Tips for converting to drip

If you are changing over to drip in an established orchard that has had a full cover irrigation system (such as micro/mini sprinklers), the most important

difference is the change in the volume and area of the wetted zone. Full cover systems encourage roots to grow in the entire wetted area and there is also a tendency in some areas for salt to build up beneath the wetted zone. When converting to drip you will be reducing the size of the wetted area and the existing salts need to be leached out of the wetted zone and away from the tree row.

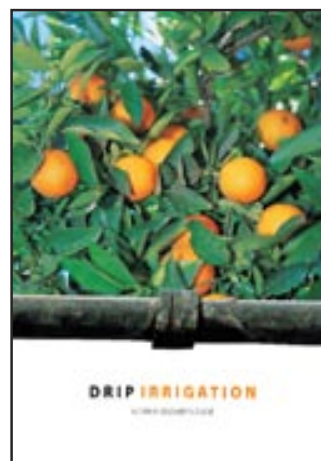
The first few irrigations should be heavy to move out any buildup of salts. Roots also need to be encouraged into the new wetted strip. This can be done by using soluble fertiliser applications through the irrigation water (fertigation).

Adequate irrigation and careful management is particularly important in the first year of conversion, in order to avoid undue water stress to the trees. The main change is that irrigations will be required more frequently until the tree roots grow into the new wetted zone. The best time to convert is after harvest or in the cooler winter months when tree water requirements are lower and not so critical.

The other key element in converting to drip from an existing system is the need to assess the adequacy of your existing hardware (pipes, filters, pumps etc) in running the new system. Consult with your irrigation designer prior to installation.

More information

For more detailed information on using drip irrigation in citrus get a copy of the new book, *Drip Irrigation: A Citrus Growers Guide*. Copies are available from the NSW Department of Primary Industries bookshop on toll free 1800 028 374.



News in Brief : Citrus



◆ Register now for citrus season update

Citrus Season Update is a national levy funded monthly report, which provides information primarily on the current season, including best practice advice, pest reports, harvest updates, growth stages, processor and markets information. The report is available via email, fax or the ACG website: www.australiancitrusgrowers.com

To register for Season Update, contact Lee Byrne, ACG Communications Manager, Phone (03) 5023 6333 or Email lee.byrne@australiancitrusgrowers.com

◆ China update

• Orchard freedom statement and integrated pest management (IPM) program:

Commercial pest scouts, technical advisors and industry representatives have been trained to register as official crop monitors. Growers must undergo an official once-off inspection by a registered crop monitor to gain registration for China (Korea and Thailand can be done at the same time).

Orchards can be separated into discreet 'blocks' so that specific areas can be targeted for monitoring (therefore hedging your bets). This can still be done

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even if growers have applied to register their whole orchard and have not yet been officially monitored. Hygiene practices and pest control on directly adjacent blocks/orchards may affect the orchard status.

Orchards must be monitored and registered by 1 March 2006.

- **IPM:**

Growers must implement their own ongoing monitoring and IPM to ensure quarantine pests of concern to China are adequately managed. This has been defined as monthly monitoring and control (on record) from February 2006. Growers can alternatively contract a commercial pest scout.

Any monitoring records must list all 19 quarantine pests of concern to China. Sample monitoring sheets and guides are available from State Boards, local organisations and Australian Citrus Growers (ACG). Ongoing monitoring will be subject to random Australian Quarantine and Inspection Service (AQIS) audits.

- **Coordinated Marketing:**

The ACG Board discussed the Austrade Shanghai report and recommendations, including the four partner options:

1. Single desk strategy
2. Single partner per region strategy
3. Multiple partners per region strategy
4. Open market

Further information is being sought including consultation with the Australian Horticultural Exporters Association (AHEA) before the ACG Board reconvenes to settle on a recommendation, being conscious that most Members and Associates strongly support a regulated form of coordinated marketing.

Source: ACG, Member's Newsletter, 6/2/2006.

- ◆ **Citrus information exchange**

ACG has signed off on a proposal from Avocados Australia to develop and implement their very successful 'Infocado' harvest reporting and

forecasting system. For some time ACG has wanted a national harvest throughput reporting system to allow the industry to better manage week by week supply and demand.

The Infocado system will be used as the first step in this process, being customised for the requirements of the citrus supply chain.

The aim of the project is that on a weekly basis, citrus supply chain contributors will have a detailed understanding of what is coming in supply and match this against forecasted demand.

ACG will be contacting packing sheds over the coming months and requesting their contribution, as one of the first steps in the project. More information will be released soon. For more information contact Andrew Thompson at ACG on (03) 5023 6333.

Source: ACG Communications Network, 6/12/2005

- ◆ **Citrus postharvest compatibility guide poster**

A new Citrus Post Harvest Fungicides and Sanitisers Compatibility Guide poster has just been released. The poster has been developed through the industry funded HAL project "Delivering postharvest decay, food safety and market solutions for export citrus".



For copies please contact your local CITTgroup Coordinator or Peter Tavener or Nancy Cunningham at SARDI on (08) 8303 9538.



News in Brief : Citrus

◆ Australian orange growers unite to launch 'Aussie grown' brand



Supported by Australian citrus growers

Look for this logo when you buy fresh oranges or fresh chilled orange juice to ensure you're getting Australian grown oranges.

By buying product supported by Australian citrus growers you can be sure you're not only buying premium quality fresh oranges but you're also supporting Aussie farmers with your purchase.

Australian orange growers have united to promote a new 'Aussie grown' brand that will allow consumers to easily identify fresh packaged juice that is squeezed from only Australian oranges.

Consumers can look out for the 'Aussie Grown' logo in the fresh juice section of grocery stores to ensure they are purchasing juice that is 100 per cent Australian grown.

The new logo with a large 'Aussie Grown' slogan will help consumers to identify and buy Australian grown orange juice, as opposed to the imported juice now making up a large portion of the orange juice market.

The new brand has been made available for all juice processors to place on those juices that use all Australian oranges – with no concentrate or imported product.

Juice processor Golden Circle will be the first major processor to use the symbol on the packaging of its Australian 'Premium Chilled' juice available in the cold section of Coles stores nationally.

◆ Auscitrus News

New varieties available

There will be small quantities of the newly released public varieties Primosole mandarin, Sidi Aissa clementine, Orogrande clementine, and Nagami Cumquat VF available in late Summer/ Autumn.

These will all be available as P1 premium varieties, supplied from the rapid multiplication system.

Primosole mandarin: (known as Clemensole in Spain) which ripens very early (at beginning of October in Sicily, which is the equivalent of



early April in Australia). It is very productive with maturity around 10 days before Okitsu satsuma.

The early maturity, easy peel characteristic and orange skin colour help to sell Primosole in Italy. Fruit taste is said to be bland, similar to a satsuma, but it is possible to improve the eating quality of satsumas with deficit water management. Primosole will be evaluated for fruit quality and palatability in future trials at Dareton and in other citrus producing states.

Primosole is not grown or recommended in Spain because of cross pollination with clementines. It will pollinate clementines and be pollinated by clementines. The variety is seedless in isolation. Primosole is susceptible to wind and can defoliate. It is also susceptible to *Alternaria* fruit rot in Italy, due to growth cracks at the styler end, and is sensitive to sunburn

Sidi Aissa Clementine: a Moroccan variety with good size and taste. Sidi Aissa is said to have the same maturity period as Nules clementine but have superior internal colour and flavor. Nules has proven the most popular of the 10 clementines released in Australia since 1988. The level of industry adoption of clementines, as a new citrus type for Australia, has been low. The reasons for this have been the difficulties experienced in their culture, being able to isolate plantings to ensure low seeded fruit and an Imperial dominated, local mandarin market.

Orogrande Clementine: a Spanish mutation of Nules Clementine that blooms at same time as Nules but can be harvested 5 days earlier. Orogrande fruit contains more fibre and juice than Nules and is also less prone to sunburn as fruit is produced within the tree canopy. Orogrande is said to be suited to areas with hot summers and mild winters such as the Murcia region of Spain.

Nagami cumquat: was imported by Auscitrus because the existing Nagami cumquat line in Australia has Citrus Leaf Blotch Virus, which causes a yellow ring at the bud-union on *P. trifoliata* and its hybrids.

Auscitrus can be contacted on (03) 5027 4411.

Source: Auscitrus Newsletter, Summer 2006

◆ **New fruit fly bait good news for organic growers**

Organic growers may finally have an effective control against fruit fly. Naturalure® Fruit Fly Control Bait is a BFA registered organic fruit fly control product for male and female Queensland fruit fly and Med Fly and has recently received APVMA registration .

Naturalure® is a specially formulated protein bait spray for attracting and killing both male and female fruit fly. The active chemical in the product is based on the same active found in the BFA registered organic caterpillar and thrip spray Entrust Naturalyte Insecticide called Spinosad® - a naturally occurring toxin produced by a soil bacterium.

Naturalure® is now used as the benchmark bait treatment for both male and female fruit fly around the world. The main advantage over other bait sprays is that it attracts females as well as males, so it is a complete fruit fly control bait. Because of the highly attractive nature of the bait, the application rates are half that of other bait sprays. The other advantage it has over conventional bait sprays is a low impact on beneficial insects.

Applications are targeted at the foliage in the upper parts of the tree and contact should be avoided with fruit as there is a chance of burning. Mangoes are particularly sensitive to the bait spray. Naturalure® is a registered trademark of Dow Agrosciences.

Source: Organic News Dec 2005

◆ **New organic certifying group**

A new group, the Organic Certifiers of Australia (OCA) will now represent the collective interests of the organic industry on certification and related matters. The OCA comprises six Australian organic AQIS approved certification bodies.

Source: Organic News Sept-Nov 2005

◆ **Domestic organic standard for Australia**

The organic industry is to proceed with the development of an organic standard under the

Standards Australia framework. The process will take about two years but the standard will then be able to be 'called up' by State and Territory governments in the event of fraud and misrepresentation of organic produce.

Source: www.ofa.org.au

◆ **New advertising agency for Australian avocados**



The Australian Avocado industry is set for the future with the appointment of the Brisbane based agency De Pasquale to continue the development of the "Avocado" brand nationally.

The Australian avocado industry has recently demonstrated an increased commitment to the marketing of their product.

De Pasquale has an exciting goal over the coming years: "To double consumption from the current the 2.2kg per person to 4.5kg per person" while retaining value for growers. De Pasquale is very excited to be appointed to produce the advertising and marketing plan for the Avocado brand for the next three years.

◆ **APVMA review of endosulfan completed**

The Australian Pesticides and Veterinary Medicines Authority (APVMA) recently completed a review of endosulfan, including all registered uses, withholding periods and application. New forms and information, essential for users of endosulfan are now available on its web site at www.apvma.gov.au/chemrev/endosulfan.shtml. Some of the new changes are that endosulfan MUST NOT be used on leafy vegetables, berry fruits, bananas, bulb vegetables, sweet corn and some cole vegetables. A number of withholding periods have also been increased.

Source: HAL newsletter - What's happening? January 2006

News in Brief

◆ **Netpro update 2006 - preliminary program**



The NETPRO Update 2006 conference theme is “Report card time – are we lifting our game?”. To be held at Alstonville, NSW on **Tuesday 16th & Wednesday 17th May 2006**.

Tuesday 16th May

9.30 – 11.00 am – To review the low chill industry “report card”, and present recent developments in low chill stone fruit breeding and evaluation that aim to better align varieties to production microclimates, and potential new markets.

11.30 – 1.00 pm – Low chill stonefruit out-turn performance. To review the low chill market performance and opportunities.

2.00 pm – 3.00 pm – Trade Expo / Product Demonstrations. To showcase low chill industry supply / service partners.

3.30 pm – 5.00 pm – Low-chill Showcase. To showcase interstate low-chill enterprises and explore export opportunities.

Wednesday 17th

9.30 – 11.00 am – To profile the South African low chill industry, and explore opportunities for R&D and commercial partnerships between South Africa and Australia.

11.30 – 1.00 pm – Critical Orchard Management & Planning. To present low chill orchard best practice in preparation for the forthcoming season.

2.00 pm – 3.30 pm – Market Access: To review disinfestation options and research related to market maintenance and market access for low chill stonefruit.

Post-conference Field Visits

Thursday 18th - NSW Venues – AM Orchard Walks

Friday 19th - QLD Venues – Tour of Maroochy Research Station, Nambour Qld

Venue and conference registration

Contact Anne Tunstead (02) 6628-0610 or go to www.hwms.com.au

◆ **Agstart a program to help young farmers**

The NSW Government today announced a new and improved scheme designed to help young people wanting to pursue a career in agriculture. Called *AgStart*, the program will deliver practical tools and a suite of assistance measures that help young people break into their preferred farming field. The new scheme was developed following detailed assessment of the challenges facing young farmers today and builds on the proposed FirstFarmer scheme.

AgStart will seek to address these gaps on a number of levels:

- An *AgStart* Advisory Board made up of industry leaders will be established to guide young people wishing to participate in the program.
- Applicants will first undertake a Career Options Workshop where they will be exposed to a range of potential career paths, including farm ownership, leasing or share-farming, as well as involvement in one of the many agribusiness sectors.
- Participants will then develop a Career Plan, which will be assessed by the Board. From there, participants may be eligible for further assistance, based on their career goals and financial situation.
- This additional assistance would come in the form of training and skills development grants, mentoring programs, financial management workshops, traineeships or assistance with farm finance.
- Relevant assistance options will be determined by the *AgStart* Board, and administered by the NSW Rural Assistance Authority.
- The NSW Department of Primary Industries will commit \$1 million to the program over the next year.

The key element of the program’s success will be the leadership and involvement of the *AgStart*

News in Brief

Board and the engagement of agribusinesses and financial institutions as *AgStart* Partners. The Scheme will encourage the involvement of *AgStart* Partners who will work with the Board to create career development tools to assist young farmers. A number of industry leaders have already expressed interest in taking part as an *AgStart* Partner.

Young people interested in starting a career in farming or agribusiness should visit the Rural Assistance Authority website at www.raa.nsw.gov.au or contact the RAA on 1 800 678 593 for *AgStart* applications and additional information.

◆ **Lettuce aphid detected in Sydney**

Currant lettuce aphid (CLA), was found for the first time in NSW on hydroponic lettuce in the Camden district in early February, 2006 by NSW DPI staff as part of the state wide surveillance program. Since then it has been found in other parts of the Sydney basin. These inspections have been required to maintain the NSW state freedom from CLA for market access to other CLA-free states and to regulate entry of lettuce from Tasmania and Melbourne metro areas where CLA is now found.

Since the first positive detection a major effort was launched to survey as many lettuce crops as possible to see how widespread CLA is in the Sydney basin. Although many lettuce crops of untreated susceptible varieties were found to be free of CLA further detections of CLA have been made within the Sydney basin. Two positive detections of CLA have been made on the Central Coast at Mangrove Mountain. Surveys of lettuce in the Central West, North Coast, Cooma and Hay have not detected CLA.

Growers in the Sydney basin who wish to ship lettuce to SA, WA or QLD will need to meet the market access requirement Victorian growers currently operate under. Contact your local NSW DPI office or Regulatory officer.

Currant Lettuce Aphid is a threat to the State's \$25 million lettuce industry, as it can cause major

losses to lettuce crops by feeding within the heart of the plant.

The insect already exists in Victoria and Tasmania where it has been accepted that eradication is not possible. As a result, control and surveillance measures are in place to minimise the impact on lettuce industries. Lettuce moving from Victoria into NSW has to meet strict conditions of entry. These include inspection and treatment.

At this stage it is unknown how Currant Lettuce Aphid made it to the Sydney Basin property, however it is widely known that the insect can spread two ways - by wind and as hitchhikers on produce, vehicles and people.

NSW DPI researchers had been preparing for the discovery of Currant Lettuce Aphid in NSW for sometime and already have research projects underway to develop practical control measures. Trials involving insecticide options as well as Integrated Pest Management (IPM) are being conducted at the NSW DPI's National Vegetable Industry Centre at the Yanco Agricultural Institute. The trial sites in Tasmania have revealed that lady beetles and brownlacewings can control lettuce aphids. Sydney growers have been part of some of the research work.

The way the insect gets into the heart of the lettuce, especially head lettuce, makes chemical treatment difficult. Therefore an arsenal of effective insects that can get to the centre of the lettuce and attack the aphid has been identified and is being trialled.

About the insect: Currant Lettuce Aphid

- Adult aphids are green with black stripes. Juveniles don't have stripes;
- Feeds primarily on leaves and is found deep in the heart of the lettuce;
- Considered a major pest throughout Europe and more recently New Zealand;
- The aphids suck sap from the leaves. Generally the damage is limited;
- The aphids pose no threat to human health

News in Brief

◆ **Applications open for Farmer of the Year award 2006**

Now is your chance to receive acknowledgement for your efforts as an innovative and successful producer and to highlight your industry. Entries are now open for the Farmer of the Year and Young Farmer of the Year awards.

About the awards

The NSW Farmer of the Year and NSW Young Farmer of the Year Awards are designed to recognise excellence in farming within NSW. A joint initiative by NSW Farmers' Association and NSW Department of Primary Industries (DPI), the awards have a particular focus on acknowledging farmers who combine sustainable environmental practices with profitable production.

Farmer of the Year will be awarded \$10,000 and Young Farmer of the Year will be awarded \$5,000

Who can enter

The NSW Farmer of the Year is open to farmers in NSW. The Young Farmer of the Year is open to farmers aged between 16 and 35 years.

How to enter

Application forms are available from the following websites: www.nswfarmer.org.au and www.dpi.nsw.gov.au

Selection Process

A number of finalists will be selected by the judging panel, which consists of representatives from NSW Farmers' Association, NSW DPI, Royal Agricultural Society and The Land.

Both awards will be judged on four key criteria:

- **Farm Management:** the achievement of profitability and sustainability
- **Innovation:** use of innovation and agricultural research
- **Financial Management:** application of financial and risk management systems
- **Community leadership:** involvement in the local community.

Closing date is 19 May 2006.

Further information

NSW Farmers' Association, Member Service Centre
1300 794 000

Trudy Glasgow, NSW DPI, Public Affairs phone
(02) 6391 3312

◆ **Summerfruit summit seeks improved industry profitability**



The Australian summer fruit industry, whose production of peaches, nectarines, apricots and plums has an annual value of \$240 million, is looking to improve its future profitability at a Summit to be held on the **2nd of May** at the Airport Motel and Convention Centre **Melbourne**.

The Summit - which is to be opened by the Hon Peter McGauran, Minister for Agriculture, Fisheries and Forestry - seeks, through broad industry participation, to identify the factors holding the industry back, and the responses required to remove or moderate those factors. The direction it determines for the industry shall be given urgent priority in the strategic planning of Summerfruit Australia Ltd (SAL), the Summit convenors.

Speakers from all major summer fruit growing regions will be asked to present their views on the industry's problem areas as seen from their sectors' perspective, and to recommend actions in response. The high priority matters will then be isolated and the means of addressing them agreed.

Leaders of similar horticultural industries will also be invited to share their experiences with the Summit, particularly in regard to their approaches to common problems.

It is important that as large a representation as possible from the national industry attend the Summit and contribute to its outcomes. Attendance is open to all, and growers of summerfruit are particularly encouraged to participate.

Visit the SAL website www.summerfruit.com.au for a booking form which is required to secure a reserved seat.



How to Grow for Profitability™

News in Brief

◆ **Elevating work platforms issues (Project HG 05031)**

A recent project sought and received funds from various industries that use elevating work platforms (EWPs; hydraulic ladders with a lift greater than two metres, used in construction, factories and tree fruit production). There are over 8,000 of these units used in tree fruit crops around Australia for tree training, pruning, thinning and harvest.

The Australian standard for the maintenance and safe use of EWPs was reviewed in late 2005. There were a number of inclusions in the draft standard that would have been expensive for growers to comply with and could in fact introduce an additional occupational safety hazard. Through this project, a consulting engineer developed and presented a submission to the appropriate Standards Australia committee. This submission argued for special consideration of the horticultural workplace and was successful.

A proposal to extend this project to encompass the review of design aspects of EWPs is underway. This review has identified a number of issues of concern to industry. For copies of the most recent progress report, please contact HAL Portfolio Manager for QA / Food Safety, Richard Bennett on richard.bennett@horticulture.com.au or (03) 5825 3753.

Source: HAL newsletter - What's Happening, 27 January 1006

◆ **Pesticide regulation coordinator (Project AH04007)**

Horticultural industries need to stay abreast of decisions by regulatory agencies such as the Australian Pesticides & Veterinary Medicines Authority (APVMA), Food Standards Australia New Zealand (FSANZ) and Codex that could impact on their access to pesticides. To this end, Pesticide Regulation Coordinator, Kevin Bodnaruk, acts on behalf of industry where appropriate, submitting responses to chemical reviews and changes of legislation or practices that impact on pesticide use by horticulture.

For more information contact: Kevin Bodnaruk, AKC Consulting P/L, phone (02) 94993833 or email akc_con@zip.com.au

Source: HAL, Across Industry Report 2004-05

◆ **Minor use coordinator (Project AH04009)**

Before an agricultural pesticide can be supplied, sold or used in Australia, the APVMA must register it. The APVMA has a permit system that allows for the off-label use of pesticides when a registration is not available. As many horticultural industries do not have the resources or expertise to prepare minor use permit submissions, this project undertakes these tasks for industry in a coordinated manner across all industries.

In October 2004 Peter Dal Santo was appointed to the position of Minor Use Coordinator. As Minor Use Coordinator, Mr Dal Santo, works to:

- Coordinate permit requests – similar requests from multiple industries for the same or similar pesticides were recorded and consolidated in 2004/05
- Assist industries with their pesticide request process.
- Strategically assess currently available pesticides and seek 'softer' or the best option.
- Provide industries with APVMA data requirements for permits.
- Provide industries with cost estimates to complete permit requirements.
- Tender and manage projects for data generation to support permit applications.

The first round of industry requests has been received. All requests have been circulated to each horticultural industry, an expert review panel, pesticide manufacturers, APVMA and HAL for comments and input. This information determined the viability and likelihood of success for each project. The data requirements and associated costs have also been determined. The list has now been finalised and contains 248 proposed projects. These projects must now be prioritised by each horticultural industry before they can proceed.

For more information contact:

Peter Dal Santo, AgAware Consulting Pty Ltd, phone (03) 5439 5916 email pds@agaware.com.au

Source: Across Industry Report 2004-05

An introduction to open hydroponics

Steven Falivene and Sandra Hardy, NSW DPI.

Introduction

Hydroponics is a production system which involves growing a crop in a soil-less medium and providing nutrients continuously through the irrigation water. Some hydroponic systems grow crops only in a nutrient solution whilst others use an inert media to provide an anchor for the plant roots (ie rock wool). The inert media does not provide or store nutrients. All nutrients are provided in the water solution.

Open Hydroponics (OH) uses the basic principles of hydroponics in a soil based production system. OH relies on reducing the influence of the soil as a nutrient storage medium and using it only to anchor the roots and deliver the nutrient solutions to the roots. OH is a crop management program for irrigated horticulture that has been recently introduced into Australia. OH is designed to continuously apply nutrients by drip irrigation that is operated at very high frequency. Precise management of this system through monitoring and control is critical for maximum crop yield and quality.

The key principles of OH are:

- The active root-zone is limited to a small wetted soil volume.
- A balanced nutrient solution that is pH adjusted is continuously applied through the irrigation water.
- The wetted soil volume is always maintained near to field capacity.

The claimed advantages of OH over conventional production systems include:

- increased yields through improved tree health and vigour;
- improved fruit quality by greater control of concentration and uptake of nutrients in the root zone;
- reduction in transient periods of water stress by better management of soil moisture.

OH in Australia

Practices such as intensive proportional fertigation and restricted root zones have been investigated

and used in orchards in the past. However Professor Rafael Martinez Valero, from Spain was the first person to bring all of the concepts together to develop OH in the early 1990's. The original purpose in developing OH was to address low fertility gravel based soils and poor quality saline water present in some regions of Spain. Professor Martinez then commercialised his version of OH, now known as the Martinez Open Hydroponics Technologies (MOHT). Since the inception and adoption of MOHT into horticultural industries around the world, other consultants have developed their own versions of OH.

The majority of information about OH is intellectual property and is owned by the commercial proprietors of each system, so very little detailed information is published. Two systems currently used in Australia are the MOHT program currently coordinated by Yandilla Park and the OH Solutions program currently coordinated by Mr Japie Kruger, a consultant from South Africa.

The concept of OH was first introduced into Australia in 1999 with the installation of a MOHT system by Yandilla Park on their Farm 8 citrus orchard in the Sunraysia region. The Farm 8 MOHT citrus orchard has generated a lot of interest in OH and many growers have visited the Farm 8 orchard. They have been impressed with the increased vigour and productivity of the orchard. A number of MOHT systems have now been installed on other citrus farms in Australia. MOHT is used in Spain, South Africa, Chile, Argentina, Morocco and California.

Managing OH

OH is complex and requires an intensive management program with a high level of technical competency. A consultant is normally used to provide advice on the design, installation and management of an OH. Management advice includes basic training in operation of the system, provision of nutrient mixes and injection rates, irrigation scheduling techniques, and the interpretation of data collected by monitoring equipment. Regular visits need to be made by a consultant to fine-tune the irrigation and fertigation program.

Restricted Root Zone

OH aims to reduce the influence of the soil as a media to store water and nutrients by reducing the size of the active root zone. This is achieved by reducing the size of the wetted soil volume by the use of drip irrigation and reducing the number of drippers per tree. The principle of restricting the root zone by reducing the wetted soil volume can work successfully in an arid climate, however these effects may be reduced in regions of higher rainfall.

There is no published or proven definition of a restricted root zone but the best estimate to date is that it occupies about 10-30% of the total available soil volume. A standard conventional twin line drip irrigated orchard would wet about 20 to 35% of the total available soil volume.

The pulsing or continuous application of water and nutrients is an important aspect of OH. Roots generally grow where there is an ample water and nutrient supply which is normally directly underneath the dripper. A concentration of roots under the drippers is a common observation in conventional drip irrigated citrus orchards on sandy loam soils in the Sunraysia area.

Studies on restricting the root zone of some fruit and vegetable crops using physical constraints have shown a reduction in yield mainly as a result of reduced canopy growth. However in many of these studies the root zone was restricted by significant amounts, and much smaller than that used in OH. As yet there has been no reduction in canopy growth or yield per tree observed in OH orchards. More work is required to understand restricted root zone dynamics in OH.


What are the risks?

OH may have the potential to increase orchard productivity but there are risks that could lead to reduced productivity, increased leakage of nutrients and root-zone soil salinity.

OH orchards have restrictive root zones that may only hold one day's supply of readily available water (RAW) during high demand periods. A cut to the water supply for a number of days during this period could significantly impact on productivity of the orchard. On-farm water storage, back up pumps and electric generators are required to reduce the risk. Similarly, an under estimation of irrigation requirements will cause trees to become water stressed. In contrast, an over supply of irrigation will result in waterlogging of trees and/or drainage

of water below the root-zone and potential leakage of nutrients. A misjudgement in nutrient application rates could impact on yield and fruit quality and increase root-zone salinity.

More Information

OH: Risks and opportunities – NPSI (National Program for Sustainable Irrigation) Report, 2005. Fertigation Systems Workshop Report, NSW Department of Primary Industries, 2004. These reports are available from the NPSI website. A fertigation manual will be released by NSW DPI in late 2006. 

◆ New country of origin food labelling standard

Food Standards Australia New Zealand (FSANZ) has gazetted the new Country of Origin Food Labelling Standard for Australia. The standard will come into full force for unpackaged fruit, vegetables, nuts and seafood products in six months' time, for unpackaged pork products in 12 months and for packaged goods in two years' time.

The new standard includes:

- A) broadening the scope to include unpackaged fresh pork, ham and bacon products and processed unpackaged seafood, vegetables, nuts and fruit;
- B) a requirement that unpackaged products included in the standard have a specific country of origin label, not just a statement that the product is imported;
- C) distinct statement of origin information on packaged products;
- D) a requirement for country of origin declarations for packaged and unpackaged foods to be consistent with trade practices legislation and trade practices law; and
- E) strengthened requirements for legibility and print size on labels and signs used to declare the country of origin for unpackaged foods.

The standard and a user guide to assist industry, retailers, enforcement agencies and consumers understand the new standard is available on the FSANZ website at www.foodstandards.gov.au

Source: Guacamole, 23 December 2005.

Microbes and minerals



Greg Reid, NSW Department of Primary Industries.

Plants require many elements from the soil and largely depend on microbes to extract these nutrients and incorporate them into organic molecules. As organic matter breaks down, the nutrients dissolve into the soil water where they can be accessed by plant roots. This means that at any one time the nutrients in the soil can be in one of three places; bound to soil particles, incorporated in organic matter or dissolved in the soil water.

Metal nutrients

In most soils there is a relatively large mineral pool or reserve of metal nutrients such as iron, calcium and magnesium. Microbes tend to only play a minor role in the extraction of these nutrients, and deficiencies can be corrected easily by the use of lime, gypsum or trace fertilisers, all of which are permitted in organic farming.

There are large reserves of potassium in most clay soils but it only becomes available to plants when it is released into soil water, where it is readily leached away by rainfall.

Non-metal nutrients

Sulfur

Soil minerals in the form of sulfides are common but sulfur is not available to plants in this form. Thiobacillus bacteria can convert sulfides into sulfates, a form which plants can use. These bacteria occur naturally in healthy soils. Some sulfides can be slowly oxidised to sulfate by exposure to air. Sulfate can also be added to the soil in the form of gypsum.

Phosphorus

Many Australian soils are phosphorus fixing. This means that phosphorus in the soil is tightly bound to the soil particles and relatively unavailable to plants. Thus the mineral pool of phosphorus in the soil can be relatively large but little of it available to plants.

Phosphorus is exported from the farm every time you send product to market. This loss has to be replaced either as fertiliser or by releasing some of the remaining soil phosphorus.

Certain fungi can assist plants to extract phosphorus from the mineral pool. *Penicillium radicum* and *Penicillium bilaiae* can be inoculated to seeds of wheat, lentils or medic to help the young roots obtain phosphorus from the soil. Other plants rely on vesicular arbuscular mycorrhiza fungi (VAM). VAM fungi can be encouraged by practices such as minimum tillage, short fallows, winter cover crops and crop rotations that avoid brassicas and lupins.

Start the fight against fruit tree disease NOW!

Most of the common diseases of fruit trees are carried over from year to year in the soil, on prunings and on the tree itself.

Soilsmart has a range of products that can help you to start cleaning up and protecting potential infection sites, enabling you to start the fight against disease early.

The introduction and management of beneficial organisms, post harvest, as a preventative measure against disease will dramatically reduce, and in most cases eliminate disease problems before they re-occur in the next crop.

When properly managed, the beneficial biomass introduced to the soil and plant, will also provide ongoing protection and competition against disease and insects.

Soilsmart can assist in developing a management program to rebuild soil health and productivity in a cost efficient way.

- ✓ **Biological inoculants & foods**
- ✓ **Mineral based fertilizers**
- ✓ **Organically chelated Trace elements**
- ✓ **Plant & Soil diagnostic services**



Mobile 0407 284051
Fax/Office (02) 9831 4309
Email: paul@soilsmart.com.au

www.soilsmart.com.au

Rock phosphorus contains about 15% phosphorus in an insoluble form. Only when it is applied to acidic soil is the rate of release likely to approach that needed by most plants.

Phosphorus can be added in an organic form. Poultry manure is up to 2% phosphorus and in this form the phosphorus is not fixed by the soil. Another approach is to add rock phosphorus to a compost pile. The composting action helps release the phosphorus in an organic form.

Liming will help reduce phosphorus fixation in acid soils but the amount needed may be considerable. Heavy additions of animal or poultry manure can also reduce phosphorus fixation. In both cases the decrease in fixation is a long-term process.

Practices that build soil organic matter will help to build the organic pool of phosphorus. Fertiliser additions may still be necessary but at rates low enough that rock phosphorus or manures may suffice.

Nitrogen

Over three quarters of the air we breathe is nitrogen. Unfortunately plants cannot use this form of nitrogen and instead require it as nitrate or ammonia. Though a small amount of nitrogen is converted by lightning, plants generally depend on microbes to fix nitrogen into useable forms.

From the point of view of a plant, phosphorus fixation is bad news because the phosphorus becomes unavailable, but nitrogen fixation is good because it makes more nitrogen available. Legumes such as clover and beans have root nodules of Rhizobium bacteria which fix nitrogen. Such bacteria can fix 100kg of nitrogen per hectare per year.

Some free living soil microbes can also fix nitrogen but their contribution is relatively small. Examples of these microbes include Azotobacter chroococcum, Azospirillum brasilense, Agrobacter radiobacter, Gluconobacter diazotrophicus, Bacillus polymyxa, Flavobacterium and Herbaspirillum. Attempts to inoculate soil with these microbes to improve nitrogen fixation have not proven very effective.

Without using nitrate or ammonium fertilisers the best way to maintain nitrogen is to encourage nitrogen fixation with legumes or legume rotations. Acid soils discourage fixation so acidity may need to be remedied by liming.


Organic fertilisers contain only small amounts of nitrogen. To match nitrogen fixation from legumes these fertilisers would have to be added at rates measured in tons per hectare. As a result the transport and spreading costs are considerable. As well, spreading manure in large quantities can lead to soil and water pollution.

Nitrate is readily leached from the soil by rainfall, and ammonia is lost by volatilisation back into the air. Building soil organic matter helps reduce these losses by encouraging nitrogen storage in the organic pool.

Key points

- Building soil organic matter helps store soil minerals in the organic pool.
- Encourage nitrogen fixation by using legume rotations.

More information

Soil biology basics is a NSW DPI information series describing basic concepts in soil biology. NSW DPI has online soil biology information at www.agric.nsw.gov.au/reader/soil-biology. 

Tocal Fieldays 2006

Friday 5 – Sunday 7 May 2006



Tocal Fieldays combine a genuine rural experience with commerce, entertainment, and an insight into Australia's historic farm life, based around the heritage homestead.

The 2006 special features are Farm Safety and Testing Times. Testing Times will feature the NSW Department of Primary Industries' diagnostic and analytical services to improve farming practices. "Hands-on" displays, talks and tests will be on offer. Visitors are encouraged to bring farm samples of soils, fodder and water for diagnosis and advice from experts in minerals, forests, agriculture and fisheries sectors. The Farm Safety special feature will provide free demonstrations and advice on safe handling of livestock and farm machinery.

For more information go to www.tocal.com

Fireweed

Extracted from the PRIMEFACT 126: Fireweed

Fireweed is a serious weed of coastal pastures in New South Wales. Fireweed is a declared noxious weed in 16 local government areas.

It is native to south-eastern Africa. Fireweed is an invasive plant, quickly colonising heavily grazed, or neglected pastures, and cultivated or disturbed land, during the autumn to spring period. It competes strongly with existing pasture plants for light, moisture and soil nutrients, particularly phosphorus and nitrogen. Fireweed can sometimes be poisonous to livestock, particularly cattle and horses.

Fireweed is highly adaptable to changes in the environment. Under normal or favourable seasonal conditions, the plant can behave as a short-lived perennial. However, in an extremely dry season or in an arid environment it behaves as an annual.

The plant produces large quantities of seed over a long period. Each flower produces between 100–150 seeds. Therefore, a single large plant has the ability to produce around 25,000–30,000 seeds with a high viability.

Germination of seed depends mostly on rainfall but is also stimulated by light and by mild-warm temperatures. Optimum temperatures for germination of fireweed occur between 15–27°C, with greatly reduced germination at lower or higher temperatures. Most seed, however, germinates from March to June, with the young plants developing rapidly. Plants can produce flowers 6–10 weeks after emergence.

Control

An integrated approach is the best means to control fireweed in pastures.

Early removal. Isolated plants can be pulled out by hand or spot-sprayed before they set seed. Uprooted plants should then be placed in a large plastic bag, such as an old fertiliser bag, and burnt.

Pasture improvement and management. A vigorous permanent pasture provides the best control of fireweed. This can be achieved by sowing suitable competitive pasture species.

Phalaris and fescue with Haifa white clover and subterranean clover is an ideal permanent pasture to compete against fireweed south of the Hunter Valley.

Chemical control. There are currently a number of registered herbicides that are effective on fireweed.

Spray fireweed with registered herbicides during the small seedling-early flowering stages of growth. Early autumn-winter is best when fireweed plants are young and actively growing.

Slashing/mulching. Slashing or mulching a fireweed paddock from mid-September onwards to control fireweed has proven effective on the Central Coast in paspalum/kikuyu paddocks. By mid-September, when fireweed has developed into a large plant, slashing or mulching can damage plants sufficiently to allow the summer growing pasture to out compete fireweed. This control method is not recommended for summer growing pastures over autumn and winter because fireweed can recover more quickly than the pasture.

Further information

Go to this primefact at www.dpi.nsw.gov.au/aboutus/resources/factsheets/primefacts/fireweed



Photo: J J Dellow

Fireweed plants can have a wide range of flowering stages at any one time, but each flower always has 13 petals

What's on

- ◆ **26-29 March 2006**
Australian Citrus Growers 58th Annual Conference.
Mandurah, WA
Phone (03) 5023 6333 or visit www.australiancitrusgrowers.com
- ◆ **2 May 2006**
Summer Fruit Industry Summit Airport Motel & Convention Centre. Melbourne VIC
Bookings essential – phone (02) 6622 2000 or go to www.summerfruitaustralia.com.au
- ◆ **Tocal Fieldays 2006**
5 – 7 May 2006
For more information see www.tocal.com
- ◆ **9-11 May 2006**
Irrigation Australia Conference and Exhibition.
Brisbane QLD
Phone (02) 6285 3000 or go to www.irrigation.org.au
- ◆ **16-17 May 2006**
Netpro Update
Low Chill Australia Inc. Stonefruit Conference and Trade Expo. Alstonville, NSW
For more information phone (02) 6628 0610.
- ◆ **21-23 July 2006**
Organic Expo
Sydney Exhibition Centre, Darling Harbour, NSW
Phone (02) 9451 4747 or email: exhibitors@organicexpo.com.au
- ◆ **28 August-1 September 2006**
International Symposium on Irrigation of Horticultural Crops. Mildura, VIC
Go to www.dpi.vic.gov.au/irrigationsymposium

What's new in publications

◆ **Microbiological methods for assessing soil quality**

This book reviews the theory and practice of a range of the various microbiological methods used within these programmes. It gives an overview of approaches to monitoring, evaluating and managing soil quality and also provides a practical handbook with detailed descriptions of the methods. More information at www.cabi-publishing.org/bookshop.

What's new on the web

◆ **All about soil**

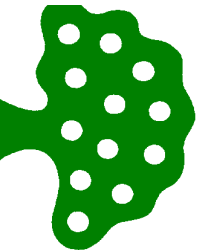
CSIRO has just launched a new web tool - the Australian Soil Resource Information System (ASRIS). Users can look up information about soils at a range of levels, including general description of soil types, landforms and regolith across the continent; and detailed information where mapping is complete.

The site has a lot of information about soil depth, water storage, permeability, fertility, carbon and erodibility. Information is displayed using coloured maps, satellite images, tables, photographs and graphs.

The online geographic information system allows the user to zoom into a region of interest, produce customised maps, and then save the results. The ASRIS is online at www.asris.csiro.au

Source: ACG, Communications Network, Dec 2005.

Print Post Approved
PP255003/00759



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.

SURFACE
MAIL



NEW SOUTH WALES
GOVERNMENT OF
PRIMARY INDUSTRIES

POSTAGE
PAID
AUSTRALIA

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Rob Bowman - Senior Inspector
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Mobile 0411 139 579

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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