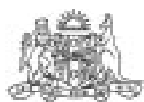


COASTAL FRUITGROWERS' NEWSLETTER

ISSN 1446-0513

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NSW DEPARTMENT OF
PRIMARY INDUSTRIES

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

No. 64 Autumn 2007

Dear Growers

Welcome to the autumn edition which is jam packed with a range of articles.

Coming up in April is the 59th Australian Citrus Growers Conference being held in Renmark. I thoroughly recommend this conference to all citrus growers as it gives you the opportunity to speak to other growers and see other orchards first-hand. (See page 20)

For North Coast citrus growers there has been a change in personnel for the position of local Cittgroup representative. Sue Braz has retired from growing citrus and has moved to Queensland. I thank Sue for all the work she has done over the past 5 years. The local Cittgroup Co-ordinator will now be Phillip Wilk (District Horticulturist, NSW DPI) in conjunction with Wendy Graham (Secretary, North Coast Citrus Growers). Together they will be organising the local Cittgroup events this year.

On the avocado front, Simon Newett from the Queensland Department of Primary Industries has been successful in securing a Hal funded project "Study Groups to achieve globally competitive Avocados". The project will establish 10 regional study groups across Australia, which will serve as a vehicle to conduct regular technical workshops. In NSW groups will be established in northern NSW, the mid north coast, the central coast and one in Sunraysia. I am looking forward to the first workshop to be held in the coming months.

Happy reading

Sandra Hardy

Erratum

In the last issue of the Coastal Fruitgrowers' Newsletter (No. 63 Summer 2006/07) there was an error on page 4 in the Queensland Fruit Fly article. It stated "Eggs take 24 – 48 days to hatch" this should have read "Eggs take 24 – 48 hours to hatch". I apologise for this error. Sandra Hardy

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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Autumn GA spray for Navel Oranges

Sandra Hardy, NSW DPI, Gosford.

Research work undertaken as part of the industry funded HAL Rind Quality project CT01029 – “Communicating the effects of production conditions on outturn quality” has highlighted the value of gibberellic acid (GA) sprays for maintaining rind firmness in navel oranges. Applications of GA can be done in both summer and autumn depending on the purpose of the application.

Summer Application – at 30-50mm fruit size

The summer GA spray (10ppm) needed to be applied when the majority of your fruit were between 30-50mm in size (mid-January to early February). This summer application has little to no affect on colour development* and does not delay colouring. *Higher rates of GA (20ppm) may delay colour development by up to 7 days.

The main purpose of this summer application is to reduce albedo breakdown (creasing), however it also has some additional benefits. These include the retention of better rind firmness at harvest leading to a possible reduction in post-harvest decay problems and other rind disorders associated with fruit ageing, such as staining, and puffing. The summer GA application also appears to help

the rind withstand the effects of adverse weather conditions (hot, wet or windy conditions) and rough handling.

Autumn Application – at colour break

An application of GA (10ppm) at colour break delays rind aging and colour development in navels by up to a month, depending on when it is applied. However the length of this delay in colour development can vary with variety, rate and seasonal conditions.

Late navels appear to be more sensitive to this autumn GA application (especially at early colour break) and in some situations a long delay in full colour development has occurred. Because of this it is recommended that for late navels you try a small test block to assess the impact for your own conditions.

Application of GA at colour break when fruit are silver green or with just a hint of colour (Photo 1) normally delays colour development for 20-30 days. Application of GA when fruit have about 10% colour (Photo 2) normally delays colour development by 15-20 days and when 50% of the rind has a yellow/orange appearance (Photo 3) a delay of 10-15 days could be expected.



Photo 1: Colour Break



Photo 2: 10% Colour development



Photo 3: 50% Colour development

*These photos are from the new “Navel Rind Colour Development” poster being developed by the project team, Ken Bevington, Steve Falivene and Lingwen Zeng (NSW Department of Primary Industries) and Michael Treeby (CSIRO).

New Poster and Field Guide out soon

As part of the Rind Quality project a "Navel Rind Colour Development" poster and field guide are being produced. These should be ready for release to the citrus industry in mid-April 2007.

Guidelines and Precautions for applying GA sprays

- Calibrate your sprayer. Good spray coverage is essential as GA works by contact action. Recommended water application rates are 5000L/ha for small trees, 7500L/ha for medium sized trees and 10,000L/ha for large trees.
- GA works best when the spray water has a pH of between 4-6. Best results are obtained at pH 4 – 4.5. Check the pH of your spray water. If the water is too alkaline use an acidifying agent to reduce the pH.
- Spray during slow drying conditions, such as in the early morning or late afternoon. Avoid dewy mornings, showery or very hot conditions (>35°C). Do not apply if rain is forecast within 6 hours of application.
- Do not use GA on trees that are water stressed. Trees must be adequately watered before and after GA application.
- GA should not be applied close to a copper or oil spray. Oil restricts GA uptake and some coppers can react with the GA. If a copper or oil spray has been applied wait 4 weeks before applying GA.
- GA is best applied on it own and not mixed with other chemicals.
- If fruit drop is a problem apply a stop-drop spray. GA is compatible with stop-drop sprays containing 2,4-D sodium salt.
- Always use a spreader. Don't add additional spreader if you used an acidifying agent that contained a spreader.
- Do not use GA on unhealthy trees.
- Do not apply to trees carrying badly blemished fruit – GA helps protect the rind but it does not remove blemish.



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Using stop drop sprays on navel oranges

Sandra Hardy, NSW DPI, Gosford

Fruit drop in navel oranges can commence at colour change or soon after ripening, and in some seasons may result in heavy crop losses. Additionally growers with good quality fruit may wish to extend their harvest window and retain fruit on trees to take advantage of later markets.

To reduce fruit drop and hang fruit on the tree longer certain growth regulating chemicals can be applied. The amine or sodium salt of 2,4-D applied pre-harvest is effective for delaying fruit drop. Commercial products are sold under the trade names Citrus Stop Drop or Cling sprays. The chemical 2,4-D delays the formation of the natural abscission layer at the junction of the fruit stem and the button, which results in the fruit being shed.

Although this chemical was developed mainly as a herbicide it is safe when used at very low concentrations for the pre-harvest spraying of citrus. However it is important to take precautions to avoid spray drift onto other plants, particularly



tomatoes, vines, vegetables and ornamentals. Sometimes leaf distortion commonly referred to as “boat shaped” leaves, is seen in the new growth of citrus. (See photos). This condition is thought to occur if too high a rate of 2,4-D is used, but may also be a result of seasonal conditions at the time of application. It does not appear to have any long term impacts on citrus trees.

Guidelines and precautions for using Stop Drop sprays

- Good spray coverage of fruit is essential – spray to the point of run-off. Fruit should be covered from the stem end to the bottom of the fruit
- Recommended water volumes are 2000L for small trees; 3 – 4000L for medium trees; 5000L for large trees and 7500L for very large trees.
- Sprays are normally applied at early colour break. As a guide - April/ early May for Washington navels and May/early to mid June for late navel selections, depending on region.
- Apply at the recommended rates - the label rate for navels is 10ppm. In some areas growers use a lower rate of 5 ppm for late navel selections, especially if applied later in the season (June).
- Do not apply to poor quality fruit.
- Do not apply on wet or damp days.
- Prevent spray drift onto other susceptible crops and plants.



National program for screening and evaluation of new rootstocks

Project CT03025 update

Dr Tahir Khurshid, Citrus Physiologist Research Horticulturist, NSW DPI, Dareton.

The aim of this project is to undertake preliminary field screening of new rootstock introductions from China and Vietnam as well as locally bred salt tolerant hybrids.

The evaluation of new varieties and rootstocks is a high priority for the Australian citrus industry in its continuing efforts to restructure and meet changing market requirements. Rootstocks have a major influence on the horticultural performance of citrus scion cultivars. Therefore the development and use of improved rootstocks is an important step in becoming a more productive and competitive industry.

In continuing the trend of the past decade or so, the industry is focussing more on fresh fruit and fresh juice production with particular emphasis on the expansion of exports. In this quest, there is a need for consistent production of large-size fruit, improved fruit and juice quality, and an ability to extend production seasons to address key market opportunities.

Rootstocks play a vital role in tree health and productivity and can influence a range of fruit quality characteristics. Rootstocks suited to new cultivars and better adapted to local growing conditions need to be identified so that industry can achieve its goals regarding fruit quality to meet market requirements. Improved rootstocks are also needed to overcome many of the inherent weaknesses of those currently used.

In this project, the horticultural performance of locally-bred and recently introduced rootstocks grafted to a range of scion cultivars are being assessed in short term field trials. The results will be used to identify promising rootstocks for more extensive commercial evaluation. Scions in these trials include current standard cultivars and new orange, mandarin and lemon cultivars being considered by industry. These short-term horticultural performance field trials are essential to evaluate the disease, salt and lime tolerance

characteristics that have already been tested in glasshouse tests, and to also assess yield potential and fruit quality. These trials will also provide early indications of graft incompatibility problems with new cultivars before wider adoption by industry.



Rootstocks are assessed for compatibility with different scions.

NSW DPI Dareton

Since 1996 a number of rootstock trial blocks have been established at NSW DPI Dareton with rootstocks introduced from the Peoples Republic of China and Vietnam, as well as some locally bred rootstock selections. These blocks are being used to assess fruit yield and quality and the salt tolerance of the rootstocks.

Valencia: This trial block was planted in 1996 with a range of rootstocks from China and the trees are now in full production.

A number of rootstocks have shown promise on the basis of cumulative yield/tree, yield efficiency, fruit size and fruit quality variables (total juice%, °Brix and sugar: acid ratio). Troyer Citrange is the industry standard rootstock in the trial, and it has had higher yields compared to the Chinese rootstocks. However, the most yield efficient rootstocks, based on yield/trunk cross section area, were Chinese trifoliolate orange (TO) types. Donghai TO followed by Tanghe TO, Lunan TO and Xiechen (*P. trifoliata* hybrid) followed by Swingle citrumelo, which is another control rootstock used in the trial. (See Figure 1)

Fruit quality assessments showed these rootstocks resulted in fruit juice percentages of 50, 47, 46 and 44 respectively and Brix:acid ratios of 11, 11, 10 and 9 respectively. Donghai TO rootstock also gave higher percentages of larger sized fruits. Trees on Donghai TO produced 76% fruit in the >75mm diameter size class while trees on Tanghe TO and Lunan TO produced 71% and 52% of fruit in this class respectively. Trees on Xiechen rootstock had only 29% of fruit >75mm.

These results suggest that Donghai TO was the best rootstock for Valencia oranges in the deep sandy soils characteristic of the trial site. Some of these rootstocks need to be tested in the Riverina and Curlwaa areas under clay soil conditions to assess their horticulture performance further.

Navelina: The trial block with Navelina was planted in 1999. In terms of yield efficiency, the data collected so far has indicated that Donghai TO, Australian *trifoliata* strain 22 and Tanghe TO were the best rootstocks for Navelina. These three rootstocks also resulted in juice percentages of 37.6, 37.9 and 38.2 and Brix: acid ratios of 13.7, 13.5 and 14.2 respectively.

So far, the data suggest that Donghai TO has been the best rootstock for both Valencia and Navelina oranges in these trials. (See Figure 2)

CSIRO Pant Industry, Merbein

CSIRO has propagated the trees used in the trial blocks at NSW DPI Dareton to continue the screening of these new rootstock genotypes for salt tolerance, a process started in earlier glasshouse experiments.

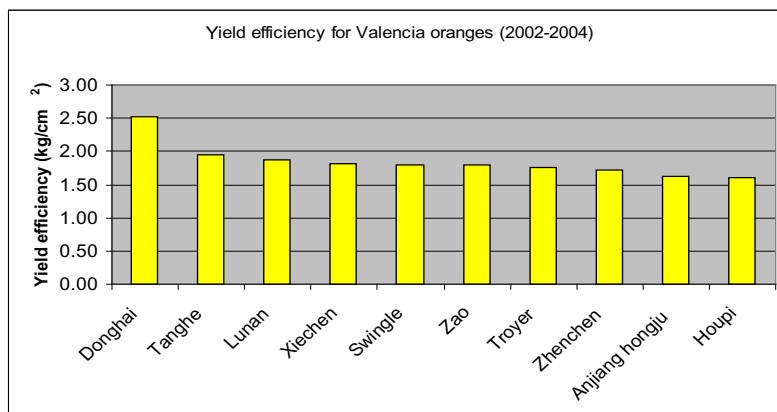


Figure 1: Yield efficiency (kg/cm²) for Valencia orange grown on a range of new rootstocks.

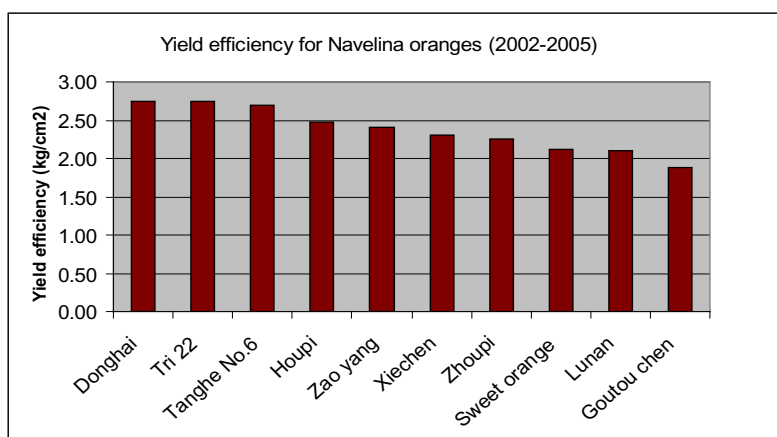


Figure 2: Yield efficiency (kg/cm²) for Navelina orange grown on a range of new rootstocks.



Leaf chloride concentration data collected in 2005 for all trees continued to show that some rootstocks introduced from China have better salt exclusion capacity than others. This coupled with better growth and an ability to give a more salt tolerant grafted plant means that these rootstocks will have value where rootzone salinity is an issue.

Of particular note was *P. trifoliata* accession Zao Yang, which continued to perform well resulting in low leaf chloride concentrations for all scion varieties in comparison to most other *P. trifoliata* rootstocks, which behaved as expected and led to high leaf chloride concentrations. Zao Yang accumulated low leaf chloride concentrations in earlier glasshouse experiments and has been confirmed as the fourth salt excluding accession of trifoliolate orange identified from the introductions from China.

QDPI&F, Bundaberg

This is the first experiment in Australia for more than 30 years to identify an improved rootstock

for fresh-consumption citrus. The combination of Imperial on Benton citrange, which was discovered in this experiment, is now widely requested by growers and nurseries are unable to meet demand. Results from the 2006 season again indicate that this combination has distinct advantages over all other stocks previously used for Imperial mandarin.

Fruit quality determinations were made for all 4 scions on all 10 rootstocks in this early season mandarin trial in Queensland. Fruit were de-greened and stored for 1 week prior to being analysed for a range of important quality characteristics including Brix:acid, external and internal colour, rind texture, granulation and juice content. The trees were thinned in January so fruit were of an acceptable size at maturity. Aside from the discovery of Imperial on Benton, this experiment has also revealed some important improvements to rootstock choices for Nova mandarin – an important early season export variety.



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Integrated pest management in citrus at Emerald

Project CT99020 media summary

D Smith and C G Freebairn, Primary Industries & Fisheries, Queensland.

Extracted from the Final Report available from Horticulture Australia.

Emerald citrus in 1999, with a value of ~ \$30M, accounted for a significant proportion of the Queensland mandarin crop and most of its product was exported to Asia. From the outset in the late 1980's growers relied on insecticides to control the key pest red scale, which by 1997 was uncontrollable. Packouts were unacceptably low and scale at extremely high levels.

Prior projects, extensive experience, and promising results in the 1998-99 season, when methidathion was replaced with multiple oil sprays and *Aphytis* releases for red scale, indicated good prospects for the successful implementation of IPM. Emerald, however, is hotter, drier and better suited to red scale than other Queensland citrus areas, and insecticide drift from nearby cotton spraying posed a serious risk to the prospects of IPM.

We aimed to establish and maintain IPM in citrus at Emerald, and to develop grower confidence in the system so that it would be sustained after the conclusion of the project.

Key findings from the project were:

- IPM was implemented and successfully maintained for 5 years in citrus at Emerald, prior to the destruction of all citrus at Emerald as a result of citrus canker.
- The key pest, red scale was successfully managed with a combination of oil sprays in spring-early summer, multiple releases of the parasitoid *Aphytis lingnanensis*, and judicious use at other times, and for other pests, of 'soft' insecticides.
- Aerial drift of insecticides from nearby cotton spraying was shown to be disruptive of *Aphytis*, but with care and consideration by spray pilots was reduced to manageable levels. Multiple *Aphytis* releases restored *Aphytis* parasitism and reduced the impact of drift events which otherwise would have been more detrimental.
- A range of 'soft' insecticides was effective against red scale in trials. These include Biopest



oil, imidacloprid soil drench, and the insect growth regulators buprofezin, pyriproxyfen, and BYI8330. Imidacloprid and pyriproxyfen will soon be registered, BYI 8330 - a very promising active, within a few years.

- Oriental mite pest status appears less tightly linked to biocontrol agents than in other Queensland citrus regions. Good control was achieved with 'soft' miticides.
- Mango planthopper control was best achieved by 'soft' insecticide sprays in spring. An effective new egg parasitoid was discovered, released and began to contribute to control. Bluish dogbane, a botanical insecticide, was very effective against this pest, soft on the new egg parasitoid and on the key red scale parasitoid *A. lingnanensis*.
- Inappropriate management of minor pests can disrupt biocontrol of red scale.
- Citrus gall wasp was controlled by the release and establishment of ~ 1 million parasitoids relocated to Emerald from a coastal citrus orchard.

This project was very successful in establishing a working IPM system for the \$30M Emerald citrus crop, despite the ongoing pressure of disruption by insecticide drift from aerial cotton spraying. This was achieved by intensive practical research in close co-operation with growers and pest scouts on key aspects of the local ecology of the insect and mite pests and their natural enemies. Benefits in the order of millions of dollars accrued through pesticide savings and vastly improved fruit packouts, and the knowledge system developed will be invaluable when citrus is replanted at Emerald.



Trapping *Carpophilus* beetle in low chill stone fruit during the 2006 season

Phillip Wilk, District Horticulturist, Alstonville

I was curious to know the effects *Carpophilus* beetle had in spreading brown rot in low chill stone fruit on the NSW north coast. Most growers have observed *Carpophilus* beetle over the last few years, but have done little to control them, as it was thought that by the time they build up to sufficiently damaging levels the low chill season is over (Sept-November).

This season Rick Dali who manages Ray Hick's orchard, Heavenly Valley Farms at Bangalow asked me to help him set up some traps and monitor them over the season. Rick agreed not to spray any chemicals registered for *Carpophilus* beetle control in the testing blocks. I contacted Dr Mofakhar Hossain from DPI at Tatura who generously supplied me with traps, instructions and chemical attractants.

We set up three attract and kill traps (A&K) in a 1 hectare block with the traps positioned upwind of the block being trailed. The prevailing wind at this time of year is a north-easterly so we hung the traps at about shoulder height off the exclusion netting on the north eastern side of the block.

These attract and kill funnel traps are based on the use of a synthetic aggregation pheromone (based on the smell of ripening fruit) together with an attractant (fermented apple juice) and



Carpophilus beetle attacking nectarines.

an insecticide-impregnated strip to kill captured beetles in the trap. The pheromone was changed every 2 weeks and the attractant was changed every week. Within that block we also had two monitoring traps containing only the attractant and pest strip. We also set up a separate control block containing two monitoring traps. The insects found inside the traps were collected each week and sent to Dr Mofakhar Hossain at Department of Primary Industries at Tatura Victoria to be counted at a later date.

The traps were very effective at catching beetles and large numbers were emptied each week from the A&K traps. The aggregation pheromone in the traps attracts both male and female *Carpophilus* beetles and has been shown to considerably minimise potential damage to the crop.

Preliminary results seem to be very pleasing. Rick felt the amount of brown rot in the orchard this season was lower than past seasons. His last variety of nectarine, 5-15 had very little damage from *Carpophilus* beetle and on the last 'strip' pick he could barely find a beetle at all. Last season he sprayed Talstar® (Bifenthrin) late in the season which appeared to have little effect on the number of beetles present. Another complicating factor at Heavenly Valley Farms is that citrus are also grown in a nearby block. *Carpophilus* beetle are often seen in the fallen citrus fruit which can be a source of



The funnel trap used in the Attract and Kill system

food for the beetle almost all year round. Although the citrus are usually harvested from April through to August, with Tahitian limes present there can be some fruit and flowers all year round.

What really surprised us with this work were the large numbers of beetles found in the traps so early in the season. The traps caught more than fifty beetles in a week as early as the first week of September.

The high humidity and unpredictable rainfall in this region means that brown rot is always a major problem in all orchards, and is only controlled by routine orchard hygiene and a regular spray program. Generally brown rot tends to become a problem later in the season around early November and mainly affects later varieties and most growers aim to be finished harvesting their latest varieties around mid-November. However in recent years

it has been noted by many growers that brown rot sprays at this later time seem to be ineffective at control. This may be due to *Carpophilus* beetles spreading the brown rot. Maybe the use of the *Carpophilus* traps coupled with normal orchard hygiene practices will limit the spread of brown rot and help to control it at this time of the year.

The growers in the Bangalow Valley are very interested in trialing the traps on a much broader scale on all three adjacent orchards in 2007 season to see how effective the traps are at controlling the beetle using an IPDM strategy. Remember that early deployment of the attract and kill system is important. The system relies on the ability to drastically reduce *Carpophilus* populations in the orchard before the crop ripens and becomes susceptible to damage from *Carpophilus*.



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The horticulture code of conduct starts May 2007

What is the Horticulture Code of Conduct?

It is a mandatory code under Section 51AE of the *Trade Practices Act 1974* and, as such, has the force of law. The code's aim is to improve the transparency and clarity of transactions between growers and wholesalers of fresh fruit and vegetables. The code also provides for independent assessment of transactions and mediation of disputes.

Why was it developed?

The code was developed to address the lack of commercial transparency in grower/wholesaler transactions. The Government's decision to develop the code followed the failure of growers and wholesalers to agree on voluntary arrangements.

When does it start?

14 May 2007. This provides sufficient time for an awareness campaign to ensure that users of the code understand its requirements and for industry to prepare for the code.

What are its key requirements?

The code will require that:

- wholesalers publish their preferred 'terms of trade';
- growers and wholesalers use written agreements;
- wholesalers are clearly identified as either agents or merchants;
- wholesalers provide written transaction information to growers;
- independent assessment is available on transactions; and
- there is compulsory mediation if disputes arise.

Application of the code

What does it cover?

The code covers all transactions between growers and wholesalers of fresh fruit and vegetables in Australia. A wholesaler is defined as either:

- a merchant, who buys a grower's produce for resale; or

- an agent, who sells produce on a grower's behalf for a commission or fee.

This definition covers wholesalers operating both inside and outside Australia's central wholesale markets.

What does it not cover?

The code does not cover transactions between growers and those who are buying grower's produce for processing, retailing or exporting. However, the voluntary Produce and Grocery Industry Code of Conduct may apply to these trading arrangements.

The code will also not cover any existing written agreements that were entered into before the code was registered on the Federal Register of Legislative Instruments on 14 December 2006. However, if this agreement is varied after the day the Code commences (14 May 2007) then the Code will apply to trade occurring under that agreement after the date the agreement is varied.

The code does not apply to growers and wholesalers trading under a statutory marketing scheme.

Enforcement of the code

How will it be enforced?

The code will be enforced by the Australian Competition and Consumer Commission (ACCC). For more information on enforcement, please refer to the ACCC website at www.accc.gov.au/industrycodes or call the ACCC Infocentre on 1300 302 502.

What does the Horticulture Code of Conduct mean for GROWERS?

- Growers will have access to terms of trade documents which contain basic information about how wholesalers intend to do business with growers. This will help growers to find a wholesaler appropriate to their trading needs.
- Growers and wholesalers will use written agreements setting out how trade will be conducted. – It is anticipated that the terms of trade and written agreements will be relatively standard across the industry.

- Growers will have clarification about whether a wholesaler is trading as an agent, who sells produce on behalf of a grower, or as a merchant, who buys a grower's produce for resale.
- Growers and wholesalers will have clarification about when ownership of produce transfers and when prices are agreed.
- Prices will be agreed in writing under merchant trading arrangements.
- Wholesalers will provide written reports to growers with basic information about the purchase of the grower's produce, under a merchant transaction, or the sale of the grower's produce, under an agent transaction.

- Growers and wholesalers can appoint Horticulture Assessors to investigate and report on produce quality or transaction details.
- Wholesalers and growers can access a low cost dispute resolution process and mediators appointed by the Horticulture Mediation Advisor if a dispute occurs.
- Growers and wholesalers have the opportunity to strengthen existing trading relationships.

For more information visit the: Department of Agriculture, Fisheries and Forestry website at www.daff.gov.au/hortcode.

Australian Competition and Consumer Commission website at www.accc.gov.au/industrycodes or call the ACCC Infocentre on 1300 302 502.



Minimising the risk of microbial contamination of fresh produce

Joe Ekman (NSW DPI), Scott Ledger (DPIF Qld), Robert Premier (DPI Vic), Clare Hamilton-Bate (Freshcare Ltd), Graham McAlpine (MSS), Jane Lovell (TQA Inc), and Richard Bennett (HAL).

There are many microorganisms (microbes) in the environment – some are harmless, some are beneficial, and others cause food spoilage and breakdown. A small number of microbes have the potential to cause food poisoning. These microbes are called human pathogens. Examples of human pathogens include species of bacteria such as *E.coli*, *Salmonella* and *Listeria*, parasites such as *Cryptosporidium* and *Giardia* and viruses such as Hepatitis A.

Contamination of fresh produce with human pathogens can present a serious health risk, particularly to susceptible consumers such as old, young and sick people. To prevent this from happening:

- the risk of human pathogens contaminating fresh produce must be assessed;
- good agricultural practices must be implemented in the growing and harvesting of fresh produce;
- hygiene and sanitation practices must be implemented in the packing shed in the handling and preparation of fresh produce for market; and

- all practices must be regularly monitored and reviewed periodically or as practices change.

Sources of human pathogens

From planting through to transport to customers, there are many opportunities for human pathogens to contaminate fresh produce. Potential sources of contamination include:

- soil and dust
- organic products used as fertilisers and soil additives
- water used for irrigation, spraying, water dumps, hydrocooling, top-icing, washing and postharvest treatments
- workers who handle fresh produce at harvest and during grading and packing
- wild and domestic animals, birds and vermin
- harvest bins and containers and harvest and packing line equipment
- packing containers and materials
- storage facilities and transport vehicles

Preventing human pathogens from contaminating fresh produce during growing, harvesting, packing, storing and transport to customers is the best way to minimise the risk to consumer health.

Good agricultural practices during growing and harvesting of fresh produce

Practices that minimise the risk of fresh produce being contaminated with human pathogens during growing and harvesting include:

- ☑ Locate or cover stockpiles of organic products (for example animal manure) to avoid contamination from wind drift onto adjacent crops and harvested produce or rainfall runoff into watercourses and groundwater.
- ☑ Use growing practices that minimise the chance of the human pathogens from untreated organic products coming into direct contact with fresh produce. For example, quickly incorporate untreated animal manure into the soil to minimise contamination of adjacent crops from wind drift or contamination of water supplies by rainfall runoff into watercourses and groundwater, and grow the fresh produce on plastic mulch.
- ☑ Maximise the period between applications of untreated organic product and when the crop is harvested – ensure a minimum of 60 days between application and harvest.
- ☑ Compost or age organic products to reduce microbe levels. Composting is more effective than aging. Longer treatment periods are required for aging (usually at least six months) than composting (about six weeks, if done properly). Handle products produced by vermiculture in the same way as other untreated organic products as there is no heating to reduce microbe levels during production.
- ☑ For side dressing, only use treated proprietary organic products or composted manure containing less than 100 E.coli per gram. Ask the supplier (manufacturer) for evidence that the product has been treated and does not exceed this critical limit.
- ☑ Do not apply composted manure or proprietary organic products over the top of produce.
- ☑ Minimise the potential risk of faecal contamination from the presence of livestock, birds and other animals. For example, grazing animals are not allowed into growing crops or

adjacent areas during the last 60 days before harvesting.

- ☑ Assess water used for irrigation and spraying for risk of contaminating fresh produce. Where a significant risk exists, either treat the water with a sanitiser or use an alternative water source. The risk of microbial contamination is higher if irrigation water comes into direct contact with the fresh produce immediately before harvest.
- ☑ Check harvest containers and equipment for soundness and cleanliness before use and clean or discard them as required.
- ☑ Train workers about sources of microbial contamination and the importance of good hygiene practices.

Hygiene and sanitation practices during washing, treatment and packing of fresh produce

Practices that minimise the risk of fresh produce being contaminated with human pathogens after harvest include:

- ☑ Assess all water used in the packing shed for risk of contaminating produce, such as water used for water dumps, washing, hydrocoolers, top-icing, postharvest treatment, cleaning of packing line equipment and surrounding areas and water used for staff facilities.
- ☑ Select water sources or sanitise water used for postharvest treatments and for hand washing to minimise the risk of contamination of produce.
- ☑ Treat water dumps and hydrocooler solutions with an approved sanitiser to maintain water quality for the duration of use. Monitor the concentration of sanitiser to ensure levels are maintained and keep a record of the initial sanitiser concentration, monitoring frequency, monitoring results, water condition relative to maintaining sanitiser effectiveness (pH, temperature) and quantities of supplementary sanitiser added.
- ☑ Replace water dump, hydrocooler and postharvest treatment solutions at appropriate intervals and do not allow water and treatment solutions to stagnate between uses.
- ☑ Heat water dumps to 5°C above fruit temperature to avoid infiltration of microbes through the stem end.

- ☑ Train workers about contamination sources and the importance of maintaining packing shed sanitation practices and personal hygiene requirements.
- ☑ Provide toilets and hand washing facilities that are equipped and maintained to enable workers to achieve personal hygiene requirements. Position signs in visible places to reinforce personal hygiene requirements and monitor workers for their compliance with the requirements.
- ☑ Develop and follow a cleaning plan that ensures that the cleanliness of packing shed areas and facilities is maintained. Use vermin control measures to minimise infestations, discourage birds from roosting and exclude domestic animals from all areas where fresh produce is handled, packed and stored.
- ☑ Check packing containers and equipment, storage areas and transport vehicles before use for cleanliness and vermin infestation and clean or discard if there is a significant risk of contaminating produce.

Product identification and traceability

To ensure fresh produce that is contaminated or suspected of being contaminated can be rapidly identified, withdrawn or recalled and appropriately disposed, the following records and practices are needed:

- ☑ Clearly mark each fresh produce package or container with identification, including the packer's name or brand, address and packing date or batch identification code. If fresh produce from more than one grower is packed under the same name or brand, identify each package with a name or grower code to enable traceability to each farm.
- ☑ Keep records of the growing location, harvest date, packing date/batch identification code, quantity supplied and destination for each consignment.
- ☑ Keep records of the production and postharvest practices related to food safety. This includes records of all fertilisers and soil additives, crop sprays, sanitisers, postharvest treatments and test results.

Testing produce


Preventative measures are clearly superior to microbial testing in assuring the safety of fresh produce. Microbial testing of produce can verify the effectiveness of management practices used to prevent, reduce or eliminate contamination. The Guidelines for On-Farm Food Safety for Fresh Produce provides information on microbial testing of produce.

Reviewing practices

The keys to marketing safe fresh produce are good agricultural practices during growing and harvesting and good hygiene and sanitation practices in the packing shed. To ensure practices remain effective it is essential to review all practices on a seasonal basis or when changes occur. Re-assess the risks whenever there are any changes to growing practices such as changes to the water source, irrigation system, fertilisers and soil additives or activities nearby to the crop, and changes in the packing shed such as changes to the water source, washing steps or postharvest treatments, new equipment or new workers.

Reference: Guidelines for On-Farm Food Safety for Fresh Produce, 2nd Edition 2004 Department of Agriculture, Fisheries and Forestry

www.daff.gov.au/corporate_docs/publications/pdf/food/nfis/guidelines_onfarm_food_safety_fresh_produce_2004.pdf

For more information contact Joe Ekman on 02 4348 1900. 

New Primefacts on the DPI website

- Fire Ants
 - Tree management after drought
 - Soil management following drought
 - Drought increases residue risks
- Read this if you intend to use or sell out of specification fruit for stock feeds
- El-nino and the southern oscillation index
 - The role of climate science in drought management

Go to www.dpi.nsw.gov.au/aboutus/resources/factsheets/primefacts

Choosing the appropriate NSW DPI soil test package

Diagnostic and Analytical Services, a branch of NSW Department of Primary Industries (NSW DPI), can assist you in maintaining your soil health. Our soil testing laboratory undertakes a range of soil analyses to assist you in determining the nutrient and trace element requirements of your soil. In addition, the laboratory undertakes specialist testing for pesticide residues and heavy metal contamination when required.

Our laboratory is NATA accredited and independent, giving you consistent, reliable results.

NSW DPI offers four soil test packages. If you have not previously had soil tested we suggest you talk to your local advisor, District Horticulturalist or phone our Customer Service Unit on (02) 6626 1103 to determine the most appropriate package for your needs. In addition to our standard soil test packages, over 50 types of soil tests are available on request.

The Grazing package provides general information and is usually quite sufficient in most grazing applications, however, if you know from previous testing that you only need to monitor phosphorus and sulfur levels then a **Basic package** may be adequate.

The **Cropping package** would be a better choice for cropping and horticulture circumstances and also where more detail is required.

The **Horticulture package** contains all the features in the Cropping package, plus testing for the trace elements boron, zinc, chloride, copper and manganese. This package will be of most use to horticulturalists. If other trace elements are needed than a leaf/tissue analysis may be more useful.

In cropping areas a deep nitrogen test may be required. This test requires special sampling and packaging for transportation to the laboratory. Please talk to your advisor or our Customer Service Unit before sending samples for deep nitrogen testing.

Interpretation

Interpretation of soil test reports requires specialised knowledge of local conditions and crops. Our laboratory reports do not include an interpretation. We strongly recommend that you consult one of NSW DPI District Agronomists or Horticulturalists or another advisor to interpret the results. For general information on soil interpretation visit our website at www.agric.nsw.gov.au/reader/soil-testing/interpret-soil-test.htm

NSW DPI soil test packages

Basic	Grazing	Cropping	Horticulture
pH (CaCl ₂)	pH (CaCl ₂)	pH (CaCl ₂)	pH (CaCl ₂)
		pH (water)	pH (water)
	EC (water)	EC (water)	EC (water)
Available phosphorus (Colwell)	Available phosphorus (Colwell)	Available phosphorus (Colwell)	Available phosphorus (Colwell)
		Phosphorus buffer index	Phosphorus buffer index
Available sulfur (KCl ₄₀)	Available sulfur (KCl ₄₀)	Available sulfur (KCl ₄₀)	Available sulfur (KCl ₄₀)
	Exchangeable cations (Gillman & Sumpter)	Exchangeable cations (Gillman & Sumpter)	Exchangeable cations (Gillman & Sumpter)
		Walkley & Black organic carbon	Walkley & Black organic carbon
			Chloride
		Total Nitrogen	Total Nitrogen
			Extractable Boron
			DTPA extractable Copper, Iron, Manganese & Zinc

Samples can be sent to:

NSW Department of Primary Industries Diagnostic
& Analytical Services, Wollongbar Agricultural
Institute, 1243 Bruxner Highway, Wollongbar
NSW 2477

For further information contact:

Customer Service Unit
Ph: 02 6626 1103
Fax: 02 6626 1276
email: wollongbar.csu@dpi.nsw.gov.au

Test	Application
Soil pH	pH is a measure of acidity and alkalinity. Soil pH can affect nutrient uptake.
Electrical conductivity	Electrical conductivity is an indirect measure of salinity. Many plants are affected by high soil salinity.
Available Phosphorus	This test is useful in assessing the need to fertilise crops and pastures with phosphorus.
Phosphorus buffering index (PBI)	This test is a measure of the soil's ability to tie up phosphorus. It can assist in determining fertiliser requirements.
KCl:40 extractable sulfate sulfur	Test used to determine sulfate availability in soils.
Exchangeable cations and Cation Exchange Capacity (CEC)	The major exchangeable cations are calcium, magnesium, potassium, sodium and aluminium. CEC is a major factor affecting soil structure, nutrient availability, soil pH and also the soil's response to fertiliser.
Organic carbon	Organic carbon is a measure of the organic matter level of a soil. This in turn is very important for soil structure and plant nutrient uptake.
Chloride	Chloride is the most commonly occurring soluble anion in Australian soils. The importance of this anion in land-use assessment is due to its possible accumulation in soil profiles to levels that are detrimental to plant growth.
Total nitrogen	Total soil nitrogen provides an indication to the soil's long term nitrogen supplying capacity.
Boron, hot CaCl ₂ extractable	Test used to obtain an index of soil boron status for plant growth.
DTPA micronutrients (Fe, Mn, Zn, Cu,)	Measures plant-available forms of these elements.

Other tests available from our laboratories

Pesticide residues (Organochlorines, organophosphates, synthetic pyrethroids)	Useful if pesticide build-up is suspected, and for dip site remediation. Used by organic growers seeking certification.
Total Carbon	Carbon is the organic material in soil which improves moisture holding capacity, increases soil structural stability and protects soil from erosion. Carbon:Nitrogen ration is used when making compost from organic material.
Full ICP scan (Al, As, B, Ca, Cd, Co, Cr, Cu, Fe, K, Mg, Mn, Mo, Na, Ni, P, Pb, S, Se, Zn)	This test will assist in identifying any nutrient/metal deficiencies or toxicities in your soil or organic fertiliser. It important to check for metals in organic fertilisers, particularly those sourced from human and animal waste.
Nutrient ICP scan (B, Ca, Cu, Fe, K, Mg, Mn, Na, P, S, Zn)	A nutrient scan will assist in solving nutrient deficiency or toxicity problems that you may have with your soil or organic fertiliser.
Mineral Nitrogen	Nitrogen requirements before planting a crop.



Drought, deficit irrigation and postharvest quality of citrus

Peter Taverner, SARDI

Extracted from the Packer Newsletter, Volume 85, December 2006.

Currently, the combination of drought and reduced irrigation allocation has placed growers in a difficult situation. As water supplies become more scarce and costly, irrigation scheduling has become more precise, and this trend will continue. Many studies have been conducted on the effect of different irrigation regimes on citrus yield, juice quality and external quality (eg size, weight and peel thickness). Yield and fruit size are obvious factors that growers will observe, but others are more insidious, and may express themselves after harvest. In other words, what are the possible effects of water stress in the orchard on the pre and postharvest quality of citrus? Not surprisingly, there is a lot of interest amongst the citrus R&D community in Australia.

Firstly, it must be mentioned that reducing irrigation during stages of crop development when yield and quality have low sensitivity to water stress can provide water savings without compromising returns. In fact, controlled deficit irrigation during the final growth period and the beginning of ripening may provide benefits through an increase in sugar content and acidity (Verreynne et.al., 2001). However, under drought conditions, 'normal' water allocation by either irrigation or rainfall cannot be assured during more critical periods. For further information, on irrigation strategies and critical watering periods contact your state government primary industry agency. Useful information can also be found on the ACG website: <http://www.australiancitrusgrowers.com/aspdev/resources/irrigation.asp>

Effects of drought on fruit. The overall yield is likely to decrease, as would fruit size and weight. The total soluble solids and acid content may increase, but total soluble solids per hectare may decrease overall due to yield reductions. Reduced rind thickness in response to lower irrigation volumes has been observed in some parts of the world, but Australian experience has not verified this effect.

Drought conditions may accelerate rind maturity, and early monitoring suggests that fruit maturity is advanced this season, though this may also be a consequence of the earlier flowering in most districts. In addition, balanced irrigation contributes to the efficiency of nutrient uptake, which will also influence fruit quality.

How are drought conditions likely to affect various storage disorders? This is difficult to quantify either way, but some of the disorders likely to be influenced, and relevant to our situation, include, albedo breakdown, rindstaining in navel oranges, postharvest pitting, age-related (navel) and stem-end (Valencia) rind breakdown, oleocellosis, and chilling injury.

If we assume that drought conditions lead to accelerated rind maturity, then we would expect a higher incidence of age-related and stem end rind breakdown (SERB). Rindstaining is a different condition that occurs on the fruit while the fruit are still on tree and during storage (Agusti et al., 2001). The Spanish have serious rindstaining problems with Navelate fruit during ripening, but Navelina, Washington navel and Lane late fruit can also develop this disorder during postharvest storage. These symptoms are seen on fruit harvested from inland Australia, where climatic conditions similar to the Mediterranean-type conditions in Spain prevail. Affected fruit are characterised by collapsed areas in the rind, which become reddish-brown over time. The symptoms appear on fruit at non-chilling temperatures, and fruit blemish increases with maturity. Water stress is thought to play an important role in its development. Delivery of bins to packing sheds should be prompt. Storing fruit at low temperatures (2°C) is considered useful to reduce the symptoms. Degreening with ethylene may also delay its expression.

Postharvest pitting is a similar disorder to rindstaining and was first described on white grapefruit and Fallglo tangerine. This disorder occurs in waxed fruit, and appears associated with gas permeability. Navel oranges are prone to postharvest pitting, and also express SERB-like

symptoms that are apparently indistinguishable from postharvest pitting (Petracek et. al. 2006). Using more gas permeable coatings and prompt low temperature storage can reduce symptoms.


Oleocellosis is cell collapse and blemish caused by the release of rind oils after impact or abrasion. The disorder is well described by Toby Knight, a former student of the University of Adelaide (Knight et. al. 2002). The incidence of oleocellosis is closely related to the turgidity of the fruit during harvest. If fruit is stressed and wilted at harvest this may reduce the risk of damage. However, extended drought conditions may have compromised overall rind integrity, resulting in easier damaged fruit.

Predicting the incidence of chilling injury is fraught with danger, but chilling injury may be reduced under drought conditions. Grierson (2002) persuasively argues that fruit produced on drought stressed trees are very resistant to chilling injury. The mechanism conferring resistance is unclear (nor, probably, of interest to packers, but I'll try to explain it anyway). Initially, it was felt that chilling injury might be associated with the balance of gibberellins (GA) and abscisic acid (ABA); high ABA levels correlating with drought and chilling injury resistance. More recently, the role of ABA in protecting fruit from storage disorders has been disputed, with oxidative stress implicated in chilling injury development, and high levels of antioxidants, such as carotenoids, thought to provide protection (Alferez et al 2005).

Another aspect to consider in this period of low water availability is albedo breakdown or 'creasing'. Michael Treeby, CSIRO, Merbein, has done some work in this area, and suggests that rind mineral levels, rootstock type and irrigation management are factors contributing to albedo breakdown. Fewer symptoms were observed in navels subjected to reduced water volumes, whether delivered as part of a partial rootzone drying strategy or not (Treeby et. al 2000). This work also highlighted the impact that reduced water volumes have on final fruit size. A particularly interesting outcome of this work was the recognition that low water volumes less affected trees on some rootstocks more than the same budline growing on other rootstocks managed in the same way and growing on the same site.

Generally, appropriately timed GA orchard sprays reduce many (but not all) of the disorders described above. The drought may accelerate fruit maturity, and so it will be important to time sprays according to phenological stage rather than on a calendar basis. Likewise, handling, storage and marketing strategies should take into account the maturation stage of the fruit.

In regard to decay, the drought conditions will provide a much drier orchard environment for disease and spore accumulation. However, after harvest, mature rind and the increased incidence of physiological damage will aid spore germination and disease development.

To finish on a positive note, when full irrigation is resumed after a deficit period there is evidence of increased fruit growth, above that of normally irrigated trees. In grapefruit, vegetative growth is reduced more by prolonged deficit irrigation than is fruit growth (Levy et. al., 1978). We hope and pray for substantial rain to test this hypothesis. 

What's on

◆ **28 July 2007** **"What's New" for Flower Growers workshop**

1.00 pm at Dural Country Club.

For more information contact:

Bettina Gollnow, NSW DPI, 02 4640 6333

Alan Merriman, Organic Fertilisers, 0408 267 728

◆ **4 – 6 May 2007** **Tocal Field Days,** **Paterson**

Friday, Saturday and Sunday - 4, 5 and 6 May 2007.

Promoting environmentally friendly farming

The 2007 special focus is WATER, featuring oysters, aquaculture, rivers, marine parks, habitat protection, water quality and how to save water.

Learning from experience overseas

Julie Dart, District Horticulturist, NSW DPI, Tumut.

Recently I attended the International Fruit Tree Associations 50th anniversary conference in Hobart. This is the first time that the conference has been held in Australia.

At one presentation Mr Franco Weibel discussed how the Swiss organic apple industry manages the promotion and sale of new, unknown organic apple cultivars, in a country where consumers mainly purchase well known conventionally grown varieties. His challenge was to develop a system that would encourage consumers to buy completely new varieties with the confidence that they would be purchasing a product that met their preferred taste. The system broke the mould of selling by variety and instead focussed on selling a flavour.

The system simplified sales by putting an apple into one of three flavour categories, Sweet, Spicy and Tart (acid). Each category has its own coloured label Sweet (red), Spicy (yellow) and Tart (green). In Switzerland apples are sold in plastic tray packs of up to six pieces of fruit, with a coloured taste system label on the top of the packaging. This label also has the variety name, grower and packing date in case people choose to look for the same variety in the future. It makes it easy for the consumer to pick what suits them by colour, although it could be a problem for those with red-green colour blindness. The system is such a success that the supermarkets have now adopted it for the non-organic apples as well.

This got me thinking about peaches and nectarines in Australia. At retail level, peaches and nectarines are not sold by variety name, and as a consumer it is pretty difficult to consistently buy fruit that fits your preferences for flavour, flesh colour and texture, even if you do have a favourite variety. I am not suggesting that all fruit should be pre-packed. However, seeing that both the major supermarkets now have one-touch systems there could be a simple solution- a display card at the top of the box, when on the shelf. A sample could look like this:

PEACH white flesh
Super Sweet
Eat firm
Var "Ice Candy"

So I raise challenge to the supermarkets and the industry: Is it really that hard to do? We already have that fruit characteristics for each variety from our nursery catalogues. We already have most of the information on the box for the supermarket (variety, grower, packing date). Let's get on with making it easy for the consumer to buy good tasty fruit.

Source: *Fruitwise, Issue 63 Autumn 2007*



What's on

◆ 3 – 4 April 2007 NSW Farmers Horticulture Industry Code of Practice Workshops

3 April, Sydney Region
10 – 12.00 Kemps Creek
2 – 3.30 pm Liverpool
7.00 pm Camden

4 April
11.00 am – 12.30 pm –UWS Richmond

For more information contact:
Frances Vella 0428 228 818

◆ 15 – 19 April 2007 Australian Citrus Growers 59th Annual Conference Future Directions in Export and Domestic Markets

Monday 16 April - Domestic Markets
Tuesday 17 April - Export Markets
Wednesday 18 April - ACG Business Day
Thursday 19 April - National Citrus Liaison
meeting

Contact: Australian Citrus Growers
Phone 03 5023 6333

For information regarding the program,
accommodation and travel, see the ACG website:
www.australiancitrusgrowers.com

◆ **Drought website goes live**

In response to requests and the need to better coordinate and share information on issues surrounding water and the drought, a new drought section has been added to the HAL website. The new site can be found at:

www.horticulture.com.au/drought

The section includes useful information on resources, tools and options for industry members to respond to the issue of drought.

Also, further information on water can be found on the Water Initiative website www.horticulture.com.au/water and further information on how other agricultural industries are responding to the drought can be found at www.ruralrdc.com.au/Page/Drought+/Drought.aspx



◆ **Pesticide Regulation Coordinator (Project AH04007)**

The domestic and international regulatory environment for pesticides is complex and subject to continual change. Keeping abreast of changes and developing suitable responses can prove extremely difficult for individual growers and industry associations.

In response to this, HAL appointed a Pesticide Regulation Coordinator, Kevin Bodnaruk, to coordinate the provision of information to growers and their organisations about regulatory changes, collate their comments and respond on their behalf to the relevant authorities.

The coordinator has developed linkages with regulators through direct liaison and participation in various Government committees and forums.

To help industries address specific issues, the coordinator liaises directly with industry representative bodies, growers and chemical manufacturers and participates in industry forums and conferences. This enables horticultural industries to be given adequate information on the implications and progress of any planned changes

and ensures that access to important pesticides is not lost through lack of adequate consultation.

This year, a number of activities were undertaken on behalf of horticultural industries, including: a response provided to the Victorian Department of Primary Industries Review of Control of Use legislation; a submission on behalf of horticultural industries to various Australian Pesticides and Veterinary Medicines Authority (APVMA) reviews of chemicals and a response to a discussion paper on the scope of the national registration scheme.

A submission was also prepared for the Food Regulation Standing Committee consultations on Maximum residue limits setting and Food Standards Australia New Zealand assessment processes.

Comprehensive liaison with the APVMA on a number of issues is also a key role for the Pesticide Regulation Coordinator.

For further information contact:
Kevin Bodnaruk, AKC Consulting P/L
Phone 02 9499 3833 Email kevinakc@bigpond.net.au



◆ **Improving access to pesticides via minor use permits for horticulture (Project A04009)**

Source: Horticulture Australia, Across Industry report 05-06

Improving the access of all horticultural industries to pesticides through Minor-Use Permits has been the focus of this project.

Managed by AgAware Consulting, the project assists growers in solving crop protection problems and encourages the use of integrated pest and disease management systems. It also encourages the use of reduced-risk pesticides and the management of chemical resistance.

The project will help meet legal requirements regarding pesticide use, ensure produce does not contain unacceptable chemical residues and meet the requirements of quality assurance systems and export markets.

Using a strategic approach to permit acquisition across all horticultural industries, multiple permits for the same pesticide are being consolidated into one permit containing multiple crops. To date, 12 compounds have been consolidated into ‘mega-permits’ that previously constituted 56 different permits or permit applications.

Part of the approach to this project includes a ‘strategic pesticide gap analysis’ which has been undertaken to evaluate current pesticides for selection criteria such as integrated pest management fit, resistance management, residues and trade. Gaps in available pesticides are determined and new control options selected using the same selection criteria. To date, the analysis has been undertaken in the vegetable industry in four states where 27 different crops have been reviewed. A specific protected cropping analysis has also been undertaken for five different crops. The results of this analysis will form the basis of all future pesticides requests in vegetables. This process will also be used in other horticultural industries.

Data generation requirements are being coordinated with the regulatory authorities and manufacturers to maximise efficiency. Feedback is then provided to individual industries. Industry issues in relation to pesticide use such as emergency and urgent permit applications are also being addressed.

Vegetable projects have recently been allocated to service providers using this consolidation process. All other horticultural industries have received a list of proposed pesticide projects with associated costs to prioritise and fund appropriately.

For further contact:
 Peter Dal Santo, AgAware Consulting
 Phone 03 5439 5916 Email pds@agaware.com.au



◆ **Changes to drought assistance may benefit more fruit growers**

Lawrence Ullio, District Horticulturist, NSW DPI, Camden.

Over 90% of NSW remains drought declared. Recent changes to the Exceptional Circumstances Interest Rate Subsidy assistance by the federal and state government (October 2006) may now benefit more fruit growers.

Most Rural Lands Protection Boards (RLPB) in NSW remain in drought and farmers in these RLPB areas that are affected by exceptional circumstances may be eligible to apply for interest rate subsidies.

The main type of support that may be of interest to fruit growers is interest subsidy on loans taken out for farm related purposes. The maximum interest subsidy is 80% of the interest paid on a loan up to a maximum of \$100,000 over a 12 month period.

Some of the conditions that apply for interest subsidy assistance are:

- Total net off-farm assets can not exceed \$458,000. Superannuation and bona fide insurance are exempt from the off-farm assets test,
- No asset test applies to the farm, farm equipment and infrastructure,
- The applicant must contribute at least 75% of his/her labour to the farm enterprise and
- At least 50% of income is derived from farming and the applicant has been farming for at least two years.

The NSW Rural Assistance Authority also offers other types of assistance such as income support for families, assistance to help pay household bills and provide funds for professional advice and planning assistance.

For more information call NSW Rural Assistance Authority on (02) 6391 3000 or Toll free on 1800 678 593 or visit their web site www.raa.nsw.gov.au

Source: Fruitwise, Issue 63 Autumn 2007



◆ **Dimethoate/Fenthion Task Force**

Source: ACG Members Newsletter, February 2007.

A national task group has been formed to deal with the potential effects of the loss of the insecticides dimethoate and fenthion as post harvest treatments in Australia.

The task group, directed by the Plant Health Committee, is comprised of regulators, researchers and industry, represented by Plant Health Australia and Horticulture Australia Limited (HAL).

The APVMA is currently reviewing the insecticides because of toxicological, occupational health and safety, and residue and trade concerns. A consequence of the review may be that the insecticides can no longer be used as a post-harvest treatment.

The newly formed task group will be responsible for overseeing the implementation of a national action plan which includes processes for:

- Developing and approving alternatives to current uses of dimethoate and fenthion that will provide an equivalent level of phytosanitary protection; and
- Integration of alternative measures into crop production systems for consideration and approval by quarantine regulators in Australia and overseas.

The national task group will be working with HAL, researchers and regulators to come up with practical systems that meet quarantine needs.

The Office of the Chief Plant Protection Officer is in the process of appointing a national coordinator to chair the task group. 

◆ **Draft ACG operating plan 2006-2008**

Source: ACG Members Newsletter, December 2006.


ACG Executive Director Judith Damiani outlined a draft ACG operating plan developed from the industry plan. The three main areas of focus for

ACG over the next two years are:

- Establishing ACG as a world class organisation
- Improving the competitiveness of Australian citrus growers; and
- Enhancing industry skills, information and communication.

Priorities include:

- Facilitating the alignment of the industry organisational structure through a 12 month consultative process, and
- Delivery of the industry strategic plan through the appointment of a industry implementation group comprising citrus supply chain leaders over a two year timeframe.

National delegates resolved to accept the draft operating plan and priorities with an update at the April 2007 AGM. 

◆ **'Squashing' the threat of granulation in Imperial mandarins (Project CT04002)**

Source: Australian Citrus News, Volume 83, Dec 2006/ Jan 2007

Granulation remains a major fruit quality problem in Imperial mandarins. In 1998 and 1999 the disorder caused widespread problems with almost all Queensland orchards reporting fruit flesh to be dry and with poor taste.

Although incidence of the disorder has since been relatively low, growers need to know what causes the disorder and what management practices they can implement to prevent its occurrence.

Queensland mandarin blocks that show significant amounts of granulation during the fruit development stages and at harvest have been identified.

These blocks are being used in growth regulator work to determine direct or indirect effects on the incidence of the disorder.


Research efforts have also concentrated on determining how early in fruit development the disorder can be detected.

News in Brief

During the 2006 season large numbers of mandarin samples were supplied to collaborators at the Central Queensland University who are investigating non-invasive techniques to detect the disorder. Normal fruit and granulated fruit (severe and moderate) were hand sectioned for characterisation by brightfield and fluorescence microscopy. Samples were also examined by transmission and scanning electron microscopy.

Mature fruit ready to harvest were also assessed using three acoustic-based technologies. These acoustic detection technologies do not appear promising at present, but further work is required before a final conclusion is reached.

In the 2007 season, optical, x-ray, electrical impedance and acoustic technologies will be investigated. These may later have application to packingline grading of commercial fruit.

For more information contact:
Malcolm Smith, QLD DPI & F
Phone 07 4155 6244 Email malcolm.smith@dpi.qld.gov.au 

◆ **On Line Information System**

Source: ACG Members Newsletter, February 2007


During December 2006 and January 2007, ACG has been conducting initial meetings on the Online Information System with predominately packers across the key growing regions; Murray Valley, Riverland and Riverina.

The most recent visit was to the Riverina on the 24th and 25th January 2007. Packers and growers were presented with ACG's market information initiatives, which were well received by both groups.

The key initiative being the 'Online Information System', is an internet-based information exchange, that will initially focus on pack house supply through-put data (modelled on the Avocados Australia "Infocado System").

The new system will allow collection of supply throughput data and reporting of this information,

and harvest rates, at both a regional and national level.

The system is anticipated to 'go live' in early April 2007. Ongoing development of the system is in the pipeline, with plans to extend beyond this initial module to include collection of other relevant industry data. The key benefit will be timely and relevant data to assist marketing and business decisions. 

◆ **The Australian Chamber of Fruit and Vegetable Industries releases new produce specifications**



The Australian Chamber of Fruit and Vegetable Industries released its new specifications for Class One produce, FreshSpecs in January.

"FreshSpecs has been compiled in conjunction with the largest buyers of fresh produce to ensure that they meet the expectations of Australian consumers", Martin Clark, Australian Chamber Executive Officer, said today.

"For many years now much of the produce being supplied to the Central Markets has been labelled by suppliers as Class One when there has been no clear guidelines as to what constitutes Class One produce", he said. "Now there are very clear specifications to meet that grade. FreshSpecs will provide a clear, consistent guide for the industry."

"There are hundreds of individual specifications for Fruit, Vegetables, Herbs and Sprouts included in the FreshSpecs range. There are clear specifications of what are major and minor defects, tolerances per consignment, receipt conditions such as pulp temperatures, maturity, shelf life requirements and food safety requirements to meet the Class One standard", Mr Clark said.

"FreshSpecs will be adopted by the Central Market Wholesalers as their requirements for Class One produce being delivered to the Markets. A problem that the industry has had since the Government

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dropped grade standards years ago, is that there can be a wide variety of quality labelled as Class One being supplied to the market”, he said.

“This in turn creates a false expectation by the supplier that they will be paid Class One prices because they have labelled their produce Class One, when in fact the produce may fall well short of the customer expectation of Class One. Having the new FreshSpecs in place will help to provide the industry with clear market signals of quality and price”, Mr Clark said.

“Similarly produce buyers have been unhappy because they have been unable to rely on the Class One labelling. Because of this there has been strong interest shown by some of the country’s major produce buyers who are also looking to adopt FreshSpecs”.

FreshSpecs can be viewed and downloaded through the link on the Australian Chamber’s website www.freshmarkets.com.au

For further information contact: Martin Clark,
Executive Officer, on 02 9764 3244



◆ **Chemical review news**



Extracted from APVMA website

► **Outcomes of Carbaryl**

The outcome of Part 1 of the review of carbaryl for

- **Agricultural situations** – The use of carbaryl products in most agricultural situations will be retained. For some products there will be restrictions on the way the chemical can be used and supplied. Labels will also contain more detailed instructions relating to the use of the products.

► **Restriction on the uses of methomyl**

The use of the pesticide methomyl (trade names: Electra, Lannate, Marlin and Nudrin) has been removed from all horticultural crops grown in protected cropping situations (glasshouses, greenhouses, shadehouses, etc) and on lettuce and other leafy vegetables (both field grown and grown

in protected cropping situations), based on new evidence that such uses may result in methomyl residues in food exceeding maximum residue limits.

Product registrants have agreed to delete references on product labels to the use of methomyl on lettuce and leafy vegetables. They have also agreed to include a statement on labels to disallow the use of methomyl on food crops grown in protected cropping situations.

Growers should not use any methomyl products they may still have in stock on lettuce, leafy vegetables, or any food crops grown in protected cropping situations.

All product containers supplied from January 2007 are expected to bear the new labels. In the interim, manufacturers will put warning stickers on containers currently in the supply chain, advising growers not to use the product on lettuce and leafy vegetables or on any crops grown in protected situations.

The APVMA is working with peak industry bodies to educate users about the unacceptable dietary intake of residues that could result from these uses of methomyl.

The vegetable peak industry body, AUSVEG, is currently working with APVMA, pesticide manufacturers and growers to generate the necessary data to evaluate the exact residue situation in various crops. It is hoped that this data will provide the information required by APVMA in relation to the use of methomyl in the future.

For more in formation contact Subbu Putcha of the APVMA on (02) 6210-4766, the Chemical Review Group (chemrev@apvma.gov.au).



◆ **Horticulture vision receives \$900,000 Govt boost**

Source: Rural Press National News Bureau

The Federal Government and industry will jointly fund the development of a strategic vision for the horticulture industry in Australia.

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The Government has approved \$900,000 to fund the program, which is to be matched by industry contributions.

“I understand that the bulk of the industry funds have already been pledged with supermarkets, wholesalers, central markets, managed investment schemes and grower levies all contributing,” Agriculture Minister Peter McGauran said.

The project will begin in the New Year with the first step being the appointment by the Minister of a leadership group, with representatives from all sectors of industry.

“For the first time we are developing an industry plan for the whole of the horticulture industry that takes a realistic and detailed look at what is happening and adopts a cohesive approach to adding value in the future,” Mr McGauran said. “The new plan will provide guidance for the whole industry and involves all of the major players throughout the supply chain, from growing produce through to buyers and consumers.”

The plan will influence the industry over coming decades in fundamental ways by driving competition and competitiveness.

Other areas for attention of the plan are:

- preparing for a greater export focus, particularly gaining market access and improving export marketing;
- better identification of consumer needs to improve production and marketing;
- the development of measures to raise quality, consistency and reliability throughout the industry;
- encouraging greater cohesion along the supply chain in areas where break downs are reducing value;
- raising the efficiency and sustainability of participants throughout the industry;
- the investment and direction of R&D and marketing resources.



◆ **New Organic Initiatives for NSW**

Source: Organic News, NSW DPI, January 2007.

A new \$250,000 Organic Industries Initiative package has been launched at the NSW Department of Primary Industries (DPI) Bathurst Agricultural Research & Advisory Station.

The Initiative will fund two new organic agricultural positions and new infrastructure at Bathurst as well as the creation of the NSW Organic Ministerial Advisory Council. The Council’s role will be to advise the Minister for Primary Industries on important matters facing the NSW organic industries and help harness the full potential of prospering organic markets by developing a strategic plan for the industry, and an approach to further developing the organic farming sector in NSW.

The Organic Ministerial Advisory Council includes a wide range of representatives from the production, wholesale, retail, processing, waste recycling and local government sectors. The members of the council are:

- Terrance Healey, Chairman
- Ken Taylor, meat processor/wholesaler (Gosford)
- Catherine Ford, coffee (Rosebank)
- Richard Jones, former MLC (North Coast)
- Geoff Brown, cereals processor (Parkes)
- David Booth, goats, beef, cereals producer (Cootamundra)
- Jan Denham, citrus (Palinyewah)
- Stuart Larsson, beef and seed producer (Mallanganee)
- Eric Love, organic waste recycling (Sydney)
- Phillip Rougon, wholesaler (Sydney)
- Jan Barham (Mayor, Byron Shire Council)

The NSW Organic Ministerial Advisory Council recently held its inaugural meeting in Bathurst at the NSW Department of Primary Industries Bathurst Agricultural & Research Advisory Station.

Topics discussed at the meeting included:

- Investment in organic wine and olive oil production;
- Solutions to supply chain issues for organic meat;
- Soil fertility improvement in organic systems; and
- Facilitation of group marketing of organic produce.



Essential oils could help control postharvest disease

Source: *Agriculture Today*. December 2006.

NSW Department of Primary Industries (DPI) post-harvest researchers are evaluating the antimicrobial properties of essential oils and their potential to control postharvest diseases on fresh produce.

Postharvest diseases caused by fungi, such as brown rot, green and blue moulds and soft rots cause losses of between 10 to 50 per cent of fruit and vegetables worldwide.

Chemicals have been widely used to control postharvest diseases. Although they can be effective, many are no longer used because of economic, environmental, or health concerns, or because diseases have become resistant.

Few chemicals are still available for postharvest treatments, making alternative approaches more attractive.

Dr Elena Lazar and Dr Vivian Ku from DPI at Gosford are testing several essential oils to see if they prevent fungal growth and spore germination. Essential oils are highly fragrant natural oils extracted from plants which may be used in flavourings and perfumery.

Dr Lazar said that many essential oils can inhibit diseases before they become a problem.

Four essential oils were tested in laboratory trials: lemon myrtle, cinnamon bark, oregano and thyme oil.

Dr Lazar said the oils would all stop fungal growth in *Monilinia fructicola* (brown rot), one of the most common diseases of stone fruit.

They also reduced spore germination. Lemon myrtle was the most effective, killing 100 per cent of spores.

The first round of trials involved mixing the oils at strengths of 1000 parts per million (0.1%).

Lower concentrations of lemon myrtle were also tested against *M. fructicola*. These concentrations of lemon myrtle delayed rather than stopped fungal growth and spore germination.



Monilinia fructicola (brown rot) is a costly cause of disease in stonefruit.

Trials were conducted on 300 nectarines deliberately infected with *M. fructicola*. Lemon myrtle oil was applied to the wound site.

Dr Lazar said this had varying effectiveness, depending on the time of application. Treatment with lemon myrtle oil was more effective if applied before the fruit was infected with *M. fructicola*. This suggests that the oil had prevented the disease rather than cured it. The lemon myrtle oil used in the trials did not damage the fruit skin.

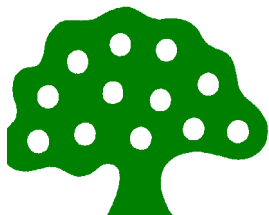
Dr Lazar said that essential oils are extremely complex, so diseases are unlikely to develop resistance against them.

However, in order to meet industry expectations, she says large scale trials conducted under commercial and semi-commercial conditions are required for different products. These would need to encompass all the costs, legal, and safety issues.

Contact Elena Lazar, DPI NSW, Gosford
Phone (02) 4348 1935 or email elena.lazar@dpi.nsw.gov.au



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COASTAL FRUITGROWERS' NEWSLETTER

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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.

NSW Department of Primary
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Bill Yiasoumi - Irrigation Officer
Rob Bowman - Senior Inspector
(Sydney & South Coast) 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.

STOP PRESS



**Next Central Coast CITTgroup Event
Tuesday 1st May, 10.00 am**

Ross Hitchcock's Farm, 102 Williams Road, Kulnura.

"Introduction to Natural Production Systems for Citrus"
with John Priestly, Biodynamic Citrus and beef producer

For more information contact Sandra Hardy 02 4348 1916.

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