



COASTAL FRUITGROWERS' NEWSLETTER

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NSW Agriculture

Fruitgrowers' Newsletter
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Design & Layout -
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Dear Growers

Welcome to the first edition for 2004. I hope you enjoyed some sort of break over the Christmas period.

In this issue for stone fruit growers there is a report on the results of the NSW WFT surveillance program. There's also an update on the low chill stone fruit variety evaluation.

For citrus growers there are a number of reports including information from a recent blood orange study tour to Italy. There's also technical summaries for two recently completed industry funded projects on disease control and replant sites.

Caltex Australia has also supplied technical standards for their spray oil products in response to the "Spray Oils" article in the last edition.

Any growers on the Central Coast wishing to get rid of used farm chemical containers, should see details of the drumMUSTER collection on 3 April (see page 15).

There's also lots to catch up with in the "News in Brief" section.

Sandra Hardy

NB. The second part of the "1st Coastal Citigroup Field Day" report covering citrus diseases and postharvest handling will be in the Winter 2004 edition

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

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Good Response to WFT Surveillance



Graham Thwaite, Special Entomologist, Orange Agricultural Institute.

NSW Agriculture's initiative to survey the distribution of western flower thrips (WFT) in the State's stone fruit growing districts has finished. The surveillance program, carried out in conjunction with growers, followed the serious outbreak of WFT in the Central Coast and Sydney regions of New South Wales in the 2002/03 season.

Information on the pest status of WFT, the damage caused to stone fruit (especially nectarines) as well as the challenges to its management through the ability of

WFT to develop resistance to pesticides has been set out in previous articles in this *Newsletter*. The 2003/04 edition of the *Orchard Plant Protection Guide* also contains this information.

Surveillance program

At the beginning of the 2003/04 growing season, stone fruit growers were offered yellow sticky traps at no cost through any of the seven NSW Agriculture District Horticulturists servicing stone fruit districts. The traps were supplied with Agnote DPI/471 which described how to set up the traps, collect and replace them and send them in for checking.

All traps returned through the District Horticulturist were sent to NSW Agriculture's Agricultural Scientific Collections Unit (ASCU) at Orange. There, trained staff checked each trap for thrips. Any WFT found were recorded separately and other pest thrips species, such as plague thrips and onion thrips, were pooled. Counting stopped when the number of these reached 50.

Results were then forwarded to the grower through the District Horticulturist who had submitted the traps on the grower's behalf. In some cases there was a substantial time lag between a grower delivering traps to the District Horticulturist and the results returned. However, participants were warned from the outset not to treat the survey as a "spray warning service".

Later, the traps were also checked for beneficials, especially those likely to be valuable in the biological control of WFT. Species found included

lacewings, ladybirds, predatory thrips and tiny parasitic wasps. Spiders, known to be valuable general predators, were also recorded.

We were not able to inform individual growers of the predator counts as part of the program. Any grower who would like to have that information can get it by phoning the Entomology Laboratory at the Orange Agricultural Institute on 6391 3840 (leave details, including mailing address, in a message) or by e-mail (marion.eslick@agric.nsw.gov.au).

Where is WFT?

In the Summer 2003/04 (51st) edition of this *Newsletter*, confirmation of WFT in stone fruit orchards around Sydney was reported, despite this pest being widespread on other horticultural crops in the Sydney basin since 1996. By the end of the program, the pest had been identified on traps submitted from most of the surveyed orchards in the southern and south-western Sydney region (includes Thirlmere, Wedderburn and Darkes Forest).

In December 2003, WFT was found in traps placed in a Forbes district orchard in November. This was the first confirmed record of WFT away from the coastal districts. WFT was subsequently detected in the three other orchards which had been surveyed. The finding could have serious implications for other agricultural industries.

No WFT were found in traps from the north coast, nor from the only orchard from the Central Coast to submit traps to ASCU. Some traps were also assessed at the Horticultural Research and Advisory Station, Gosford but no WFT were detected in those either.

Some numbers

A summary of the findings for 2003/04 is set out in Table 1 on next page.

WFT was picked up in traps from September to February in the region south of Sydney. The pest can therefore be present throughout the year and has been known to occur in this area for several years.

Most of the 341 traps that were checked had thrips other than WFT on them. In most cases the number exceeded 50. This indicates that species such as



plague thrips and onion thrips are also around for most of the growing season. Plague thrips is only known as a problem during the blossom to shuck fall stage, especially on nectarines. Onion thrips is not regarded as a pest of stone fruit.

Beneficials

The healthy population of beneficials in the State's stone fruit orchards is a good sign. At least one predator or parasite was found in $\frac{2}{3}$ rds of the traps. Some of these "good bugs" will be valuable in helping to manage WFT while others will have an important part to play as the industry develops its integrated pest and disease management program.

What now?

The NSW stone fruit industry now has a better picture of the distribution of WFT. Growers in the Sydney basin need to maintain vigilance and be ready to respond if monitoring in orchards detects the pest. Our limited experience suggests this will not happen every year, such as the difference on the Central Coast between 2002/03 and 2003/04.

Heed the warnings about overuse of insecticides. Not only will the use of some insecticides be ineffective against WFT because of its known resistances, but those pesticides could also suppress or remove beneficials which might otherwise assist with control.

If you want advice on monitoring WFT, contact your District Horticulturist prior to the start of the season. Information will also be included in the 2004/05 edition of the *Orchard Plant Protection Guide*.

The surveillance program is unlikely to be repeated or extended in 2004/05. However growers are welcome to use the service provided by ASCU at their own cost.

Acknowledgments

Thanks to the 35 growers who took up the offer to be part of the WFT surveillance program and the District Horticulturists who assisted. My sincere thanks go to Sandra Hardy and Marilyn Steiner who provided valuable help to allow the program to be launched. Without the cooperation of Peter Gillespie, Matthew Kerr and staff of ASCU (thrips identifications), Marion Eslick and Anne Hatley (trap distribution and beneficials assessments) the program couldn't have happened.

Total cost of the project (traps and identifications) exceeded \$8,300. This valuable contribution to the stone fruit industry was made possible through a special grant from NSW Agriculture.

Table 1: Western flower thrips (WFT) surveillance program, 2003/04

District	Number of		Number of traps with		
	Orchards	Traps	WFT	Other thrips	Beneficials
North coast	11	75	0	75	52
Central coast ¹	2	32	0	27	19
S-W Sydney	7	88	17	87	36
Bilpin	1	17	0	17	25
Tumut	5	38	0	38	6
Young	3	14	0	13	13
Forbes	4	13	7 ²	13	59
Orange	2	64	0	64	13
TOTAL	35	341	24	334	223

¹Includes 18 traps checked at HRAS, Gosford

²Found from all four orchards



Spray Sense - Information for Users of Agricultural Chemicals

Spray Sense is a series of leaflets in plain English which focus on providing up-to-date information on a range of pesticide issues. Everyone who is involved in the manufacture, sale, distribution, use and provision of advice is encouraged to use this information to apply pesticides more effectively.

The Spray Sense series was first developed in 1995-96 as an initiative of the Pesticide Project Team, comprising NSW Agriculture Horticultural extension officers and industry representatives located in the Greater Sydney Basin. The series has now been updated and expanded to take into account new issues. The series covers the following topics:

- How to calibrate hand operated sprayers
- Testing for chemical residues
- How to calibrate airblast sprayers
- How to prevent and treat pesticide poisoning
- Storing pesticides safely on the farm
- Using fungicides correctly
- Safe disposal of empty pesticide containers
- The role of EPA pesticide inspectors
- How to read and understand Pesticide labels
- Transporting farm chemicals
- Spray water quality
- How to calibrate boom sprayers
- Managing chemical spills
- How to choose the right pressure gauge
- What pesticides can I use?
- Keeping pesticide records
- Assessing spray coverage with water sensitive spray cards

The Spray Sense series is available on the NSW website at www.agric.nsw.gov.au/reader/spray-sense



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Low Chill Stone Fruit Varietal Evaluation

Philip Wilk, District Horticulturist, Alstonville.

The Varietal Evaluation Program comprises NSW Agriculture, Low Chill Australia, University of Western Sydney and DPI Queensland.

Introduction

The varieties being tested are harvested from the Low Chill Australia evaluation block at Bangalow NSW. The varieties have come from a number of sources.

The varieties are supplied by the University of Western Sydney, ANFIC and DPI Queensland. As well there are a number of public domain varieties as reference trees.

Most ripening times of low chill varieties are taken or compared to *Flordaprince* peach.

We normally expect *Flordaprince* to be picked around the middle of September, followed by *Tropic Beauty* peach 1-3 weeks later. *Sunwright* nectarine (81-17), begins its pick around the second week in October and is usually the first nectarine on the market.

87-4 nectarine, (90-3) *White satin* nectarine are the next two reference varieties to be picked towards the middle to end of October followed by *Sunblaze* nectarine, beginning in the first week of November.

The fruit development period (FDP) is the time from full flower bloom to harvest. The longer this period, the more time fruit has to accumulate sugars. *Flordaprince* is usually around 78 days.

The information collected comes from a number of sources including release notices, grower's comments and evaluations by NSW Agriculture over the last season.

Seasonal conditions

- This season was not only one of the driest on record but also one of the coldest. The shortage of water on most orchards caused an early loss of leaves and an early flowering 2-4 weeks ahead of an average season.

In most areas of the north coast of NSW we received a number of heavy frosts. The coldest recorded temperatures were at Bangalow which was -5°C. This was on 3rd and 27th July when

most fruit had not reached stone hardening. The chill hours at Bangalow up to full flowering were 227 hours while areas around Alstonville received approximately 220-230 hours. The warmer sites on the coast had approximately 100 to 120 hours of chill up to full flowering.

- The severe late frosts at Bangalow this season caused a great deal of fruit loss with some early varieties (*Flordaprince*, *Sunwright*)
- The lack of early sufficient chill caused early fruit drop and misshapen fruit suture bulge and cold injury.
- The dry conditions over winter and spring have caused a reduction in the incidence of stonefruit disease this season and an improvement in fruit quality.
- A late, very cool period in July after most nectarine varieties were at stone hardening caused cold injury and severe cracking in nectarines (*Sunwright Sunmist*, 87-4N). Some peaches were also affected.
- Cool weather in September caused the season to slow down and fruit would not size up.
- A huge amount of sucker and tree growth occurred on Okinawa rootstock (very little on Coastal Peach)

Varietal performance this season with public reference varieties.

Nectarines

White Satin (90-3) white fleshed nectarine:

Produced poor fruit in all districts. Ripened on tip but was still green at attachment end. Fruit is still 28-30 size, sugar levels 11 -12 %. Difficult to pick and transport.

Sunwright (81-17) nectarine: This is usually a very reliable, sound variety. Early fruit showed mild winscreen to severe cracking. Later fruit was sound with excellent sizes 25-28. Damage was due to cold nights and warm days.

Sunracer (84-16)nectarine: Colour is good as well as size but this is a great deal of split stone and it has an odd egg shape which often makes packing in tray more difficult. This season, lack of chill up to flowering would have been the major contributor to the poor shape.

Sunmist white fleshed nectarine: This variety was superseded by *White Satin* variety (90-3) but this season and last season it has proven to be as good or better than White Satin in terms of size. Colour is not as good but size and flavour are very close. Sugar levels 11-12%. Needs to be pruned 2 weeks before harvest.

Peaches

Flordaprince: Poor fruit set, suture bulge and early fruit drop were common this season in Bangalow, Alstonville areas, fruit later than usual. Most fruit were frosted before stone hardening occurred. Cold damage was evident on some fruit on the tip end.

Tropic Beauty: Performed well this season. Harvest date mid to late October, quality excellent 23-28 tray size. In some areas fruit was late and harvested throughout October and into November. Quality was excellent.

Fla. 86-10: Yield and quality excellent this season, 25-28 tray size. This variety had good size, shape, colour and flavour this season. Difficult to harvest this season as picked and ripened almost at the same time. Matured very quickly.

Varieties Being Tested

Peaches

- **Fla 94-32c.** Non melting yellow flesh peach. Fruit ripened 9th October the same time as Tropic Beauty. Attractive fruit with 75% full red blush with moderate yellow ground colour. Yellow flesh with dark red flesh around the stone. Tray size 30-32, 80-90 grams weight, mild flavour sub acid with good shape. Flavour is mild with sugar levels 11-12%. Juice levels low to moderate. Low to medium crop yield this season. Good shelf life and transport characteristics. Has some surface pimpling on many early fruit. Has a very long harvest period. 2003 season frost damage and no fruit collected or sampled.
- **UF Gold (ANFIC)** fruit ripened 3rd week in October or same time as Tropic Beauty. Moderate yellow background colour with 50% bright red blush. Non melting flesh variety, very firm with good handling and transport characteristics. Produces 150 -160 pieces, 6-7 trays in some districts, fruit 25-28 tray size, 60-70 mm dia, 100-105g weight. In Florida 225 chill units were recorded but it probably needs more chill (275-300). Cropping potential has improved with age (4 years old this season).
- **Fla 92-11c (ANFIC) UF Charm.** A non-melting flesh yellow peach with sub acid. Harvested 6th November or same time as *Flordaglo* or *Tropic Snow* white fleshed peach. Very similar to UF Gold in colour but crops very heavily with average 10-12 trays per tree. 50% streaked moderate red blush on a bright orange yellow ground colour. Size is 28-30 tray size or 60-63mm dia, weight averages 95-105g. Shape is excellent with small tip and shallow suture, moderate juice, full flavour and strong aroma. Sugar levels 10-11%, Firmness excellent. Little observable difference on Okinawa or Nemasun rootstocks. Without heavy pre-harvest pruning to allow light in to colour fruit, this variety remains full yellow. Some off flavours develop if overripe.
- **Fla 92-15c (ANFIC) UF Delight.** A non-melting flesh yellow peach with sub acid. Looks like a later version of UF Gold in colour. Harvested 3rd to 4th week in November or same time as *Flordaglo*. Crops very heavily. 75% full moderate red blush on a bright orange yellow ground colour. Size is 28-30 tray size or 60-63mm dia, weight averages 95-105g. Good shape with shallow suture and no tip, moderate juice, full flavour and excellent sugar levels 14-16%. The flesh shows red around the stone and throughout the flesh. No *observable* difference between Okinawa and Nemasun rootstocks. Needs heavy pre harvest pruning to colour fruit. Too late for low chill districts. Often crops into December.
- **N5-50 (DPI) A yellow melting flesh peach.** FDP 124 days. Harvested 7th November or similar timing to *Flordaglo*. Has 75% red blush with yellow ground colour. Size 67-70 mm or 25-28 tray size. Good shape, balanced taste with moderate juice levels. Sugar levels 13%. 250-275 chill units. May be a good late peach.



- **Fla. 97-1 (ANFIC) A yellow non melting flesh, sub acid peach.** Harvested 6th November. Has 75% full red blush with yellow ground colour. Acceptable shape. Low acid with acceptable juice and a mild flavour. 13-14% sugar. May appeal to the Asian taste.

- **94-13c (UWS) A yellow non melting flesh peach.** Harvested 15th November. Has 25% faded red blush on mostly moderate yellow ground colour. Size is 25-28 tray size or 63-70mm dia. Heavy fuzz with an elongated shape and a very prominent stylar end tip. Sugar levels 12% and some off flavours if overripe.

It is a little late for North NSW growers and has a poor shape for packing at the end of the 2003 season

Nectarines

- **94-7nw (UWS) White fleshed nectarine.** Slightly later on Okinawa than Nemasun by 2 weeks. Harvested mid September. This is the earliest nectarine which at present harvests earlier than *White satin* or *Sunwright* by 2 weeks. Same time as *Flordaprince*. Size 28-30 tray counts. 100-105g, weight. 80-100% full blush with some sugar speckling. Sugar levels 9-11% with a full flavour, juicy low acid. Needs approximately 250 chill units. Yields acceptable averaging 4-6 trays per tree.
- **Sunsnow (public) a white fleshed nectarine.** Harvested 5th November or 105 days from full flowering or the same time as *Sunblaze (9-15)*. Has 75% moderate red blush with light green ground colour and some sugar speckling. Sugar levels were 13-15%. Size was 60-70mm dia or 23-28 tray size, 110-115g weight. Harvested two weeks earlier in 2000 and had lower sugar levels last season. Yields were excellent, 10-12 trays per tree. Similar to White Satin in flavour and colour but later. This variety performed very well this season despite the difficulties. Better on coastal peach than Okinawa (less sucker growth). Needs heavy pre harvest pruning to colour fruit.
- **94-1n (UWS) Yellow melting fleshed nectarine.** Harvested 4th November or same time as *Sunblaze*. FDP 120 days. Size 67-70mm or 23-28 tray size. 100-105g weight 75% light red blush with moderate yellow ground colour.

Yields excellent, 8-10 trays per tree. Shape excellent with balanced flavour, good juice and 15% sugar levels.

- **94-55nw (UWS) White non-melting flesh nectarine.** Harvested 1st and 2nd week in November or 110 days from full bloom. Has 100% full red blush with light green ground colour. Sugar levels 12-13%. Size 60-70mm dia or 23-28 tray size, 95 -105g some sugar speckling. Some blood colour in the flesh. Yields were low 2-4 trays per tree. *Sunsnow* is slightly better in yields, colour and flavour. Seasonal conditions may have had a major effect on this variety this year.
- **Fla. 94-7n A yellow flesh nectarine.** Harvested 28th October or similar timing to *Sunwright*. FDP 112 days. Has 80% streaked moderate red blush with moderate yellow ground colour. Size 60 -63 mm or tray size 28-30. 100-105g weight. Full flavour with good juice levels. Sugar 10-12% TSS. Has a small stylar end tip which may be a problem for packing. No difference on Okinawa or Nemasun. Small tip may be due to a lack of chill this season. Slightly small size for fruit at this time of the season may also be a problem.

Plums

- **Pl 97-1B (UWS) Blood plum.** First harvest this season. Requires 500 chill hours. Harvested mid to late November. Dark red/black skin. Shape acceptable. Deep red blood flesh. Flavour is mild low sugar (TSS 10-12%) and acid. Size 40, 38-41 mm diameter. Pl 97-2B is better size and flavour.
- **Pl 97-2B (UWS) Blood plum.** First harvest this season. Requires 500 chill hours. Harvested mid to late November or same time as *Sunblaze* nectarine. Dark red/black smooth skin. Blood red flesh .Some minor sugar speckling. Good shape. Needs heavy thinning to produce good size. Produces a heavy crop. Size 36-40 tray size 48-51 mm diameter. Flavour moderate with sugar levels 13-15% TSS and low acid. Produced good fruit in 2003 season despite only low chill.

Recommendations following the 2003 season

Phillip Wilk , District Horticulturist, Alstonville conducted the fruit evaluations over the 2003 season of three to five year old peach nectarine and plum trees.

The following short listed selections need further testing and commercial evaluation by growers.

Peaches

- 1. UF Gold for coastal areas-yellow non- melting flesh peach.** 250-275 CU bright red blush on yellow /orange background. Similar maturity to *Tropic Beauty*. Needs *Paclobutrazol* (4ml/tree) to manage tree size and minimise pre harvest pruning. Late pruning to see which flower buds will set fruit. Yields were lower in previous seasons but increased with tree age after 3 years. This variety will not supersede *Tropic beauty* but may be useful for an export market. Fruit presents well in a tray with a black liner against the bright orange yellow fruit colour.
- 2. UF Charm (Fla 92-11c) for coastal areas - yellow non-melting flesh peach.** 250 CU Red blush on orange background. Similar to UF Gold. Needs heavy pre harvest pruning to colour up fruit.
- 3. N5-50 (Topp) A yellow non melting flesh peach.** FDP 124 days. Harvested 7th November or similar timing to *Flordaglo*. Requires 250 - 275 chill units. Only one season's data collected so needs further testing.

Nectarines

- 4. Sunmist (Fla 88-11 nw)** This was superseded by *White Satin* due to colour but the size of Sunmist is better than *white satin*.
- 5. Sunsnow** white fleshed nectarine for coastal areas. 300CU. Dark red blush on a creamy background. Similar maturity to *Sunblaze*. Produced excellent quality fruit in a difficult season. Performed better on coastal rootstock. Needs pre harvest pruning to colour fruit early. Mid to late November harvest, with excellent yields and fruit quality.

Disclaimer

NSW Agriculture recommends that all growers undertake their own evaluation trials to determine the suitability of these selections to their management situations, microclimate and marketing strategies. These varieties are available from ANFIC nurseries or from AUSBUDS (PO Box 158, Seaford 3198 or phone 03 9786 3833)

The above assessments are preliminary and growers wishing to trial these selections do so at their own risk.

Additional Trials

1. *Austar* treated trees

Four trees of UF Gold peach variety on two rootstocks, Nemasun and Okinawa were treated with *Austar* (paclobutrazol) at two rates, 4ml/tree and 8ml/tree as a collar drench.

The trees were treated on 28/2/03 with 2ml and 4ml each and again just prior to flowering on 2/7/03 with a further 2ml and 4ml each (trees each had a total of 4ml or 8ml)

Observations

This is the third year *Pacloburazol* has been applied to these trees. It is worth noting that no effect was observable on red soils until this season where it became blatantly obvious the effect of the growth regulator on the trees.

At pre-harvest time in treated trees, there was very little upright growth from water shoots within the tree canopy. Therefore there was a need for only a light pre harvest pruning to allow light in to colour fruit where in the untreated trees there was a much greater number of watershoots which needed heavy pruning.

Fruit yields were significantly different between treated and untreated trees this season.

The 8ml treated trees had less watershoot growth than the 4ml treatments but had similar yields. There was no significant difference between the two rootstocks in terms of the amount of watershoot growth.

New shoot growth by laterals was close to the main leaders and seems to clasp the main branches. It is hoped the treated trees will not need a great deal of summer pruning post harvest.

It is further hoped that in the coming season the treated trees will bring forward harvest dates by up to 14 days.

There was little observable difference between the 8ml and 4ml treatments therefore it is recommended that growers use the 4ml split applications on UF Gold trees to regulate shoot growth.



Flying Fox Management Update

Lawrence Ullio, District Horticulturist, NSW Agriculture, Camden

Flying foxes continue to cause considerable crop losses in un-netted fruit orchards, in mainly coastal regions of NSW.

The Grey-headed flying fox is the most common species responsible for crop losses in coastal orchards. They are found along the east coast of Australia, ranging from Bundaberg in Queensland to Melbourne and as far as Warrnambool on the far west Victorian coast. There have also been reports of Grey-headed flying fox in South Australia.

The Grey-headed flying fox was included in the Environmental Protection and Biodiversity Conservation Act 1999 list of threatened species and classified as vulnerable on 4 December 2001 by the Australian Government. Seven months earlier it was also listed as a threatened species in NSW.

The species was listed because it had suffered significant decline in numbers according to the Threatened Species Scientific Committee. In 1989 the number of Grey-headed flying fox was estimated to be 566,000 animals in NSW alone. Ten years later, the population was less than 400,000 animals nationally. This represented a decline of approximately 30 per cent in the national population.

Flying foxes have been shown to be an integral part of the World Heritage values in the Blue Mountains and east coast rainforests. They are pollinators and seed dispersers of native trees in these areas. The main threat to flying foxes is the ongoing habitat clearance, particularly along coastal areas of northern NSW, and to a lesser extent unregulated culling.

Since flying foxes are now found in more than one state the Australian government is working with the relevant states (Queensland, New South Wales and Victoria) to facilitate the protection and recovery of the Grey-headed flying fox. This has resulted in an agreement that the total number of Grey-headed flying fox to be killed will not exceed 1.5 per cent of the lowest agreed national population estimate for the species.

At this level of authorised shooting it's unlikely to affect the long-term survival or recovery of the Grey-headed flying fox. This will be reviewed annually, on the basis of new national population numbers and any information available on the impact of shooting Grey-headed flying fox numbers.

For NSW the total allocation for the 2003/2004 season was 3,040. Of this 20% was held in reserve, leaving a total of 2,432 to be divided amongst the Department of the Environment and Conservation (DEC) Regions; previously known as National Parks & Wildlife Service (NPWS). The number of recorded flying foxes harmed during the last two seasons in NSW was below the allocation number.

The quota for each Region will be allocated at the start of the fruit season and will be based on numbers of licences issued in the previous season and the number of flying foxes permitted to be harmed in those licences. The present arrangement of issuing licences to fruit growers to harm flying foxes will remain in place until the end of June 2006. For more information on Regional quotas and issuing licences contact your nearest DEC office.

The erection of exclusion netting over orchards remains the most effective non-lethal control method to reduce crop losses from flying fox.

To assist fruit growers in protecting their crops from flying fox damage the NSW Government, through the Rural Assistance Authority, has included exclusion netting in the Special Conservation Scheme. This scheme allows commercial fruit growers to apply for a low interest loan to erect exclusion netting. Interest is fixed for 10 years at 25% below the NSW Treasury Corporation 10 year bond rate (5.0%* as of 1/03/2004). The maximum advance is 90% of the cost of the works with a ceiling of \$100,000. The maximum term of the loan is for 10 years. Other conditions apply.

For more information contact the NSW Rural Assistance Authority on Free call 1800 678 593, e-mail: rural.assist@raa.nsw.gov.au or their website: www.raa.nsw.gov.au

Handling flying foxes

- Avoid handling injured or trapped flying foxes. These animals can carry diseases that may be transmissible to humans, such as lyssavirus. Always seek professional assistance.
- Use gloves when handling dead flying foxes. Dead animals should be buried deeper than 15 cm.
- If bitten or scratched, wash the wound carefully with soap and water and contact your local doctor immediately.



Standards of Caltex Australia Oil Products

Stuart Paterson, Caltex Crop Protection.

Caltex Australia has provided the following information about their products D-C-Tron Plus and Summer Spray Oil as a result of the article on "Using Petroleum based oil sprays in Citrus", published in the Summer 2003/04 edition of this newsletter.

Caltex insecticidal PSOs meet the standards required of both AMOs and HMO's.

The table below lists the standards, and how the Caltex products D-C-Tron Plus and Summer Spray Oil rate according to them.

To find out more about these classifications please contact your Caltex Spray Oil Business Manager, Stuart Paterson on 0408 682 087.

Standard	AMO	HMO	Caltex D-C-Tron Plus	Caltex Summer Spray Oil
Virgin or recycled oil	Virgin	Virgin	Virgin	Virgin
Paraffinicity	> 60%	> 60%	70%	70%
Unsaturated molecules	< 8%	< 8%	6 -7%	5%
%UR	> 92%	> 92%	93-94	95
Effective %UR (based on photo-oxidation)*	-	-	98	95
Median Carbon number	Not specified	nC21-nC25	nC24	nC23
10-90% nCy range	> 6	< 6	5.9	5.0
Classification	-	-	HMO	HMO

**This is an extra criterion that Caltex uses to classify its spray oils.*



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News in Brief

◆ **A snapshot of organic farming worldwide**

Organic farming is practised in approximately 100 countries around the world. World-wide there is around 23 million hectares managed organically and 398,804 organic farms.

European Union: The EU has more than 5 million hectares under organic management.

North America: In North America more than 1.5 million hectares are managed organically (0.25% of total agricultural land) and there are more than 45,000 organic farms.

Latin America: Organic farming is growing rapidly in Latin America. The total area managed organically is 4.7 million hectares.

Asia: In Asia the total organic area is almost 600,000 hectares. In comparison to other nations organic agriculture is progressing slowly, with no country yet reaching 1% of production. China is perhaps the 'sleeping giant' amongst organic nations and is predicted to have the most rapid growth potential.

Australia: The largest production area in the world is Australia with 10.5 million hectares certified for organic farming. Most of this area is extensive grazing land. In Australia, around 2,100 farms are certified organic.

Source: "The World of Organic Agriculture 2003 – Statistics and Future Prospects", IFOAM 2003
Extracted from NSW "Organic News Vol 1, Issue 1, Jan 2004.

◆ **Austrade identifies organic opportunities in the UK**

Austrade has identified opportunities for exporters of organic produce to the United Kingdom (UK). Opportunity areas in the organic food sector include:

- grocery products such as pasta, breakfast cereal, biscuits, snacks, condiments, sauces and confectionery – both branded and private label;
- fresh temperate fruit including premium apple varieties, cherries, nectarines, berries and citrus
- fresh exotic fruits and tropical fruits;
- food ingredients for supply to the UK food manufacturing sector;
- premium beef, lamb and possibly game meats (although these are affected by quotas).

There are also limited opportunities in the organic food service industry (such as restaurants and mass catering) where price is the principal factor. For more information contact Austrade on 13 28 78.

Source: The Austrade website: www.austrade.gov.au
Extracted from NSW Organic News, February 2004
Vol 1, Issue 2.

◆ **NSW Government to create Australia's First "Through Chain" Food Safety Agency**

Extracted from "The Organic Advantage", January 2004.

The State Government has announced the creation of Australia's first "through chain" food regulatory agency – the NSW Food Authority. The new agency will merge Safe Food NSW with the food regulatory functions and resources of NSW Health. The result will be a single State agency responsible for food safety regulation from harvest all the way through to the consumer point-of-sale.

NSW Agriculture Minister, Ian Macdonald, said that "Estimates indicate food-borne illness costs the State more than \$765 million a year in loss of income and productivity. By creating a single, through-chain agency, we can strengthen the regulatory framework and better manage the integrity of systems to help bring that cost down."

"Specifically, the NSW Food Authority will develop food safety systems tailored to particular industries or food sectors. It will then make sure the standards are adhered to by providing the industries with regular advice, training, auditing and enforcement." The NSW Government has already committed \$9.48 million for the new agency's first year of operation and will be considering ongoing funding in the 2004 Budget session.

The NSW food industry is made up of more than 68,000 businesses, including 31,000 food service operators, 18,000 food retail outlets and 19,000 businesses in the primary production, manufacturing and distribution sectors.

More information about the NSW Food Authority and the Directions Paper for State and Local Government is available at

www.safefood.nsw.gov.au or by calling (02) 9295 5777.

News in Brief

◆ New Avocado Website

"Avocados Australia" (AAL) (formally Australian Avocado Growers' Federation Inc) has created an Avocado website for the industry and related industry partners. The website can be found at www.avocado.org.au

The website will allow the industry to add a further form of communication to the methods we currently employ.

The AAL Office will be contactable through the following addresses:

- Antony Allen, CEO: a.allen@avocado.org.au
- Annette Williamson, Admin Officer: a.williamson@avocado.org.au
- General office Email: admin@avocados.org.au

**Source: The Austrade website: www.austrade.gov.au
Extracted from NSW Organic News, February 2004
Vol 1, Issue 2.** 

◆ Citrus Gains in FTA Agreement



The Australian citrus industry has achieved several positive outcomes in the recently released text of the Australia-USA Free Trade Agreement. However,

further access issues need to be considered to fully capture the tremendous opportunities the US market offers.

Australian exports of oranges, mandarins and lemons to the United States market are restricted to the areas which are fruit fly free – Riverland, Murray Valley and Riverina. In 2002/03 these exports were valued at approximately \$50 million.

Judith Damiani, Australian Citrus Growers (ACG) Executive Director said, "Currently the majority of tariffs are set at 1.9UScents/kilogram, these tariffs will be eliminated when the agreement is ratified by both the Australian parliament and the US congress".

With the abolishment of the export tariff, fresh Australian citrus will enjoy a cost reduction of an estimated \$670,000 which will provide some assistance to counter the continuing appreciation of the Australian dollar.

Nevertheless, a phase-down period of 18 years will apply to the elimination of tariffs for grapefruit.

Ms Damiani said, "The Australian citrus industry has also invoked the Australian Government's horticulture export efficiency powers to appoint a single importer/marketer into the US. This program has provided a high level of transparency and return back to the grower.


"ACG is delighted that there will be no compromise on the Australian Government's support for the retention of the horticulture export efficiency licensing arrangements nor quarantine rules.

"However, internal US Standards will continue to apply to imported citrus – a range of quality and size specifications, except in the months of July and August."

Citrus juice imports into Australia will also be affected by the agreement.

Ms Damiani said, "Citrus fruit imported into Australia from the US is restricted to the states of California, Arizona and Texas (Florida is currently seeking access), in 2002/03 imports were valued at \$17.5 million, and there is currently no tariff on imported fresh fruit.

"Citrus juice is also imported into Australia from the US, valued at \$5.4 million in the same period, an immediate elimination on the tariff for imported citrus juice will also occur under the FTA, which is currently 5%. This tariff will continue to apply to Brazil, who supply the bulk of orange juice imports."

Further to these issues ACG continues to seek access for the growing areas of Narromine and Bourke in NSW and Emerald in QLD. A formal application for access for the Central Burnett, QLD will be lodged when complete. 

◆ NSW Agriculture re-launches Freshcare training

NSW Agriculture has re-launched their Freshcare training course offer in response to increasing industry demand. Previously marketed as *Approved Supplier* training, the new courses are aimed at growers needing to obtain Freshcare certification to meet their customers requirements. Three training package options are offered to meet the different needs of growers.

News in Brief


Freshcare DIY Express is the 1 day Do-It-Yourself option for the grower that has not attended any QA course before but feels confident that they have the practices and records in place to manage their own way to certification. All training materials and application forms are provided with instruction on the steps to getting certified. Cost \$260

Freshcare Refresh is the ½ day workshop option for the grower that has previously completed *Approved Supplier/Freshcare* training and needs to dust off and get going again. This refresher course brings you up-to-date with any changes since previous training, signs you up for Freshcare membership and registers your business in the queue for an audit. Workshops focus on getting your business audit –ready. **Cost \$239***

Freshcare Implementation is the full 1½ day option for the grower that has not attended any QA training course before and would like the full facilitation package to get audit ready. It includes the 1-day training course and ½ day review and preparation workshop for getting your business audit-ready. **Cost \$499***

* \$99 (incl GST) Freshcare membership and joining fee is included. Other training course costs are GST free. Additional costs for certification to Freshcare post training include produce residue testing and the audit costs.

For further information contact your District Horticulturist or Joseph Ekman on (02) 4348 1922 or joseph.ekman@agric.nsw.gov.au

NSW Agriculture's Freshcare Facilitators are a specialist food safety and quality systems team in the Horticulture Program. Our Facilitators are supported by NSW Agriculture's science-based information and decision support in Research, Development, Extension and Education for farm product integrity across the supply chain. 



Introducing the New Regional Service Managers – Frances Vella and Michael Burt

The NSW Farmers' Association has recently appointed two Regional Service Managers to work with members and focus on horticulture.

Frances Vella

With an extensive and impressive background in the horticulture industry, Frances Vella is familiar with many of the issues faced by members in the Sydney Basin – the area she now looks after as a Regional Service Manager.

Frances has successfully tried her hand at running a medium sized operation and spent 7 years working for her family's seedling business, which specialises in aquatic plants, native grasses, plantation trees and vegetables. In addition to her experience in the horticulture industry, Frances has dabbled in the political sphere, having spent 2 years working for Geoff Irwin, Member for Fairfield and Shadow Minister for Business and Consumer Affairs.

Frances joined us at the beginning of January and will work with members between Newcastle and Wollongong. However, her expertise in the horticulture industry will also be valued in areas around central NSW and Griffith.


Frances can be contacted via phone: 02 4655 8888, mobile: 0428 228 818, or email: vellaf@nswfarmers.org.au

Michael Burt

The new position of Regional Service Manager for the north coast has been filled by Michael Burt. Based in Bellingen, Michael will focus on issues affecting horticulture producers in particular.

Michael has had a rewarding and interesting career in agriculture – starting from growing up on a lucerne and cattle grazing farm near Tamworth. Studying for a Bachelor of Rural Science at the University of New England, Michael majored in horticulture, agronomy and marketing.

On completion of his studies, Michael worked overseas and on returning to Australia, took up a sales agronomist position with Elders in Mudgee before being transferred to Taree. Following this, Michael worked as a rural journalist with Rural Press in Queensland, reporting on issues impacting on the horticulture, beef, dairy and sugar industries for *Queensland Country Life* and *North Queensland Register*.

Michael can be contacted via phone: 02 6655 0596, mobile: 0428 228 988, or email: burtm@nswfarmers.org.au 

News in Brief - Farm Chemicals

◆ Use of fumigants in NSW - farmer exemption

Under new OH&S legislation all persons who use fumigants, including phosphine tablets, must have a certificate of competency issued by the WorkCover Authority. To get this certificate, a person needs to have successfully completed the TAFE fumigator's course for Pest Management Technicians.

In response to representations made by NSW Agriculture and the NSW Farmers' Association, the WorkCover Authority has issued farmers with a temporary exemption from this requirement providing certain conditions are met. The exemption applies specifically to the use of fumigants:

- on farms (defined as farms, orchards, vineyards, market gardens, forestry);
- for stored grain and vertebrate pests (i.e. does not apply to soil fumigation); and,
- by manual application (i.e. does not apply to powered fumigators for rabbit warrens or automated gassing systems in silos).

The exemption only applies for 2 years. During this time, WorkCover's expectation is that suitable training will be introduced to cover basic application of fumigants such as phosphine on-farm. NSW Agriculture and TAFE have already prepared a draft competency plus supporting delivery and assessment material. It is envisaged that the on-farm fumigation training will be integrated with existing chemical training such as SMARTtrain and ChemCert where appropriate, or offered as a half day supplement. It will also be assessable on an evidence-only basis. The exact details of what will be offered and how, are still being negotiated with WorkCover and other stakeholders.

Please note that other fumigation activities such as soil fumigation or the use of fumigants by seed, grain or feed wholesalers is not exempted. For more information contact Mark Scott, telephone (02) 6391 3567.

Fruitgrowers using methyl bromide or chloropicrin have to do the WorkCover training which is available through TAFE. This does not apply to the Telone formulation that does not include

chloropicrin. There are two Telone products: one with, and one without chloropicrin. For using the product with chloropicrin, growers will need to have done the WorkCover course, for the one without, they should do the manufacturer's endorsed course. This also applies to metham sodium.



drumMUSTER

◆ drumMUSTER is coming to Gosford City Council region

Members of the Mangrove Rural Fire Service on behalf of the Gosford City Council will be conducting a drumMUSTER collection of used farm chemical containers at the Rural Fire Station, Bloodtree Road, Mangrove Mountain on Saturday April 3 from 10.00am- 2.00pm.

All farm chemical users within the Gosford region are encouraged to bring their eligible, empty, properly cleaned non-returnable chemical containers to the designated centre for collection and recycling. By supporting these collections you are also supporting the Mangrove Rural Fire Service.

An AMNESTY on all pre-drumMUSTER plastic and steel containers is also in force for this initial collection, allowing farmers the opportunity to return clean plastic and steel drums that predate the 1999 drumMUSTER program.

A recent change to eligibility criteria now also allows farmers to bring in non-hazardous farm chemical containers including surfactants, liquid fertilisers, wetting agents and dairy chemicals.

Chemical users are reminded that their empty containers must be correctly cleaned and air-dried, as all containers will be inspected when brought to the collection centre. Any unclean or partly filled containers will not be accepted.

Cleaning chemical containers is a simple process but must be done thoroughly, as the containers collected by drumMUSTER will be processed and recycled into various metal and plastic products. drumMUSTER is unable to accept containers with




News in Brief - Farm Chemicals

chemical residues because they could jeopardise the whole recycling process.

drumMUSTER is the national program for the collection and recycling of empty, cleaned, non-returnable crop production and animal health chemical containers and is funded by a 4 cent per litre or kilogram levy on these chemicals sold in rigid steel and plastic non-returnable containers.

There are no limits on the number of containers that farmers wish to deliver.

For more information on this collection please contact:

Allan McGann drumMUSTER National Field Officer on 02 6230 6712 or 0429 409 435. 

◆ **Minor Use Task Force – has its first meeting**

The Minor Use Task Force held its first meeting in December, 2003.

It was agreed that the terms of reference for the Task Force would be as follows:

- Identify the key issues confronting all stakeholders regarding the minor use of agricultural and veterinary chemicals in Australia;
- Facilitate further work on these issues with a view to developing and implementing long term solutions to these issues;
- Work collaboratively with all stakeholders and communicate progress on the activities of the Task Force to stakeholder groups.

The Task Force itself will meet on a regular basis to oversight the work of the working groups.

General Approach

The Task Force considered the outcomes of the November 2003 Minor Use Forum, convened by the Australian Pesticides and Veterinary Medicines Authority (APVMA), and noted that many issues had been raised by a wide range of stakeholder groups and from many different perspectives.

As a starting point, it was agreed that the Task Force should develop a scoping paper to provide an historical overview of minor use arrangements in

Australia and a description of the current situation in this country. The paper would then seek to identify a path forward to address the main impediments to an improved minor use system.

Policy Issues

The Task Force noted that the main policy issues to arise out of the Minor Use Forum related to funding, legislation, data protection and liability.

On the issue of funding of minor use activities, it was agreed that further analysis was needed on the funding contributions made by governments, the chemical industry, and user groups. An examination of the coordination of funding of data generation work and the effectiveness of this work would also be useful.

In respect of liability issues, it was acknowledged that there is no clear solution to the potential exposure of chemical companies or user groups to legal claims. This problem also exists internationally. However, the Task Force recognised that the greatest liability in this process is negligence and that the best defence to negligence is to ensure that all aspects of minor use R & D, assessment and approval are scientifically robust and transparent.

The Task Force noted that the key operational issues identified at the Minor Use Forum related to APVMA processes and control-of-use arrangements in the States and Territories.

The Task Force noted that State/Territory control-of-use arrangements varied in their application although significant progress had been made in aligning the overall objectives of these arrangements. A number of refinements had also been made to reduce the need for users to apply for permits.

Communication Issues

The Task Force noted that communication, at all levels, was identified as a major issue at the Minor Use Forum. It also noted that the APVMA has already commenced work to address this issue from its perspective.

Extracted from "Minor Use News" January, 2004 available on the APVMA website www.apvma.gov.au



Biosecurity planning – being prepared for the worst

Delia Dray, Program Leader, Quality Assurance Horticulture, NSW Agriculture.

The Scout's motto of "Be Prepared" was very much in my mind when I recently attended an apple and pear biosecurity planning workshop organised by Plant Health Australia (PHA).

"Biosecurity" in plain-speak means the threat exotic pests or diseases pose to our indigenous and domesticated animal and plant species and how we can protect production by exclusion, eradication or control methods.

Over the years the natural barrier of our island continent has proved to be the best form of defence against a wide range of these threats, and strict quarantine precautions have also helped. However, we are coming under increasing pressure to open our markets for trade. The principle of allowing market access into Australia based on zero risk phytosanitary precautions is moving to a low risk status, meaning significant changes in how government agencies approach import requests from countries with undesirable pests. The recent release of the revised draft import risk analysis for apples from New Zealand is a very close-to-home example of this in action.

We've had first hand experience in horticulture recently with handling an exotic disease introduction like fire blight. This taught us a lot about how well both the contingency planning had been and the implementation of the plan in terms of diagnostic abilities, surveying and getting accurate data, and the follow up work demonstrating that Australia is fire blight free. Eradicating exotic pest introductions is an expensive exercise. Recent examples include the fire blight incursion, and the eradication programmes for papaya fruit fly and fire ants.

You've probably heard of a relatively new organisation called Plant Health Australia, which has been set up to liaise between plant industries and governments to make sure that favourable outcomes are achieved in relation to pest and disease management, containment and or eradication of incursions. PHA is funded by both

the horticultural industries and state and federal governments.

PHA is now working with individual industries like apples and pears to develop industry biosecurity plans that assess which are the key pest threats, rank them in a priority list and develop a contingency plan that outlines roles and responsibilities, communication and consultation strategies. For each commodity, this plan will form the basis for decisions to be made about which pests are the most serious in impact on production, how it should be eradicated, when should eradication be not pursued and a containment strategy implemented, and who will fund it all.

The first part of this process has now commenced with the recent workshop where pest experts developed a list of the most important insects and diseases affecting apples and pears. Exotically named pests such as cedar apple rust, black stem blight, pear psylla and Manchurian fruit moth join the ranks of more familiar pests such as fire blight and leafroller caterpillars. These pests are being assessed for how big a threat they pose and if they are detected, how easily and at what cost can they be eradicated.

The next step is then for the apple and pear industry to categorise them on the basis of cost sharing arrangements under an agreed formula. This will require some hard thinking by both industry and government to determine how far we will go to stop establishment of any of the highest priority pests. For example, the formula being proposed is that for the highest category pests, the cost sharing principle will be government (both state and federal): industry of 80%:20%. For lower priorities it may be 50:50 or even 20:80. Only in exotic pest incursions like the fire ant situation which has environmental or human safety/amenity aspects would government fund the total cost of eradication.

Other temperate fruits will also be involved in this planning process, with a roll-out for stone, cherries and others due in the near future.



Pat Barkley, National Citrus Improvement Manager, Auscitrus.

Citrus Rootstock Seed

The closing date for seed orders from Auscitrus is 30th April 2003. Prices were reviewed by the Management Committee of Auscitrus, at their meeting in Sydney on 9-10th March, Prices are available from the Auscitrus office (02 43 250247).

Trends in supply of rootstock seed in 2003

In 2003, a total of 727 kg of rootstock seed was sold by Auscitrus. This was higher than any sale in the last 10 years. The 2003 seed season was hampered by lower than average fruit set in southern Australia, but this was partially offset by relatively high seed yields due to the young age of source plantings at Dareton and Monash.

More than 100 kg of rootstock seed were sourced from the seed increase planting at Monash Horticultural Centre and sold by Auscitrus in 2003. Seed from Monash assisted Auscitrus in overcoming potential shortfalls in Troyer citrange, Carrizo citrange, Flying Dragon, C35 and Swingle citrumelo.

There was continued high demand for Troyer and Carrizo citranges, with the combined demand for these varieties now the highest for all rootstock varieties supplied by Auscitrus. Renewed interest in *Poncirus trifoliata* was due to a number of initiatives to improve the quality and supply of fresh juice.

A record 73 kg of Swingle citrumelo seed was sold in 2003, with supply exceeding demand. There was an increased enquiry for Citrus macrophylla, C. volkameriana and Rangpur lime seed, primarily for use in 'Open Hydroponic' citrus growing systems. There is currently a world shortage of C. macrophylla and C. volkameriana. Trees of C. macrophylla were propagated in 2002 and C. volkameriana trees were established at Dareton as seed sources in spring 2002. C. macrophylla (also known as Alemow) is very sensitive to stem pitting strains of citrus tristeza virus in Australia and cannot be recommended.

C35 citrange trees have also been propagated in anticipation of increased demand. C35 is a popular rootstock for navel oranges in California due to its semi-dwarfing habit, and more recently it has been promoted overseas as a good rootstock for Afourer mandarin.

Additional seed germination testing of all seed lots was undertaken in 2003 to include rapid laboratory testing in vitro at EMAI, Camden in addition to glasshouse testing in potting mix at Dareton. This will continue in 2004.

A new seed drier was built for use at Dareton in 2003 and significantly reduced drying time for extracted rootstock seed.

Performance of New Varieties at Dareton

Graeme Sanderson, Research Horticulturalist, NSW Agriculture. (Project CT01012.)

Avana Apireno mandarin

Avana Apireno is an Italian mandarin variety and produced fruit for the first time in comparative trials at Dareton Agricultural Research & Advisory Station in 2003. Budwood is available from Auscitrus. The Auscitrus column in the Summer 2003/04 edition has comments on Avana Tardivo, which was released at the same time as Avana Apireno. The two cultivars of Avana are visually identical, but can be differentiated on their maturity periods, with Apireno being much earlier maturing than Tardivo.

Avana Apireno has a maturity period similar to Imperial mandarin. Fruit produced from reworked Valencia on citrange rootstock reached 10:1 brix to acid (B:A) ratio in mid-May and 16: 1 ratio in the last week of June. Juice content declined sharply from 43% in early July to 23% by mid-July indicating the end of the potential marketing period. This sudden decline in fruit quality also occurred with fruit tested from trees on *P.trifoliata* and Cleopatra rootstocks.

Comparative testing against Imperial mandarin showed Avana Apireno to have a higher juice content, higher juice acid and lower B:A ratio than Imperial mandarin. Avana mandarins are seeded mandarins and will produce seed even when isolated from other pollen sources. Seed numbers per fruit for Avana Apireno were as high as 15 and as low as 2. One positive observation is that the Avana mandarins have a more 'robust' rind than Imperial and are less likely to exhibit skin blemish problems such as waterspot.

The Avana mandarins have a similar tree and fruit appearance to Imperial and also have an 'Imperial-like' rind aroma. When these features are combined with the similar maturity period of Avana Apireno it is likely to

stop the commercial adoption of this variety in Australia. More interest has been shown in Avana Tardivo as it has the potential to extend the Imperial season due to its later maturity.

Caffin Clementine

Caffin clementine was introduced from New Zealand but developed and released in Corsica in 1988. Sufficient fruit is available, on reworked trees, to do detailed fruit quality assessment in 2004. New Zealand comments suggest the eating quality is very good, but fruit size and yield have been low. These problems are said to be related to a lack of tree vigour.

A few fruit were tested in 2003 and the internal maturity was similar to Okitsu Satsuma, which puts Caffin in a very early maturity period. On the 2nd of May Brix was 7.7, acid 0.5 and B:A ratio 15.4. Low juice acid content has also been reported in New Zealand testing. Gas colouring of the rind would be required as internal maturity was ahead of the development of full skin colour.

Cara Cara navel

The Auscitus import of Cara Cara navel has set some fruit on potted glasshouse trees and is exhibiting

characteristics reported for the variety in overseas literature. Minor leaf variegation has been seen on a few trees. These trees have been removed from the rapid multiplication program for Cara Cara. The pink/red pigmentation in the flesh was evident when a fruit was cut in January 2004. Taste testing in 2002 of Cara Cara fruit, produced from the private budwood importation, suggest that it would have a similar maturity period to Washington navel. The low acid taste of the fruit would allow the harvest period to concentrate at the beginning of the Washington season. Cara Cara is reported to lose internal colour intensity if held on the tree for an extended period. This same feature is a characteristic of red-fleshed grapefruit. Both red-fleshed grapefruit and Cara Cara are coloured by the same pigment - lycopene, which has been identified as having positive health benefits for consumers.

These varieties and others currently being evaluated will be on display at the ACG Conference when field sessions are held at Dareton Agricultural Research & Advisory Station on the 19th and 20th of April 2004.



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Screening New Products for Citrus Disease Control



Dr Sonia Willingham, QLD
Department of Primary
Industries

Horticulture Australia

This is the Technical Summary from the final report of the Citrus Industry funded Project CT00021

There are two major diseases of citrus in Australia, brown spot *Alternaria* sp. and black spot *Guignardia citricarpa*. Both significantly contribute to crop losses both in Australia and overseas and control of these diseases relies heavily on fungicide application. At present copper and mancozeb protectants, and the eradicant benomyl are the only products registered for use, with the first two being the most widely used. The most effective way to avoid fungicide resistance is the use of multiple chemistries to avoid creating resistance amongst pathogen populations. The aims of this project were to:

- Investigate the effectiveness of a range of new fungicide chemistries for the citrus industry,
- Investigate spray programs aimed at reducing resistance development.
- Investigate fungicide application volume with the aim of reducing the amount of fungicide applied to Australian citrus orchards.

Not only were the products screened for disease control, but also their ability to address some of the side effects induced by the currently registered products. Copper, being a heavy metal can build up in orchard soils, becoming toxic to plants and soil microbes. It is also believed to darken pre-existing blemishes, as well as causing a unique condition called rind “stippling”. Mancozeb is highly toxic to many of the predatory mite and wasp species that are vital to citrus integrated pest management (IPM), and it is also a marine pollutant. Finally, benomyl is also toxic to IPM species, and there have been reports of resistance to this fungicide in other countries.

Between 2000 and 2003 we conducted eight field experiments, three postharvest dip experiments, three glasshouse experiments and two baseline sensitivity tests. Each field experiment consisted of four single-tree replications per treatment, arranged

in a randomised complete block. Treatments were applied to trees until runoff, using a handheld lance. Approximately 60 fruits from both the eastern and western aspects of each tree canopy were harvested, and assessed for disease development after 3 weeks incubation. Postharvest dip experiments were carried out by dipping fruits (25/treatment with four replications) in a large quantity of fungicide, then storing fruits to induce and then assess postharvest diseases. Young (up to 12 months old) citrus seedlings were used for glasshouse experiments. These trees were treated with various products 7 days prior to inoculation with spore suspensions of *Alternaria* sp.. These trees were then incubated under high humidity to exacerbate brown spot before being assessed for lesion development. The baseline sensitivity tests were carried out on fungicide-amended agar with 49 *Alternaria* sp. isolates and 49 *Guignardia citricarpa* isolates. Their growth on the amended agar was used as an indicator of sensitivity.

The products investigated included **acibenzolar** (Bion®), **azoxystrobin** (Amistar®), **captan**, **chlorothalonil (70%) plus pyrimthanil (30%)** (Walabi®), **copper ammonium acetate** (Liquicop®), **copper hydroxide** (Kocide®) plus ferric chloride, **copper oxychloride**, **cuprous oxide** (Norshield®), **iprodione** (Rovral Aquaflo®), **phosphorus acid** (AgriFos® 600), **pyraclostrobin** (Headline®), **methoxycrylate** (HEC® 5725), and **trifloxystrobin** (Flint®). Most of these products were found to be effective, with the exception of phosphorous acid. The plant activator acibenzolar was effective against black spot, but not to a commercially viable level. Antifungal analyses using TLC showed significant differences between rootstocks and scions for total antifungal activity. The strobilurins were all effective under all conditions, except for trifloxystrobin against brown spot under coastal conditions.

In the 2002-2003 season, a large-scale field experiment was established to investigate the effect of spray application volume on disease control. The current industry standard method is to apply upwards of 10,000 L/ha using an oscillating boom. Very few tree crop industries still use these high volumes, and provided disease control level is maintained, reducing application volumes has many advantages. These include reducing water use, chemical use, labour input, machine time, off-target

losses, and input of fungicides into soil. The field experiment consisted of 5 trees x 3 tree plots, sprayed with commercial sprayers at different volumes, replicated 5 times. The treatments included an oscillating boom @ 11,500 L/ha, a Barlow® tower (airblast) @ 4,052 L/ha, a Radak® (airblast) @ 4,052 L/ha and 6,600 L/ha. Industry standard fungicides and application timing were used for all the treatments. When assessing the effectiveness of the different volume sprayers, fruits were taken from four different positions within the tree canopy. These four positions were inside bottom, inside top, outside bottom and outside top. The severity of black spot was highest

on fruits positioned on the inside compared with the outside of the tree canopy and on the bottom compared with the top part of the canopy. At the top of the tree the most significant differences in disease control between machines were observed for this particular orchard. Overall the Barlow® tower and the Radak® @ 6600 L/ha provided the same level of black spot control as the oscillating boom. However, dropping the Radak® spray volume from 6600 L/ha to 4052 L/ha significantly reduced disease control.

A full copy of the report can be obtained by contacting Horticulture Australia on 02 8295 2300.



Improving Citrus Performance in Replant Sites



Horticulture Australia

Nerida Donovan, Citrus Pathologist, EMAI Menangle.

This is the Technical Summary extracted from the Citrus Industry funded Project CT02008

Citrus trees may grow poorly when replanted on soil that has been under citrus cultivation for ten years or more. Economic and environmental pressures mean that it is usually necessary to replant existing citrus orchards rather than clear and develop new land for production. This poses the question, are we losing production on unhealthy or replant soils in Australian orchards? As most citrus in Australia planted in current citrus producing areas is on replant land, it is difficult to quantify the extent of the replant problem in our orchards.

There are a number of hypotheses surrounding the cause of poor growth of citrus replants but the subject has not been adequately explored for Australian soils. The nature and severity of the replant problem and the best way to manage replant land needs to be assessed to maintain production levels. This preliminary study was funded by the Murray Valley Citrus Marketing Board, Horticulture Australia and NSW Agriculture to explore the replant issue.

In this study, soil samples were collected from existing and replant citrus and grape orchards at various stages of production, and from uncultivated soil in adjoining blocks at NSW Agriculture's

Research and Advisory Station at Dareton. Biological, chemical and physical soil properties were measured to identify differences that may explain the poor growth of citrus replants in old citrus or grape soil.

The results of this preliminary study suggest that cover cropping has a significant influence on soil biological activity in citrus orchards. Cover cropping increased soil biological resilience and fungal diversity and activity. Bulk density was also decreased by cover cropping.

This project did not find a clear answer to the replant problem, as there were no significant differences or consistent data patterns between trial sites for many of the characteristics measured. However there was some evidence that where citrus is immediately replanted with little or no fallow period, nematode populations are significantly greater than where the soil is rested between crops.

There may not be a simple solution to the replant problem, with most disorders being site specific. The answer may be to follow standard management practices (cover cropping/fallow periods/deep ripping) to improve soil structure, fertility and functioning and deal with any replant disorder on an individual site basis. This work was of an exploratory nature and indicates suitable directions for future research projects in the areas of citrus replant and sustainable citrus production.

A full copy of the report can be obtained by contacting Horticulture Australia on 02 8295 2300.



Sweet as Citrus: Growers get paid for a premium product and consumers get what they pay for

Darren Morrow, District Horticulturist, Griffith.

The Japanese citrus industry, which mainly produces mandarins offer their consumers citrus that is guaranteed to have a certain sweetness (sugar : acid ratio). This premium product is the result of the application of good growing techniques and Near-infrared spectrophotometry, or NIR for short.



Portable NIR sensor

NIR is a piece of technology that is being implemented more and more in horticultural industries across the globe. Light energy in the Near-infrared region of the light spectrum is directed into a fruit sample, where it collects various information before being recaptured by a sensor. This data is then translated into useful information such as sugar and acid levels.

This information can then be used for a range of purposes such as collecting varietal information, consumer education, for cultural and harvest management, and for maturity monitoring and standards.

NIR testing is non destructive, meaning that the fruit remains intact after analysis. This means that potentially all fruit can be tested without loss. The main advantage is the ability to market a product that is uniform, whether the brix : acid ratio is high, medium or low. It also allows us to produce a product which more accurately targets a consumer's particular taste.

There are two types of NIR machines that are used in Japan. The most commonly used is the inline NIR sensor. This is installed into the grading line in packing sheds, testing all fruit that passes along the conveyers. Over 80% of packing facilities in the Ehime Prefecture (famous citrus producing area in Japan) use NIR to grade their fruit. The second and much newer type is a portable NIR sensor. This machine has the added advantage of being easily moved around the field, testing a sample of fruit on trees, or other situations outside the packing facility such as in the supermarket. However, the portable NIR technology is still used mainly in the research sector, primarily due to cost and ongoing evaluation trials.

Research is being carried out in Australia, but at this stage the technology has not been adopted as widely as in other areas around the world. These areas include some of our export markets.

The use of NIR in Japan was studied by Darren Morrow over a six month period as part of a technical exchange program.

For more information contact Darren on 6960 1313



Portable handpiece used to scan fruit

A Study Tour to Italy — Home of the Blood Orange

Pat Barkley, National Citrus Improvement Manager, Auscitrus.

In February, Michael Arnold, Chairman of Auscitrus, led a group to Italy to study blood orange production and varieties. The group of eleven included growers, industry development officers Kym Thiel and Peter Morrish and National Citrus Improvement Manager Pat Barkley.



Ippolito, a mid season Tarocco orange

Mike Arnold is a blood orange grower. (The Arnold blood orange, which is probably the variety Moro, is available through the Auscitrus budwood scheme). Although yields and fruit size of Moro in Sicily are good, fruit tends to be somewhat acid, does not hold on the tree, becomes soft and has a limited marketing period. With the formation in the Riverland/Sunraysia of a Blood Orange Growers' Group, there is a need to extend the marketing period with improved varieties of blood oranges, such as some of the selections of Tarocco orange, developed or selected in Sicily.

Blood oranges were first mentioned in Sicily in the 17th century, in the opera "Hesperides" by the Jesuit Ferrari (1646), and had been taken to Italy by a Genovese missionary, from the Philippine Islands.

The Australian group visited the Bertolami Nursery in Lamezia Terme in southern Italy, and were shown a range of Tarocco orange selections, as well as a few of the 8000

hybrids bred by this nursery. The patented Clemapo Delizia, is a Bertolami hybrid of Clementine X Avana mandarin which matures in September in Lamezia Terme (March in Australia?). None of the Tarocco selections seen at Bertolami's Nursery had any red pigmentation and colour was poor in Moro and this was due to the climate in Calabria.



Blood orange juice

Southern Italy is the home of the Bergamot (*C. bergamia*), which has been grown along the Ionic Coast since the middle of the 18th

century. The essence is used for perfume, sweets, bergamino liquer and medicines. A Bergamot orchard and a distillation plant were visited along with an institute of the Ministry of Industry, with a focus on essential oils and aromatics from citrus.

In Sicily, Tarocco is gradually replacing Moro and Sanguinello blood oranges. In the last 20 years, the nucellar line 57-1E-1 has been the most widely planted selection. But Moro blood orange is used to increase the anthocyanin content in poorly pigmented juices.

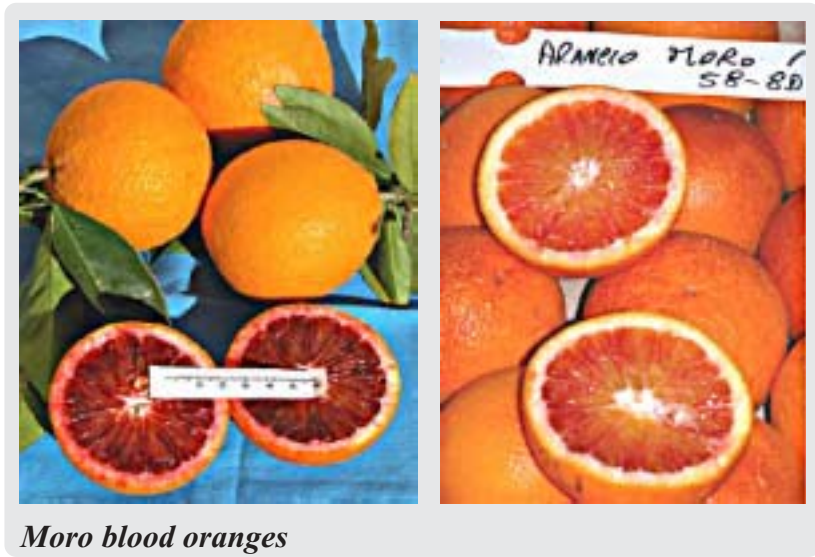
Table 1: Maturity dates of Tarocco selections

Selection	Anthocyanin content in rind	Anthocyanin content in flesh	Maturity date
Rosso	Medium	High	Medium
Nucellar 57-1E-1 ¹	Low	Medium	Early
Gallo	Low	Medium	Medium
TDV	Low	High	Medium
Scire	Low	Medium	Medium
Meli	Low	Medium	Late
Tapi	Low	High	Early
Ippolito	High	High	Medium
S.Alfio	Low	Low	Late

Table 1 outlines Tarocco orange selections seen and their characteristics in Sicily.

Tarocco late is preferred to Valencia orange by consumers in Italy. Tarocco is more easily peeled with little release of rind oil and the segment walls are tender. Tarocco blood orange fruits are large, have a good sugar/acid ratio, high vitamin C and anthocyanins.

Tarocco fruits must not be cold stored for longer than 90 days or the colour goes from red to black. GA is used to increase the storage time. Fruit is picked at 9:1 or 7.5-8:1 if it is to be stored at 6° C and 85% RH. Blood oranges are more sensitive to chilling injury than other oranges.



Moro blood oranges

Two Tarocco orange selections will be imported by Auscitrus to increase the period of availability of blood oranges and their quality in Australia.

We were repeatedly told that it is the temperature differential between night and day, which determines colour in blood oranges. Research carried out in California found that the formation of anthocyanin in blood oranges was dependent on maturity and cool temperatures. A day/night regime of 15.5/ 4.4 °C stimulated production of carotenoids in blood oranges. Carotenoids in the endocarp increased from July in California (our January) to harvest in December (our June). Anthocyanin production in blood oranges is inversely related to prevailing temperatures in stage III (the maturation period when the flavedo changes colour).

While in Sicily the group saw some of the recently released Italian mandarin hybrids. Most of these are seedless and some are

triploids (Table 2). A recommendation has been made to the Variety Import Committee for Auscitrus to import a couple of the more promising public varieties eg Simeto mandarin may be worthy of importation by Auscitrus as it is a public variety, looks like Imperial mandarin in fruit and tree habit and may come in at the end of the Imperial season.

These are due for release from Post Entry Quarantine this year.

The Australian study group visited an organic lemon farm, where tree size was controlled by pruning out vigorous shoots and sorting of juice and fresh fruit occurred in the field.

This short visit (5 days) provided a good insight into Italian citrus production and

varieties and was a worthwhile stopover for those of the group who were travelling onto the citrus conference in Morocco.

Additional information can be provided by Pat Barkley, Kym Thiel or Peter Morrish and a full report on the trip has been prepared.

Table 2: Recently Released Italian Mandarin Hybrids

Variety	Parents	Maturity Date in Sicily#	Seeds
Primosole*	Miho Satsuma x Carvalhais mandarin	mid Oct.	-
Simeto	Miho Satsuma x Avana mandarin	early Dec.	-
Desiderio	Miho Satsuma x Clementine	mid Nov.	-
Sirio	Miho Satsuma x Carvalhais mandarin	mid Dec.	-
Etna	Okitsu Satsuma x Clementine	early Nov.	-
Cami**	Mapo tangelo x (Avana x Clementine)	end Dec.	5 - 14
Tacle**	Clementine Monreal x Tarocco 4x	mid Jan.	-
Clara	Clementine Monreal x Tarocco 4x	end Jan.	-
Camel	Clementine Nules x Avana 4x	end Dec.	-

Sicily is counter seasonal to Australia. Add 6 months for potential Australian maturity date.

* a public variety imported by Auscitrus

** patented varieties imported by ANFIC

Pesticide Residue Surveys –Why Do Them?

Lawrie Greenup, Fresh Produce Watch.

Pesticide residue surveys of fruit and vegetables in Australia consistently show fresh produce has a high level of compliance. As a result the question is often asked why continue undertaking monitoring programs when there doesn't seem to be problem?

Monitoring surveys are a broad-brush check on produce. They quickly indicate when and where problems are occurring, allow for detailed investigation of the issue and, ultimately, the solving of the problem. Each state has legislation to take legal action against growers with produce with excessive residues and this is a way of preventing

further violations. However, survey results can be used positively by showing the high number of samples which meet the legal standards.

Consumers, both local and overseas, are concerned about food safety and they want to be able to buy fruit and vegetables free of chemical residues. Evidence of the presence or absence of residues can only be based on properly conducted monitoring surveys. Consumers want to reassured fresh produce is regularly monitored, is safe and, if residues are found, legislative action will occur to stop it happening again. Retailers are responding to this consumer pressure by demanding residue-free produce from their market and grower suppliers.

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There are two types of monitoring surveys - targeted or randomised.

Targeted surveys deliberately look for residues and sample specific crops, seasons, or locations when residues are most likely to occur. In other words, the sampling is undertaken on the most susceptible crops during the time when pests are most active. This type of sampling tends to find more violations than in the randomised sampling programs. Randomised surveys look at specific crops and the number of samples tested is statistically based. Generally randomised surveys have a higher level of compliance than targeted surveys.

New South Wales

Since 1989 pesticide residue monitoring has been undertaken jointly by NSW Agriculture and Sydney Markets Limited. The program, which is a targeted survey, samples produce from the market floor. Produce from all states is sampled and tested for over 25 different chemicals.

The results for 2003 show 98.2% of fruit and vegetables met the stringent legal limits set by the Food Standards Australia New Zealand. The small number of samples above the legal limit was just above and presents no health problem to consumers.

South Australia

South Australia undertakes a similar survey to NSW in which specific South Australian crops are targeted. The survey, a cooperative effort between Primary Industries and Resources SA, Department of Human Services and Adelaide Produce Markets Limited, has been in operation for over four years. The results of the 2001 – 2002 survey showed 94.3% of vegetables and 100% of fruit were within the legal limits. The higher than normal violation rate for vegetables was attributed to wetter and cooler seasonal conditions which resulted in increased pest and weed pressures.

Victoria

The Victorian Department of Primary Industries monitors Victorian produce in both targeted and randomised surveys. Recently published results of its targeted program, which sampled fruit, vegetables and buckwheat, showed 99% of samples tested were within the legal limits. With its randomised surveys the following results were obtained: export navels – 100%, grower navels – 99%, asparagus – 99.7% and nectarines – 100%.

National Residue Survey

On an individual industry basis, the onion, macadamia, pecan, apple and pear industries undertake randomised monitoring programs in association with the Australian National Residue Survey, Department of Agricultural Fisheries and Forestry - Australia. The results for 2002-2003 have been excellent with 100% compliance in onions, pecans, macadamias, apples and pears.

FreshTest Australia- Australian Chamber

A more recent survey, FreshTest, has been instigated by the Australian Chamber of Fruit and Vegetable Industries, with recent results [97.0%] similar to those found in the other surveys. FreshTest is based on grower/wholesaler quality assurance programs and is neither a targeted nor randomised survey. FreshTest is the only program conducting regular microbial testing.

Australian Total Dietary Survey

Food Standards Australia New Zealand looks at residues and chemicals in food which has been prepared for eating, rather than testing raw fresh produce as in the other programs. The 20th Australian Total Dietary Survey confirmed the overall safety of the Australian food supply and demonstrated pesticides, metals and other substances are either absent or present in low numbers.

The excellent results from all surveys show the majority of growers are undertaking sound horticultural practices with regard to pesticide usage. Regardless of these results consumers will continue to demand increasingly higher standards which they perceive as necessary for them and their families' safety. Retailers will respond to their consumers' needs and continue to place demands for residue-free produce on their suppliers.

The fruit and vegetable industry must continue its excellent work towards meeting the consumers' needs by incorporating quality management systems based on environmentally aware pest management strategies coupled with pesticide residue monitoring programs.

Anyone wanting further details or contacts for the various pesticide monitoring surveys contact Lawrie at Fresh Produce Watch Phone: 02 9746 3685 or Email: producewatch@ozemail.com.au



What's on

◆ **18-22 April 2004**
Australian Citrus Growers
56th Conference, Mildura

Phone: 03 5018 8380

website: www.austcitrus.org.au

Monday 29th

AM - Formal Presentations

PM - Research demonstrations, workshops and field trips

Tuesday 20th

AM - Formal presentations

PM - Research demonstrations, workshops and field trips

Wednesday 21st

AM - AGG AGM

Thursday 22nd

National Citrus Research and Extension Liaison meeting.

◆ **21 April 2004**
Low Chill Australia INC.
"Sustainable Soil and Tree Health"

To be held at Bangalow Bowling & Sports Club - Byron Street, Bangalow.

For more information contact Bill Hatton on 02 6687 1065 or Philip Wilk on 02 6626 2450.

◆ **4-6 August 2004**
Summerfruit 2004
National StoneFruit Industry
Conference and Trade Expo,
Melbourne.

Phone: Peter McFarlane on 0419 004 474

website: www.melbsummerfruit.com.au

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

Phone: Rob Fletcher on 07 5460 1311.

What's new on the Web in Publications

◆ **Restoring the Balance - guidelines for managing floodgates and drainage systems on coastal floodplains**

The guidelines, written by NSW Agriculture's **Scott Johnston**, show how to identify the key features of particular drainage systems, the potential problems, possible actions that can be taken and the benefits they will deliver. You can access them on the web at www.agric.nsw.gov.au/reader/floodgate-guidelines/restoring-balance-guidelines.pdf

◆ **Reducing Herbicide Spray Drift**

Can be found at www.agric.nsw.gov.au/reader/weeds

◆ **Low chill stone fruit varieties 2003**

At www.agric.nsw.gov.au/reader/deciduous-fruits

◆ **Spray Sense leaflets**

A series of 17 leaflets in plain English on a range of pesticide issues (see page 5 for more details).

Go to www.agric.nsw.gov.au/reader/spray-sense

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COASTAL FRUITGROWERS' NEWSLETTER

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

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