

The Taste of Spring

LOW CHILL STONE FRUIT GROWER

No 2/04 - June 2004

The official newsletter of Low Chill Australia Inc, the industry body representing low-chill stone fruit growers

This newsletter aims to provide relevant industry information to Association members.

All correspondence to the Association should be directed to:

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LCA Membership Subscriptions 2004/05

Your Association needs you! – LCA membership subscriptions for 2004/05 are now due. The new subscription rate is \$110 for growers, and \$275 for corporate membership.

This edition provides an update on industry issues and coming events, including outcomes of the recent LCA seminar “achieving sustainable soil and tree health”, (pp 8-14) and the LCA field day on “winter pruning” (pg 5) This edition also discusses the impact of new low-chill varieties on the industry, and the need for growers to have access to good trial evaluation data (pg 3, and pp 18-19).

Diary- Freshcare accreditation for 2004 season



NSW Agriculture will be running a *Freshcare* training course on **June 29th at Alstonville**.

A number of Low chill stone fruit growers have been told by their Melbourne and Sydney agents that they will require an on farm food safety program before they will accept their fruit this 2004 season.

In the past, agents/merchants have accepted spray diaries as a form of on farm food safety assurance.

LCA and *NSW Agriculture* over the past few years assisted most stone fruit growers by organising *Freshcare* courses although, most have not been called upon to show their accreditation to their agents.

Most stone fruit growers will probably need the *Freshcare* refresher course which is a half day workshop. There are two other course options available for newcomers or those converting from another food safety program.

For more information contact

Arthur Akehurst on Ph: 02 6672 2770 or
Kevin Quinlan on Ph: 02 6626 2400.



Diary - Melbourne Summerfruit 2004 - National Stone Fruit Industry Conference & Trade Expo, At Rydges Melbourne – 186 Exhibition St, From **Wednesday 4th to Friday 6th August 2004** (details on pg 16)

The conference program on Thursday 5th August features a healthy lifestyle symposium developing the conference theme “*Sweet Summerfruit Fun and Health*”, exploring the current and future involvement of the summerfruit industry in the current raging debate on healthy eating, social marketing campaigns, as well as the associated promotional opportunities for summerfruit. Further Melbourne Summerfruit 2004 program and registration details available on URL: <http://www.melbsummerfruit.com.au>

Profile: Peter McFarlane

Communications Manager, Low Chill Australia Inc.



Low Chill Australia Inc recently retained Peter McFarlane to develop and manage the Association's communications strategies, specifically to:

- Publish *Low Chill News* (Quarterly),
- Assist with organization and reporting of field day and seminar programs,
- Establish and maintain a *Low Chill* website,
- Develop and maintain the *Low Chill Australia Inc* database, and manage *LCA* memberships & renewals,
- Develop an *LCA* communications plan, and
- Assist the *LCA* Committee as required in the development of *Low Chill Update* Conferences, study tours and other information transfer and industry development projects, including the *low chill* breeding & varietal evaluation program.

Peter is an honours graduate in agricultural science from the University of Melbourne, and was a secondary school teacher for 15 years including 8 years in the NT. For the past 18 years he has worked with horticulture commodity associations, across industry councils, and irrigator groups in South Australia and Nationally, including citrus, dried fruit, wine grape, summerfruit, mango, nursery and garden, and almond industries.

Peter will be well known to many in the summerfruit industry through his former roles of Industry Development Manager and Executive Officer to the former *Australian Fresh Stone Fruit Growers Association Inc*, (now *Summerfruit Australia Ltd.*), roles he held from 1995 to 2002.

Peter who is also an experienced conference organiser, worked last year with the *Low Chill Australia Committee*, to help organise their *Update 2003 Conference*, which was held in Ballina in May 2003. He is also retained by the *Melbourne Summerfruit 2004 Conference Committee* to develop the program and assist in the general organization of the forthcoming *National Summerfruit Industry Conference* to be held in Melbourne August 4-6, with the theme "*Sweet Summerfruit Fun & Health*".

On the subject of health promotion, another industry role undertaken by Peter is to manage *SnackFruit Australia Inc*, an alliance of 11 national tropical, sub-tropical and temperate fruit industries founded in 1999 to promote the health benefits of eating fresh fruits. *Snackfruit Australia* also convened successful multi-industry national conferences on the "health promotion" theme in 1999, and again in 2002.

Peter was previously retained by the *Australian Mango Industry Association Ltd*, from 2001 to 2003 to manage the Association, and coordinate a national industry consultation process, aimed at "kick starting" the implementation of a proposed statutory mango levy – a project successfully concluded last year.

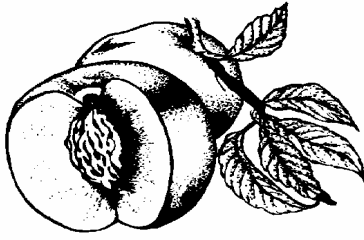
Peter is based in Adelaide where he manages the family consultancy *McFarlane Strategic Services*, providing management and communication services to industry associations and individual enterprises.

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Peter Peach



The Taste of Spring

Are new varieties the “Achilles heel” of the low-chill stone fruit sector?

By Peter McFarlane, Communications Manager, Low Chill Australia Inc.

Continuation of the DPIF Queensland low-chill varietal breeding & evaluation programs remains the number one R&D priority for *Low Chill Australia Inc.*

The low-chill sector is gradually overcoming its former reputation for inconsistent internal quality product, resulting from the combination of inferior varieties, multiple climatic regions, and the many small producers with their varying expertise with production and post harvest handling practices.

Whilst significant progress has been made in addressing these constraints, there remains a pressing need to continue the research for improved varieties as replacements for the current inferior earlier season varieties such as Flordaprince, and to better match new varieties to the expected range of microclimates in sub-tropical production districts.

The low-chill sector now has potential access to the output from several major breeding programs - *DPIF Queensland, ANFIC* (overseas programs including *Sunworld – California, the University of Florida, and Bradford Genetics*), and the *University of Western Sydney (Phytonova)*.

The industry funded low-chill breeding project SF02015, is managed by *DPIF Queensland* plant breeder Dr Bruce Topp, at the Maroochy Research Station, Nambour. This project commenced in August 2002 with the planting of over 800 hybrid peach and nectarine seedlings. A further 4,300 seedlings were planted in 2003, and promising selections are now being made.

Dr Topp reports that 3 nectarine, 2 peach and 2 plum selections from the breeding program have now been distributed for testing in NSW at Coopers Shoot, Brooklet, Bangalow and Alstonville; and in QLD at Gatton, Kumbia and Nambour. A larger number of selections have been sent for testing at the LCA Bangalow test block for evaluation.

Acknowledgement: This research is part-funded by, Low Chill Australia, Queensland Fruit and Vegetable Growers and Summerfruit Australia Ltd,

with a matching contribution from the Commonwealth Government, facilitated through Horticulture Australia Ltd.

The low-chill stone fruit varietal evaluation project SF02002, is managed by Mr Phillip Wilk, District horticulturist, NSW Centre for Tropical Horticulture, Alstonville. The current project is in the second of a three year term to independently evaluate new varieties of low-chill stone fruit from a number of commercial sources, including - the University of Western Sydney, ANFIC, and DPIF Queensland, as well as using a number of public domain varieties as reference trees.

The management committee of *Low Chill Australia Inc* is currently reviewing the future of the Bangalow evaluation block, in particular its cost effectiveness.



Photo: Dr Bruce Topp (L) and visiting scientist Kenji Beppu (R) from Japan, in the low-chill trial plot, with LCA president Bill Hatton

A major consideration prompting this review is the broader industry trend towards “closed loop”, marketing arrangements, and the low-chill sector is no exception. Unfortunately this also means not all PVR material is made available for independent evaluation. This will have two significant outcomes for Low Chill Australia and its members.

Firstly with less access to new selections for independent evaluation, it is becoming difficult to cost effectively operate the Bangalow evaluation block. The LCA committee proposal is that after June 2005, when the current evaluation project finishes, the Bangalow block be scaled down, and perhaps even phased out.

In future, new low-chill selections that are available from breeding programs, including the *DPIF Queensland* program, should be evaluated at multiple sites, on grower properties to provide a better spread of micro-climates. So perhaps the Bangalow block has “run its race”.

It is proposed that Phillip Wilk will continue to undertake the independent evaluation work in the proposed new program post June 2005.

Secondly, and much more worrying is the probability that in the future, low-chill growers will no longer have access to independent evaluation

reports on certain new low chill selections that are subject to PVR arrangements.

It would be an unfortunate irony if at the very time the low-chill sector is starting to make progress with varietal improvement, that low-chill growers risk fragmentation into “closed loop” marketing arrangements based on gaining access to new varieties that have not been subjected to full, open and independent evaluation, in the hope that they might achieve some commercial advantage over their neighbours.

Indeed wasn't that the original problem when some growers tried to get the jump on the rest of the industry in early season production by growing Flordaprince, which in turn precipitated a loss of consumer confidence in early season stone fruit, and the consequential poor repeat sales?

All stone fruit growers should insist on having not less than full access to the necessary independent evaluation data on which they can base proper commercial decisions.

These “closed loop” varietal access arrangements may become the “Achilles heel” of the low-chill sector, through presenting a confusion of “new” and competing low-chill products to the marketplace, in sub-critical volumes, and with at best only incremental benefit to consumers.

With the high cost of exclusion netting, the low chill sector has over recent years contracted to a smaller number of growers with larger plantings producing improved quality fruit. To achieve market recognition and commercial success, the low-chill sector needs to undertake much more coordinated marketing, rather than fragment into small and secretive competing groups, that risk confusing the market place. LCA's “Springfruit” concept is aimed at achieving a unified and coordinated low-chill sector. Perhaps its time for low-chill industry leaders to seriously re-think where things are heading.

Low chill stone fruit growers and allied industry partners are hereby invited to make comment on the issues raised in this discussion paper.

Note: See the article by QDPI-Qld on pg 18 – “The basis for selecting low-chill stone fruit varieties”

Acknowledgement: This project is funded by Low Chill Australia Inc, via a voluntary contribution with a matching contribution from the Commonwealth Government, facilitated through Horticulture Australia Ltd.

Australian Fruit Industry Web Sites

General sites

Australian Chamber of Fruit & Vegetables
<http://www.freshmarkets.com.au/>

Australian Fruit & Vegetable Coalition
<http://www.horticulture.com.au/healthnews/>

Horticulture Australia Ltd
<http://www.horticulture.com.au>

Rural Industries Research & Development Corporation
<http://www.rirdc.gov.au>

Commodity sites

Apple & Pear Australia Ltd
<http://www.apal.org.au/a&pindst/a&pindex.htm>

Avocados Australia
<http://www.aagf.org.au>

Bananas – Australian Banana Growers Council
<http://www.abgc.org.au>

Blueberries – Australian Blueberry Growers Association
<http://www.abga.com.au>

Citrus – Australian Citrus Growers
<http://www.austcitrus.org.au/>

Custard Apple – Australian Custard Apple Growers Association
<http://www.custardapple.com.au/info.php>

Dried Fruits – ADFA
<http://www.adfa.asn.au/>

Lychee – Australian Lychee Growers Association
<http://www.australianlychee.com/>

Melons – Australian Melon Association
<http://www.melonsaustralia.org.au>

Persimmon – Australian Persimmon Export Company
<http://www.sweetgold.com.au>

SnackFruit Australia
<http://www.snackfruit.com.au>

Stone Fruits – Summerfruit Australia Ltd
<http://www.summerfruitaustralia.com.au/>
& Melbourne Summerfruit Committee
<http://www.melbsummerfruit.com.au>

Tropical fruits:
<http://www.tablelandsonline.net.au/tropicalcuisine/index.php>
&
<http://www.australianropicalfoods.com/exotic.html>



Report on winter pruning of Stone fruit Field day at Bangalow NSW – May 2004

By Phillip Wilk, District horticulturist, NSW Centre for Tropical Horticulture, Alstonville

Low Chill Australia and NSW Agriculture held a stone fruit winter pruning field day at Heavenly Valley Orchards, Bangalow on 24th May.



The seminar was attended by over 40 people from the low chill industry and was a follow on from the summer pruning field day held at Maroochy Research Station in November 2003.

The field day was run in response to the industry's request from new growers over the last year for some basic production skills courses.

It was expected that we might have 15 to 20 people attend and we were pleasantly surprised and a little overwhelmed to have over forty people come along. There were even a few orchardists who brought their whole pruning teams with them who were eager to get a few 'hot' tips from the experts.

It was doubly surprising to get so many participants attending on the day as it was right in the middle of winter pruning time and on a glorious autumn day.

The recent change of ownership of a considerable number of stone fruit properties here on the North Coast means that new growers and contract workers are eager to get some of those basic skills that older hands take for granted.

There was a short presentation in the packing shed on some basic tree physiology principles and the advantages and disadvantages of the common tree training systems.

This was followed by three experienced growers, Robert Hood, Rick Dali and John Gough firstly demonstrated how they would go about pruning Central Leader (palmette) and Vase trained trees.

The demonstrators then guided growers through a practical workshop by having them prune trees

under their watchful eyes and afterwards they provided constructive criticism to their students.

John Jr. and Hope Gough then demonstrated to growers a range of pneumatic secateurs and other pruning tools to make the operation more efficient and safe.



There were a significant number of experienced growers in attendance at the workshop who continued throughout the day to provide lively debate as to the merits of different pruning techniques. This type of debate provides an enormous wealth of knowledge and experience to new growers and was much appreciated by everyone who was present.

The take home messages were:

1. You are not pruning trees you are trying to hang fruit from a structure.

It was stressed by growers a number of times that trees need to have fruit evenly spaced so they will receive adequate light, give even skin colour and avoid wind rub.

Laterals need to be pruned by at least one half their length to be strong enough to support the required number of fruit. Growers should be removing about 80% of the new wood produced the previous season. It is false economy to prune lightly as the fruit and flower thinning costs will be much higher later in the season.

2. Prune to a formula

Count the number of laterals you require to be left when pruning to hang an estimated number of fruit. This will save you money on fruit and flower thinning labour. Most of a grower's production costs are associated with pruning, thinning and picking/packing. Anything that will minimise the amount of labour needed will reduce production costs

For early season fruit measure the tree's butt circumference 400mm above the ground level. Then use the formula that for each one centimetre of tree butt circumference you should expect 6 to 7 pieces of fruit. Each lateral should produce 1.5 to 2 pieces of fruit (3 pieces from 2 laterals). It is surprising how

many people massively overestimated the amount of wood that needs to be left on a pruned tree until they actually counted the number of laterals they required.

3. "Each time I pick a piece of fruit I tell myself it's another \$1.00 in my pocket"

Growers need to think about pruning as an economic exercise. This quote from Robin Hood makes growers really think about the economics behind pruning and picking. On average a mature palmette tree should return about \$100 per season.

To save time during pruning; if in doubt cut it out!

4. Keep your laterals close to the main leaders.

This keeps the laterals sturdy, keeps the tree at a manageable size for picking and reduces the overall quantity of wood. Remove any competing laterals close together.

Thank you to all the instructors for making it such a successful and informative day (Robert Hood, Rick Dali, John Gough and Hope) and to all participants for your invaluable input.

Special thanks goes to Ray and Helen Hick who hosted the day and to Ray who also ran a very successful and very much appreciated BBQ lunch.

**THANK YOU FOR SPONSORING THIS
FIELD DAY**



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**APVMA - Australian Pesticides and
Veterinary Medicines Authority**

Dimethoate & Omethoate review

The APVMA review scope document on Dimethoate & Omethoate has been released for public comment. All comments need to reach the APVMA by **2nd July** 2004 and should be sent to Email: chemrev@apvma.gov.au

You can read the draft report on the APVMA website at:-

http://www.apvma.gov.au/chemrev/dimethoate_scope.pdf

Endosulfan review

The APVMA draft final review report on the pesticide endosulfan has been released for public comment. All comments need to reach the APVMA by **30th July** 2004 and should be sent to Email: chemrev@apvma.gov.au

You can read the draft report on the APVMA website at:-

http://www.apvma.gov.au/chemrev/endosulfan_draft_final.shtml

Carbaryl review

The APVMA draft report of its review of the pesticide, carbaryl, has been released for public comment. All comments need to reach the APVMA by **27 August** 2004 and should be sent to Email: chemrev@apvma.gov.au

You can read the draft report and the media release on the APVMA website at:-

<http://www.apvma.gov.au/chemrev/carbaryl.shtml>

The Australian Pesticides and Veterinary Medicines Authority (APVMA) is an Australian government authority responsible for the assessment and registration of pesticides and veterinary medicines and for their regulation up to and including the point of retail sale.

The APVMA administers the National Registration Scheme for Agricultural and Veterinary Chemicals (NRS) in partnership with the States and Territories and with the active involvement of other Australian government agencies.

For further information and announcements visit the APVMA web site at: <http://www.apvma.gov.au>

The link between molybdenum, soil conductivity, growth regulators and calcium levels in low-chill stonefruit trees

By Martin I'Ons, Silica Solutions Pty Ltd

Ph: 02 67364964

The procedures required to achieve elevated levels of calcium in low-chill stone fruit is a frequently debated topic. Increased calcium levels are well known to improve fruit firmness and therefore shelf life. Ensuring adequate levels of calcium in fruit is therefore paramount if low-chill fruit is to be exported.

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Martin I'Ons (L) with Alex McGregor from Earth Life at the LCA "Sustainable Soil & Tree Health" seminar held at Banglow.

Calcium occurs as a divalent cation and it is simply not possible for any plant to absorb a cation species without at the same time absorbing an equivalent charge in anions. In the case of calcium in trees the only anion that is absorbed in sufficient quantities to balance both the calcium and the potassium is nitrate. It is therefore essential that the tree is able to metabolise nitrate nitrogen effectively. In the process the nitrate is converted into amino acids and proteins. To do this the tree uses a nitrate reductase enzyme that contains two atoms of molybdenum in each molecule. Molybdenum availability in the soil is decreased by low pH and high concentrations of iron oxides which are both characteristics of the basalt derived soils on the North Coast.

The conductivity of the soil is a measure of the mobility of cations and anions in the soil. It stands to reason that a divalent cation like calcium would have a lower mobility than a single valent cation like potassium. North coast soils, due to high rainfall, tend to have low conductivities. Keeping

the conductivity at an optimum level is therefore a prerequisite to ensure calcium availability.

Recent research by S. Hemalatha that was published in the Journal of Central European Agriculture in October, 2002 demonstrated that growth regulators when applied to rice plants produced a big increase in the catalytic activity of the nitrate reductase enzyme. It is very likely that paclobutrozol has the same effect in stone fruit trees and would explain the different levels in leaf tissue analysis between paclobutrozol treated trees and those without. Paclobutrozol treated trees have higher levels of calcium and lower nitrogen in their leaf tissue according to the guide 'Fertilising low-chill stone fruit' by J.M. Slack, D.O. Huett and A. George. It is likely that the effectiveness of doing a Paclobutrozol treatment is enhanced by ensuring that adequate molybdenum is available to the plant. Other research has demonstrated that a foliar application of the plant hormone cytokinin to tobacco plants had a similar effect on the nitrate reductase enzyme.

How to improve calcium uptake by your trees:

1. Ensuring that there is adequate molybdenum in the orchard is as easy as applying 100g of sodium molybdate (\$2 worth) per hectare per year to the orchard after the leaves have emerged. This can be added to any spray mixture.
2. Try and keep the pH of the soil above 6. This will ensure adequate calcium and enhance the availability of the molybdenum.
3. Soil conductivity can be enhanced and maintained by applying fulvic acid through the irrigation water at a rate of 1ml per tree per week during the growing season. Alternatively apply compost around the trees.
4. Apply paclobutrozol or cytokinin as even in reduced amounts this will probably greatly increase the catalytic activity of the nitrate reductase enzyme. (It would be of great benefit if some research could be undertaken to demonstrate this relationship in stone fruit trees).



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An overview report on the Low Chill Stonefruit “Sustainable Soil and Tree Health” Seminar.

By Phillip Wilk, District horticulturist, NSW Centre for Tropical Horticulture, Alstonville

Low Chill Australia organised and ran a very successful Sustainable Soil and Tree Health seminar at Bangalow on 21st April. The seminar was attended by over 70 people representing a range of horticultural industries on the far north coast of NSW.



John Dirou, (L), Phillip Wilk (C) from NSW Agriculture, and Phil Stacey (R), LCA Committee at the “Sustainable Soil and Tree Health” Seminar, Bangalow

Speakers included Greg Reid, (Soils Extension Officer with NSW Agriculture), Steven Robideaux (Soil Food Web Institute), Leo McLean (Tryton Waste Organic Recycling), Luke Maunder (Sustainable Soil Solutions), Alex McGregor (Earth Life), John McKay (Farmers Marketing Network) and Asma Rouhana (Zadco for Quality Gro Pty Ltd).

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

Key questions from growers who attended were:

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

The changing views on soil

Until recently, common practice amongst growers, rural suppliers and agency personnel focussed

mainly on the physical and chemical aspects of soil health. To a large extent this is still done, for example the ‘crop nutrient replacement strategy’ is commonly recommended.

This strategy advocates that whatever is removed from the orchard in a season as fruit or as prunings (plus an allowance for losses due to volatilisation, leaching, fixation and tree maintenance) needs to be replaced in the form of measured doses of nutrients contained in animal manures or NPK fertilisers. The addition of the fertiliser to orchards is by means of a number of small applications. These nutrients are strategically applied to meet a trees nutritional demand at different times in the growing season.

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

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

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

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

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

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

There are some basic tenets that all growers should consider before accepting the claims made about specific products. Fruit yield and quality are the measure of benefit to a grower. These are expensive in time to test thoroughly.

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

Points to consider when choosing soil health products

- *Contents or ingredients.*

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

Products containing live microbes, enzymes or organic compounds can degrade easily. High temperatures, sunlight and airborne spores can shorten the already limited shelf life of these products.
- *Application rates*

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

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

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

Any production benefits need to be measured and compared with untreated areas in the same block since differences from one year to the next can be due to good or bad seasons rather than the product.

Remember that seasonal differences can affect quality and yield for example by 50 to 60 % but different nutrition practices may cause a small change of say 10%. If you have found a product you think may be useful to your particular situation, you may decide to conduct a trial.

Properly designed field trials with measured results are a much more reliable indicator of the usefulness of a product. Field trials are a good way to evaluate a product, but there are some important planning steps to avoid the chance of getting misleading results.

Trialling new products on your property

A useful field trial can be designed in five steps;

1. Control

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

2. Replicate

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

3. Randomise

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

4. Measure

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

5. Cost effective

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

If these trial guidelines are followed and the treated area outperforms the control then growers can be fairly confident that the product is effective. Accurate records need to be kept. As with all new products and practices it is necessary to run an economic ruler over the total operation and that also includes costing a grower's time to implement the change. Ideally, field trials need to be run over a number of seasons to account for long term effects.

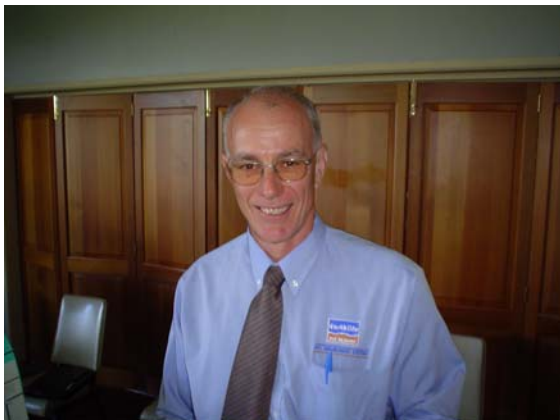
It is important to remember that no product is a substitute for good orchard management.

*Need more information on soils?
Contact our seminar presenters:*



Asma Rouhana (Zadco for Quality Gro Pty Ltd) and John McKay (Farmers Marketing Network)

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Web Page: <http://www.fmn.com.au>

Farmers Marketing Network Pty Ltd, supply a full range of Lignosulphonate chelated plant nutrition, as standard formulations, such as "Balance Multinutrient" broad spectrum or formulations to meet specific requirements such as "Synergy Calcium and Boron" for fruit formation and cell wall rigour.



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Leo McLean, (The Tryton Group Pty Ltd)

The *Tryton Group* is an organic recycling company which manufactures compost, vermicompost, organic microbial soil bio stimulants & growth solutions derived primarily from flora botanicals.

Tryton has 6 liquid inoculums now available,

*Bio Starter

*Bio Starter plus Silical

*Bio SMART-T

*Bio Balance (n)

*Bio Pop up (p)

*Bio Fruit fill (k)

Around Australia, *Tryton* are supplying products with a total strategy for agronomy to assist in maintaining soil moisture & utilising all fertiliser inputs.

Tryton field trials are in progress in most states & territories of Australia beginning with Macadamia nut, Dairy, Cropping, state forests and viticulture. Trials are supported by independent grower authorities and systems analysts.

The NSW Department of Agriculture has set the benchmarks for registered trials and is also assisting in researching the effects of *Tryton* products verses fungicides on pathogens in horticulture.

Sustainable crop nutrition & efficient usage of ground water supplies with quality assurance is the goal of *Tryton* objectives. *Tryton* can be used

anywhere that has soil & vegetation. A tailor-made program of soil inoculums will come to you in a safe living liquid form.

When adopting sustainable soil & tree health, *Tryton* will prescribe a *Total Farming system*. This approach is based on independent, comprehensive soil analysis followed by a nutritional/remedial recommendation together with an after sales support service which is available to ensure all relative issues are thoroughly explained on time, every time.

A *Total Farming System* can be put to work immediately, regardless of growth phase.

Application rates will depend on the soils condition, plant growth stage & time of season. *Tryton* soil inoculums have the advantage of being designed with a diversity of natural soil food products such as omega & silica compounds. A registered & insured spray contractor may be cost subsidised to participants of *Tryton's* field trial.

Plant & machinery currently used on farm may be utilized for inoculum application. For example:

- a) boom-spray & rosette ground applicators;
- b) Atomizing misters / air blast foliar sprayers with polarizing conductors; and
- c) Fertigation / irrigation systems.

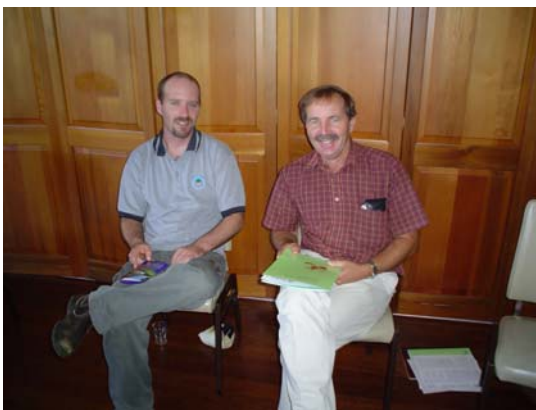
Currently, *Tryton* is looking for growers to participate in registered horticultural trials with independent grower association managers and testing.

To adopt a productive system that makes your soil really work for you, please phone your community *Tryton* technical representative, Leo Mclean on 0427 197 109 or the office on (02) 6622-8855.





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Steven Robideaux (L), (Soil Foodweb Institute Australia), and LCA Treasurer, Trevor Wilson at the LCA soil health seminar

Measures to improve the health of your soil

To have healthy plants you need healthy soil, and to have healthy soil you need the right balance of microbes to provide the nutrients your plants need, in the form your plants need them and when they need them. How do you get the balance?

Contacting Soil Foodweb

The first step is knowing what is in your soil. The next is adopting farming practices that get the balance right and get the best out of your soil.

Who is SFI? SFI is a commercial microbe-soil testing laboratory. The only one of its kind in Australia. We began in Dec 2000 and have processed over 4000 samples.

What do we test? soil, plant leaf surface, compost, compost teas, vermicast and other commercial bio-products

What do we look for? What microbes are there? How many are there? Are they in balance? Which ones are working? Which ones are causing disease? We look at bacteria, fungus, protozoan, nematodes and mycorrhizal root colonization.



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Greg Reid (NSW Agriculture (L) greets LCA president Bill Hatton at the soil health seminar

Soil Health

When asked about the properties of good soil the first thing most non-specialists think of is chemical properties such as Nitrogen, phosphorus and salinity.

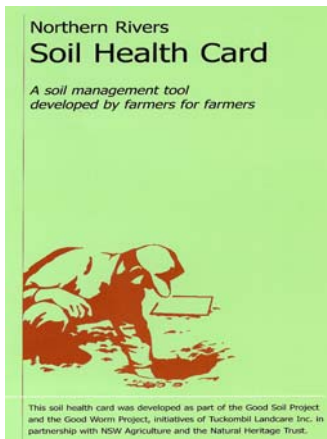
Over the years there has developed an over reliance on chemical soil tests

To get a whole picture of soil health you need to look at physical properties like compaction texture and biological properties such as organic matter and earthworms.

Many of these properties are linked. CEC is linked to pH, texture, and organic matter.

Its no good concentrating on nutrients while neglecting soil biology. Likewise its no good concentrating on soil biology if you neglect physical properties like structure and compaction.

Of course you can't fix everything at once and there is no point in fixing things that aren't broken. To work out your priorities you need to investigate your soil properties and how they vary across the orchard. If parts of the orchard are performing poorly and there are associated soil problems then the two may be related.



Soil Health Card - a useful tool to survey your soil is the Soil Health Card:

Soil Biology is the study of the complex interactions between soil particles, plant roots and millions of worms, insects, crustaceans, mites and microbes.

We know very little about most of the living organisms in the soil. We do know that they are important enough to some plants that they can spend 20% or more of their energy secreting organic compounds from their roots to feed and encourage soil organisms. The other major food source for these organisms is decaying leaf litter, roots, dung etc which break down to form dark organic matter.

Organic matter is essential not only soil organisms but has a key role in good soil structure, moisture retention and the exchange of minerals. Up to 50% of soil CEC can be due to Organic Matter. On soil tests, Organic matter is usually referred to as Organic Carbon. Soil Organic Carbon should be better than 2% of the dry weight of soil. In orchard situations up to 10% is not uncommon but a reasonable minimum would be 4%.

Organic Carbon can be improved by maintaining a living ground cover of grass, by mulching or by adding organic matter in the form of manures or composts. Manures tend to breakdown quickly and leave little long term residue. Mulches can add organic matter but soil nitrogen can be locked up during the decay process. Composts will contribute organic carbon without drawing heavily on nitrogen reserves.

Most of the soil organic carbon consists of humates and fulvic acids. Even on relatively poor soil this still totals about 18 tons per hectare of topsoil. Making any change in this requires additions measured in tons rather than kilograms.

The Non-humic fraction is a complex mixture of many breakdown products and it is influenced by the source organic matter and the balance of life forms in the soil.

Microbial Biomass Carbon is usually about 1-4% of the Soil Organic Carbon and is a measure of

microbe activity in your soil. This does not include organisms like beetles, termites and earthworms.

There are tens of thousands of different animal species in the soil. Though you may not often see them or take notice they perform many important functions in breaking up and mixing organic matter into the soil.

Earthworms have long been recognised as a good indicator of soil health and have been included in the Soil Health card as something to look for.

Copper in soils

One problem emerging in some orchards is a lack of **bioturbation** – or mixing of organic matter into the soil. This has been associated with the accumulation of copper from fungicide applications. More than 50mg of Copper per kg of soil is enough to discourage earthworms and other debris feeders. Organic matter concentrates at the surface and is not mixed into the soil below.

Some compost materials made from bulk wastes also contain high levels of copper and other heavy metals. Without cultivation or grazing activity, these metals may accumulate at the soil surface. You should insist on seeing a heavy metal analysis of any mulch, compost or fertiliser you use. Lead should be less than 100mg, Cadmium less than 10mg and Mercury less than 5mg per kg of fertiliser.

Animals like termites and earthworms rely on microbes in their gut to actually digest plant cellulose and fibres. Microbes are the real masters of the soil.

Microbe is a very general term used to describe the inhabitants of a world only seen through a microscope. These tiny life forms may be small but their variety is staggering and their numbers are overwhelming.

A single teaspoon of soil can have more microbes than there are people on this whole planet. They can form spores tough enough to withstand baking temperatures and years of drought then when conditions are right they can multiply a million fold in just a few days. Some can do things no other life forms can such as extract nitrogen from air, minerals from rocks, nutrients from toxic compounds.

To give you an idea of the world of microbes I will spend a little time introducing the major groups.

Bacteria - 40,000 species per gram of soil.

Divided into many groups depending on shape or structure

- Eg cocci, streptococci, staphylococci, spirillum, actinobacteria
- Decay bacteria
- Soil and sulfide reducing
- Nitrogen fixing eg Azotobacter, Rhizobium

- Disease causing pathogens eg some psuedomonas, Tetanus

Fungi - there are 10 of thousands of species of fungi in soil.

When you see a mushroom it is just the fruiting body of a huge web of filaments beneath the ground Mycorrhizae are fungi which attach to and vastly extend the root systems of some plants. In exchange for sugars and amino acids from the plant, these fungi supply phosphorus and other minerals extracted from the soil. One important group of this type of fungi are known as VAM or vesicular arbuscular micorrhiza.

Protozoa - these single celled organisms are a thousand times bigger than bacteria but are still too small to be seen. **The flagellate group** uses a whip like tail to propel themselves through the soil water.

Flagellates mostly eat bacteria and small algae but some are capable of causing diseases such as Malaria.

Cilliates are another type of protozoa but they use liny hairs on their surface as oars. They can get around pretty fast and can be much bigger than flagellates.

Cilliates eat bacteria, algae and any smaller protozoans. Once again, some of these can cause diseases eg giardia.

Amoeba - these rather unattractive fellows ooze and flow along. They will try to digest almost anything they can flow around, including plant fibres.

Many live in the gut of termites and help digest the wood fibres. Some amoeba can cause disease and I am sure you have heard of amoebic dysentery.

Diatoms are a type of algae which have a hard outer shell of silicon. In shallow sea their shells can sink and accumulate into layers of material known as diatomaceous earth.

Rotifers - these fellows are big enough to be able to eat most other types of microbes, The have hairs around their mouth to which sweeps a current of water into a gullet where anything solid is digested.

Nematodes are tiny worms but they are big in this microscopic world. They can feed on bacteria or fungi but some types are able to attack plant roots and cause damage. But it is not all their own way as this picture shows a nematode being captured by a fungi and there are predator nematodes that feed on their smaller cousins.

It's a complex and competitive world in the soil where individual populations can rise or crash in the space of a few hours. The next slide gives you an idea of some of the interactions that are going on.



Clearly there are a great number of interactions but what does that mean to you?

Well, there is a **balance** in all of this but the balance is constantly shifting and rapidly adapting to change. The numbers and activities of these organisms adjust with the seasons, rainfall, cultivation, your crop and even the stage of growth of your crop. Organic matter clearly has a big influence, not only its quantity but also its type. Nitrogen rich organic matter will initially encourage bacteria while fungi are better equipped to use carbon rich organic matter. Organic matter with a high carbon/nitrogen ratio eg straw can actually tie up nitrogen while it is decomposing and this could effect your crop if it is in a growth phase. Adjusting the carbon/nitrogen ratio to about 30:1 should avoid this problem.

It is possible to inoculate soils with useful microbes however to succeed, these useful microbes have to compete with many others including those that would like to eat them. So its very important to make sure that the soil conditions favour your inoculant. Conditions like compaction, acidity or low organic carbon may strongly influence the survival of your inoculant. It is worth remembering that is likely these useful microbes are already present but may be dormant or suppressed due to adverse conditions

Take home messages

- Monitor the physical and biological properties of your soil.
- Mulching is best done during dormant crop phases unless it has a low carbon/nitrogen ratio or is supplemented with nitrogen.
- Mulches, composts or organic fertilisers should not contain high levels of cadmium, lead, mercury, copper or zinc.
- Ensure that the physical and chemical properties of the soil are favourable before trying to influence specific biological properties.



Horticulture Australia Ltd / Australian Fruit & Vegetable Coalition Update

By Chris Rowley, Australian Fruit & Vegetable Coalition - Health Initiative Coordinator

The following information is provided as an overview on current progress in the development of the National Health Initiative.

State activities

- South Australia is discussing licensing arrangements with the WA Department of Health and is examining ways to progress the implementation of the campaign. The AFVC has had preliminary discussions with SA to determine ways in which they may be able to work together to maximise available resources.
- Queensland has also expressed interest in the WA campaign approach, with the State Government recently allocating additional funding of \$2 million per annum for nutrition promotion. The AFVC has also held initial discussions with representatives in this State and will pursue this development further during early June.
- Evaluation of the campaign in Western Australia has shown an increase in consumption of one serve of vegetables and half a serve of fruit.
- Other States are not as advanced in pursuing adoption of the “Go for 2&5” approach although there is some suggestion that a State Based Coalition may be established in Victoria to assist in this process.

Appointments strengthen the push for a national campaign

In addition to the appointment of a National Health Coordinator by HAL other bodies are also currently providing resources that will assist in the development of the campaign. The Strategic Inter Government Nutrition Alliance (SIGNAL) has now appointed a Project Officer to assist in building a national “Go for 2&5” campaign. The Project Officer is Christina Pollard – one of the driving forces behind the campaign in WA. In addition to the SA Fruit and Vegetable Coalition are currently seeking a project officer to assist in the development of the campaign in that State.

National Obesity Task Force

Little additional funding has been made available for new initiatives under the National Obesity Task Force, however pressure is being maintained through SIGNAL to adopt the Go for 2&5 campaign as an important element in fighting obesity.

Member support for AFVC activities

AFVC Member bodies have now been asked to more directly assist the development of the campaign by:

- Involving the AFVC in direct reporting back to members
- Providing AFVC information to members through existing reporting mechanisms (email newsletters, membership magazines etc).
- Provide AFVC website information
- Identifying media opportunities for the AFVC to promote the campaign

PR Activities

The AFVC is now undertaking a process to actively seek out PR opportunities through which to convey key messages to its target audiences. AFVC members and supporters are being encouraged to identify opportunities (both internal and external) through which the AFVC can interact – either directly or through delivery of information by supporters - with target audiences. Opportunities that will be explored include providing speakers for food media clubs, national and state press clubs and through the network of rural press clubs that meet regularly around Australia.

Funding

The AFVC is continuing to examine all avenues to obtain funding to resource the campaign. The AFVC is in the process of re-approaching the Commonwealth over this issue and will seek to obtain a commitment from it to become the major contributor to the campaign. The AFVC is now refining its approach to sponsorship to include a stepped approach under which business can choose to invest to gain a particular output from the program. The WA Department of Health is currently examining issues such as licensing agreements and the establishment of nutritional guidelines that would determine food and food products that would be allowed to participate in the scheme. An aggressive campaign to capture business funding for the program will be undertaken when this is finalised.

Selling the Political Message

All federal members of parliament have now been provided with an update on the development of a national fruit and vegetable campaign. The AFVC is now actively seeking to arrange meetings with a number of key parliamentarians with interest in the areas of health and nutrition. The Health Initiative Coordinator will meet with a number of parliamentary advisers over the next week and is actively seeking a meeting with the Health Minister to further progress the issue.

For further news from the AFVC see:
<http://www.horticulture.com.au/healthnews/default.asp>



Melbourne Summerfruit 2004

National Stone Fruit Industry Conference & Trade Expo, At Rydges Melbourne – 186 Exhibition St , From Wednesday 4th to Friday 6th August

The program on Thursday 5th August is “Sweet Summerfruit Fun & health” – a healthy lifestyle symposium exploring the current and potential involvement of the summerfruit industry in the current raging debate on healthy eating, social marketing campaigns, as well as the associated promotional opportunities for summerfruit.

Keynote Speakers

Frances Taccone, Ph.D., R.D., Director of Development for the Produce for Better Health Foundation’s “5 a day” Program, is responsible for the foundations international outreach program. There are approximately thirty countries now conducting fruit and vegetable promotions. The leaders of these national nutrition programs have linked together to form an international network called the “5 A Day Federation”. In 2003, the 5 A Day Federation began collaboration with the World Health Organization (WHO), on a global fruit and vegetable promotion initiative.

Ron Becroft, Chair of the United Fresh (NZ) Inc. “5+ A Day” Program. This program was launched in September 1994. Since then, it has gained a large and enthusiastic following and as a result, research shows that the consumption of fresh fruit and vegetables is rising. 5+ A Day is everywhere - in supermarkets, on packaging, in magazines, in schools, on buses, on TV and radio, in our newspapers, and on everyone's lips!

David Hughes, BSc, MSc, PhD Professor of Agribusiness and Food Marketing at the Centre for Food Chain Research, Imperial College London, and Visiting Professor at the Royal Agricultural College, U.K. David is a much sought-after speaker at international conferences and seminars on global food industry issues, and is a strong proponent of building vertical alliances between key food chain members in the food industry – farmers, life science and input companies, ingredient and food manufacturers, retailers and food service. He has lived and worked in Europe, North America, the Caribbean, Africa and South East Asia and, currently, spends two months of his year working with food industry participants in Australasia. David is: an international advisory board member with food organisations in the U.K., Holland, U.S.A., Canada, and New Zealand; a co-owner of a fresh produce company in the U.S.A.; and a Non-

Executive Director of KG Fruits – a U.K. farmer-owned soft fruit business (US\$170 million turnover in 2003). He works closely with senior management of food firms on business strategy development and with governments on food policy formulation.

Lisa Cork is a global fresh produce marketing expert. Her fifteen-year career in produce marketing has been spent helping national and international growers, packers, shippers, growers associations, retailers and industry service providers achieve increased sales through effective marketing, communication and research techniques.

Lisa is the director of *The Marketing Department Ltd.* From 1996 to 2003, she served as the marketing representative for California Summer Fruits in New Zealand. She has been recognised by her peers as being instrumental in growing the New Zealand market and for repositioning summer fruits from a winter niche to a mainstream fruit. Lisa will share some of the market research and trade communication strategies she has used over the past seven years to grow the market.

David Miller, BSc, has worked as the International Programs (IP) Director at the California Tree Fruit Agreement (CTFA) since 1989. The CTFA is a Federally and State legislated regulatory, research and promotional body working on the behalf of California fresh peach, plum and nectarine growers. As the first CTFA IP Director for CTFA, Miller has been engaged in direct market development programs in over twenty world markets while also working to mitigate market access barriers (both real and invented by protectionists) in other potential world markets.

The program on Friday 6th August is “Summerfruit – Healthy Trees & Healthy Environment” a forum covering other important issues and latest trends in the summerfruit industry, including new summerfruit varieties, controlled marketing, new regulatory compliance issues including environmental management systems (EMS), new product developments including ready to eat summerfruit, as well as exploring the important marketing issues of living with summerfruit imports and how best to spend our limited promotional dollars.

Melbourne Summerfruit 2004 conference program and registration details are available on URL: <http://www.melbsummerfruit.com.au>





ACIAR Project Report: Adaptation of low-chill temperate fruits to Australia, Thailand, Laos and Vietnam.

By Dr Alan George, Principal Horticulturist, Maroochy Research Station, Department of Primary Industries & Fisheries, QLD

This Australian Centre for International Agricultural Research (ACIAR) project finishes at the end of June 2004.

Thailand, Laos and Vietnam are keen to develop their fledgling temperate fruit industries. The transfer of fruit production technologies to upland regions of both Laos and Vietnam are government priorities.

Four climatic zones for temperate fruit production in subtropical regions have been identified in both Australia, Thailand and Laos; very low-chill 50-150CU, low-chill 150-300CU, medium-chill 300-450CU, high-chill 450-600CU. In Vietnam, very high-chill regions also exist (600-800CU) which could successfully grow Californian and other higher-chill varieties.



Very large and sweet 'Tropic Beauty' in northern Thailand due to long, dry fruit development period (120 days) In the current project a wide range of species (plum, peach, nectarine, pear, persimmon) and varieties were introduced into Vietnam and Laos to replace poor quality, locally-grown cultivars. The varietal base in Thailand was also expanded with additional species and cultivars introduced from Australia.

Benefits to the Australian low-chill industry:

Significant research findings have helped Australian orchardists who grow stone fruit. Some of these benefits are as follows:

- identified suitable varieties and regions (genotype by environment interactions)
- developed chill models which predict chill unit with greater accuracy
- developed new irrigation methodologies using regulated deficit irrigation
- developed canopy management and crop loading indices to produce high quality fruit
- improved canopy management, light interception etc. and physiological aspects affecting fruit quality
- developed a systems to produce super-sweet fruit
- improved orchard management systems
- developed best practices manuals for orchard management
- improved our understanding of Asian consumer markets
- developed an export manual for Asian countries

The project has also produced the following outputs:

- a best practices manual (about 400pp) for the low-chill stone fruit industry
- an export and supply chain management manual (about 350pp)
- a comprehensive socio-economic report on opportunities and economics of production in Asian countries (about 200pp).
- an analyses on the impact that globalisation will have on Australian horticulture

It is unfortunate that the DPIF-Qld team are unable to put these outputs into a computer based decision support program due to lack of funds. The team has applied several times to the Australian industry to undertake this process but have to date not been able to attract the funds.

This is disappointing given that most of the information that we have developed is suitable for both the low and high-chill industries. A small amount of funding from industry could greatly enhance the delivery of these systems.

A new ACIAR project will commence on 1 July 2004. This is a joint project with NSW agriculture and will be led by Dr Shane Hetherington, Orange Research Institute. This project will focus more on post-harvest aspects of temperate fruits such as the control of brown rot. Dr Alan George will head a team to investigate pre-harvest factors affecting fruit quality.

For further information on ACIAR projects visit their web site at: <http://www.aciar.gov.au/>



The basis for selecting low-chill stone fruit varieties

By Dr Alan George and Bob Nissen, Department of Primary Industries & Fisheries, QLD

Selecting varieties involves consideration of several factors. The broad process we suggest you follow consists of the following four steps:

Step 1. Determine how much chilling your orchard receives and compare this with the chill units required for each variety.

To determine the amount of chilling your orchard receives, follow the procedure outlined in *Determining chilling units*. The chill units we have assigned to the main varieties are listed in **Table 1** (on the next page). In some cases, these differ to the rated chill units assigned by the breeder. This is because experience under Australian conditions has shown these varieties to perform well in lower chilling ranges.

Choose only varieties that fall within your determined chilling range. Use of varieties outside of this range may result in poor growth, reduced fruit set and poor fruit quality.



Bob Nissen (L) (DPIF) discussing low-chill industry development with LCA president Bill Hatton at Maroochy Research Station.

Step 2. With the varieties chosen from Step 1, select those that are likely to meet the best market window.

The earlier the maturity, the better the price. The general rule of thumb is — warm temperatures during fruit development = earlier maturity = higher prices. However, all fruit marketed on the domestic market before about the third week of November will generally fetch reasonable prices as long as fruit is average or better in quality. The general maturity times for each variety are listed in **Table 2** (on the next page).

Step 3. Assess which of the varieties chosen from Steps 1 and 2 has the best market acceptability.

Consumers are looking for fruit with good colour, good size, good shelf life, freedom from blemish and good flavour. The more of these characteristics a variety has, the higher is its market acceptability. Yellow fleshed varieties are preferred as there is a perception that these have better shelf life. Niche markets exist for white fleshed peaches but these require more marketing effort.

Note that we are talking about market acceptability, not market performance. For example, Flordaprince peach performs very well on the market because of its earliness. However, it has low market acceptability because of russet in cooler areas and heavy fuzz in warmer areas. Our rating of market acceptability is shown in **Table 3** (on the next page). **Note that Flordagold** is used as the benchmark with a rating of 10. This does not suggest it is without faults and its rating is purely to provide a level against which the other varieties can be easily compared.

Step 4. You may want to spread your risk and labour inputs over a range of different varieties chosen from Steps 1–3.

In general, no one variety will suit the needs of the average grower. A selection of two, three or more varieties is recommended to spread the risk and workload.

As new varieties will continually become available, our advice is to select the most appropriate varieties and then plant at the highest practicable density to concentrate your production for the first ten years into as small an area as possible. This makes it more practicable to net the orchard, improves your early cash flow per unit area and makes your management more efficient.

Seek opinion from experienced extension officers, growers, nurseries, consultants and marketers. Growers investigating the export market should also consult exporters and export organisations.

New varieties for trial

New varieties are continually becoming available. We recommend that you trial new varieties in small numbers as they become available. This enables you to establish variety performance on your farm instead of accepting data from other areas at face value.

Table 1. Assigned chill units for the main varieties

	Chill units		
	50 – 150	150 – 300	300 – 450
Peaches	Flordaprince (150)	Flordagem (250)	Flordagold (325)
	TropicBeauty (150)	Fla. 3–2 (200)	Forestgold (350)
	Newbelle (150)	Flordastar (225)	
	Flordaglo (150 – rated 200)		
Nectarines	SunWright (150)	Sunblaze (250)	Sunripe (400)
	Sunraycer (150 – rated 250)	Fla. 82–17N (275)	
Plums	Fla. 8–1 (150 – rated 200)		
	Gulfruby (150 – rated 350)		

Table 2. General maturity times for the main varieties

	Maturity times*		
	Early season (early to late October)	Mid season (late October to mid November)	Late season (mid November to mid December)
Peaches	Flordaprince	Flordagem	Newbelle
	TropicBeauty	Fla. 3–2	Forestgold
	Flordastar	Flordagold	
	Flordaglo		
Nectarines	SunWright	Sunblaze	Sunripe
	Sunraycer	Fla. 82–17N	
Plums		Fla. 8–1	
		Gulfruby	

* maturity times for coastal Queensland, northern New South Wales, Atherton Tableland. Maturity times for inland Queensland are about two weeks later.

Table 3. Broad ratings for market acceptability

	Variety	Market acceptability rating (scale of 0–10):
		0 = poor 10 = very good
Peaches	Flordagold	10
	TropicBeauty	9
	Fla. 3–2	9
	Newbelle	8
	Forestgold	6
	Flordaprince	5
	Flordaglo	5
	Flordagem	4
	Flordastar	4
Nectarines	SunWright	8
	Fla. 82–17N	8
	Sunraycer	7
	Sunblaze	7
	Sunripe	6
Plums	Gulfruby	6
	Fla. 8–1	5