AUSTRALIAN
fruitgrower

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$6m packhouse upgrade cuts costs per bin

High density production pays off in Adelaide Hills
Part 2: APVMA dimethoate and fenthion review update

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Australian Apple and Pear Ltd (APAL) and Summerfruit Australia Ltd (SAL) are the peak industry bodies representing the interests of commercial apple, pear and Summerfruit growers in Australia in matters of national importance including regulation, legislation, marketing, research and development.

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Editorial

Every year fruitgrowers learn about new approaches to growing and orchard management (and sometimes even a revival or a new twist on an older theme). There is a constant quest to do things better – with less effort, better returns, with lower costs or with greater surety and consistency. This quest has underpinned the success of the Future Orchards and now PIPS programs.

However the grower must increasingly consider the orchard "business" and in particular the role of the packhouse, marketing, and other matters beyond the farm gate. In this issue two features highlight this perspective, both – coincidentally – from South Australia. Adelaide Hills grower Graham Mason has decided that he is a grower not a marketer - sending fruit to a number of different packing sheds based on what size and variety suits the different markets each shed has. "Each shed has its own market and we try to match our fruit to those markets...we are not skilled in the day to day aspects of marketing," he comments. Against this grower position consider Lenswood Co-op's $6 million investment which, with the co-operation of major local packhouses, has resulted in the capacity to handle 50,000 bins with a single shift each season. This season it will pack and market 65 per cent of the Adelaide Hills crop and delivering a 20 per cent saving in costs per bin! Such rationalisations will contribute significantly to overall industry efficiency and to growers' collective ability to respond to market opportunities.

Plant health and biosecurity are also key matters in this issue with Part 2 of a detailed report on the dimethoate and fenthion review, and a report on a current review of AQIS quarantine arrangements. There's plenty to consider before the bulk of the 2010-11 harvest harvest kicks-in properly. Until 2011, and Volume 5 of Australian Fruitgrower, to all growers and industry folk, have a safe and happy Christmas, and a prosperous season.

Cheers
John Fitzsimmons

John Fitzsimmons
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Technical Editor SAL

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Technical Editor APAL

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April No. 3	8th March	15th March	5th April
May No. 4	9th April	16th April	3rd May

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Our cover:
The apple pictured playing a special role in the lead-up to the festive season in Germany recently. Photo: John Fitzsimmons.

As another year closes our adversity lingers

As we get down to the business end of the season, the Murray Darling Basin (MDB) saga continues to entangle the politics of the nation and the south eastern states. Let's hope the submissions from the custodians of the land and commonsense takes precedence in this web of social impact, economic and environmental sustainability.

As this unravels, spare a thought for Western Australian producers who are experiencing extreme drought - not a common occurrence in the south east pocket of the west.

I wish I could inform you of some positive news in the dimethoate and fenthion review. Recently, at a forum of the Plant Health Australia (PHA) annual general meeting, the Australian Pesticides and Veterinary Medicines Authority (APVMA) continued to remain non-committal on any decision and in fact identified another extensive list of chemical reviews. It was drawn to their attention that a producer's lot is becoming increasingly handicapped without vital tools of trade. A 'systems approach' seems to be the only text book on the shelf and, for some reason, finding a compromise with variable chemical withholding periods is apparently not a solution. Acute dosage toxicity of edible peel is the target along with environmental sustainability. To be the cynic, allegedly orange juice and vegemite are not that fantastic for us either.

Anyway, the standard answer is that the chemicals will be suspended immediately if alarming results are revealed, until then the review continues.

Interestingly, the APVMA said that it is not permitted to consider economic and social impact in any decision making process. Perhaps there is a need to seriously revaluate our place in this bountiful rich agricultural nation if you couple this with the MDB.

I would like to remind producers that the Summerfruit Australia Ltd Board has sent membership renewal notices for 2010-11 and half way through this year there is still the opportunity to support your Board by renewing or subscribing to Summerfruit Australia Ltd membership. I thank those few of you who are committed to the workings of the peak industry body. There is a mountain of agripolitical work that is undertaken and the levy funds you pay are not allowed to be used for this work.

The dimethoate and fenthion issue is singularly the biggest issue of the moment and the abscence of a pot of dollars to draw from is seriously hampering lobbying efforts to argue and defend our case, in fact your livelihood. I urge you to dip into your pockets and send the $110 (inclusive GST) to the Board. A renewal form is found on the website if you have lost or misplaced the mailed out renewal and there is also a form for new members. Of course any gratis contributions will be rewarded with a Christmas card.

I wish you well for the season and very best wishes for the festive season.

John Moore
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New upgraded website

Whilst on the topic of websites we are embarking on a new upgrade that will be really positive for user friendly communication. Overall content of the website will be divided up to these three areas.

Export content

- Export market access negotiations – updates, issues and policies (if possible, or links to where to find policies/agreements)
- Export marketing activities (including market visits, etc) – announcements, updates and outcomes
- Export programs that may allow exporter /importer participation
- News on export markets
- Export material (exporter kits, artwork, export brochures etc.)
- Export retailer training material
- Current industry data
- A repository for all creative artwork that may be used by industry (Summerfruit logo, artwork etc)
- An industry contacts page
- A links page to industry bodies etc.
- Exporter list

Domestic section - SAL industry

- Summary of research findings – R&D reports (password required)
- Domestic marketing activities – announcements, updates, outcomes, upcoming promotional activity.
- Outcomes on export market-related activities such as promotions, trade shows and market visits by industry representatives
- Retailer training material
- Current industry data
- A repository for all creative artwork that may be used by industry (Summerfruit logo, artwork)
- Media releases
- Industry contacts page
- Links page to industry bodies etc.

Grower section

- Industry meetings, conferences, seminars – registration, download info, etc.
- Industry feedback section
- News
- Outcomes on export market-related activities such as promotions, trade shows and market visits by industry representatives
- Major announcements (fruit fly outbreak etc) and other announcements

APAL Chair's Report

Where has the year gone?

I got quite a shock when sitting down to write this article to realise that this would be the last one for 2010. Like most people it caused me to ponder where the year had gone and what had we achieved?

Of course a quick flick back through previous issues of the *Australian Fruitgrower* magazine highlights the many issues that we, as an industry, have addressed and, more importantly, that there are many issues that are still unresolved and will be on the agenda for next year.

I have had the opportunity to visit most growing areas during the year and the one endeavour that remains a constant for all growers is the quest for higher productivity combined with higher packouts. The Future Orchards project has, over recent years, stimulated interest in this challenge and reports of higher yields per hectare are now commonplace although there is still a long way to go. With the threat of imports even closer to us on the horizon we need to do everything possible to ensure that our industry remains competitive.

APAL restructure.

By now most people within our industry would be aware that the APAL directors began a review of the structure of the company some time ago. As a result of that review the APAL Board was pleased to announce on 18 November that it had re-appointed Jon Durham to the position of Managing Director. Jon had previously held this position from 2002 until 2007 and, prior to 2002, had been the CEO of the Australian Apple and Pear Growers Association (AAPGA). From 2007 to the present time Jon had been the General Manager of Coregeo Australia, the IP arm of APAL responsible for the global management of the Pink Lady™ apple trademark. As a consequence of the restructure, Tony Russell is no longer with APAL. The Board has thanked Tony for all of his efforts and the role that he played in the apple and pear industry since he started with APAL in 2004, and particularly in his role as General Manager APAL since 2007.

The Board believes that the new structure of APAL will ensure a coordinated focus on the many issues that face the Australian apple and pear industry at a time when we are facing our biggest challenge with the impact of apple imports from China, New Zealand, USA and possibly other countries in the future.

2011 – a crystal ball!

It would be great to have a crystal ball to predict the issues that will require greater effort from our industry as more challenges face us. One thing is certain; apples will be imported into Australia and this issue will require a focused effort to manage. By the time this article is published we will all know the outcome of the appeal lodged by the Australian government against the findings of the World Trade Organisation (WTO) in the case of the import of New Zealand apples into Australia.

Whatever the outcome of the appeal, I am sure that the Australian Government will have to re-work parts of the Import Risk Analysis (IRA) before NZ will be able to send apples to Australian markets and this will take some time.

The issue of Chinese apples into Australia is in the final stages of completion and they will most likely be in our markets before long. This is not the outcome that we want, however importers have been bringing Chinese pears into this country since late 1999 and the application to import Chinese apples was lodged in 2000. We are all well aware that the pest and disease profile of apples and pears is very similar so it was only going to be a matter of time until we were handed this result. Maybe there is a lesson here for importers to have a long hard think about the long-term implications of their actions on Australian industries.

It appears that, for the first time ever, for the September 2010 quarter, that Australia became a net importer of food. Considering our resources, and despite the drought, it is amazing that as a country we are now relying on imports to feed us. We know that within our own industry we are losing processing capacity to handle pulp and juice apples. This is despite the fact that Australian apple and pear growers are dumping fruit while quantities of imported apple juice concentrate continues to increase.

It was interesting to hear that the NSW Farmers Association has called for a register of foreign owned farms as, by all media reports, it appears that foreign investors have a far greater interest in our prime rural properties than we do. A recent article in the *Sydney Morning Herald* by Paul Myers, a previous editor of *The Land* newspaper, highlighted recent purchases of land by foreign investors that were under the $231 million threshold that is required before such a purchase needs federal government approval. Mr Myers stated, "that unlike media, telecommunications, transport and defence equipment, rural land and food production – or food marketing and processing for that matter – are not part of 'a prescribed sensitive sector' for foreign investment".

Mr Myers continued, "Such trends should set alarm bells ringing in a country that has lost control of most of its food marketing and processing". Maybe the issue of food security will now start to gather more interest and activity and come under scrutiny before it is too late.

Congratulations

Congratulations are due to APAL fellow director, Kevin Sanders, who won the 2010 Hugh McKay Future Farming Award. The Victorian Department of Primary Industries provides this award for excellence and innovation in agricultural science. Kevin's award was in recognition of a unique approach to apple production that has enabled trees to bear fruit within eight months of planting and achieve high yields in the first two years. Kevin has worked hard on behalf of the Australian apple and pear industry for many years and his award is well deserved. Well done.

It was very pleasing for me to learn that Jock Laurie has been elected President of the National Farmers Federation (NFF). Jock has previously been the president of the NSW Farmers Association where he proved to be a great advocate for the Australian apple and pear industry in many of the issues that we have had to confront.

Also congratulations must go to Richard Hawkes who was recently awarded a Horticulture Australia (HAL) 'Young Leaders' award. Richard works as the Technical Manager within APAL with his prime responsibility being the smooth running of the Future Orchards project. *(See APAL News)*

A sure thing for 2011

The one thing that is for certain during 2011 is that I will be retiring at the 2011 APAL annual general meeting that is scheduled for early August and then it will be time for others to take over.

I would like to thank everybody who has made contributions to our industry during 2010. It has not been an easy year and I am sure that 2011 will not be any easier.

I trust that you all have a safe and merry Christmas and a happy New Year. ■

Richard Hawkes - Young Leader Award

APAL Technical Manager Richard Hawkes was recently recognised with the Young Leader Award at the Horticulture Australia Limited (HAL) Awards held in Sydney.

Richard has continued working on his family vegetable property on the Mornington Peninsula, south of Melbourne, while working at APAL and it is partly for this work that he won the award.

The award stated that his progressive approach to farming and his contribution to the local community mark him as a future leader in the national horticulture industry.

In 2006 Richard undertook a study tour with APAL, visiting orchards across Europe. The main focus of the tour was to gain an understanding of the different growing methods used and how growers could improve their productivity.

Richard also participated in the AUSVEG grower tour to Israel, Berlin and Spain in February 2010, which included attending the 2010 Fruit Logistica event in Berlin. He was a valued member of the tour group and his reason for undertaking the trip was to utilise resources on the family business more efficiently, as well as to learn about new innovations in the marketplace, allowing him to better strategise on behalf of his family's business.

Richard has a Bachelor of Agricultural Science degree from Melbourne University and he received a scholarship to participate in a youth exchange program in Washington state, USA.

The main area of focus for the trip was on production and business management skills required for large scale orchard operations. His responsibilities in the family business include planting the crops and varieties grown as well as scheduling planting and sale times. He is also responsible for the crop monitoring and spray program. ■

APAL meets politicians in Canberra

APAL Chair Darral Ashton and General Manager Tony Russell recently met with government and opposition politicians in Canberra, including more than an hour meeting with the Minister for Agriculture, Joe Ludwig, and a shorter meeting with the Minister for Trade, Dr Craig Emerson.

Both Ministers reinforced their view that Australia would remain committed to the WTO process and they would not turn back the clock on Australian's global trade participation.

Other meetings were with the shadow Minister for Trade - Julie Bishop (whose father was an apple orchardist in South Australia), Shadow Minister for Agriculture, John Cobb, and the newly elected member for Riverina, Michael McCormack.

APAL was able to alert the members to the major issues facing the apple and pear industry and in particular, what are the possible negative outcomes of apples being imported into Australia for the first time in 80 years.

The meetings were a very positive first step in building relationships with politicians who have the potential to influence the overall environment in which the apple and pear industry operates. However, no promises were given by the politicians on what sort or level of support they would give the industry.

Staff from lobbyist firm Carney and Associates were present at the meetings as well. Following the meetings, letters of thanks were hand delivered to the members of parliament with whom APAL met. In part, the letter stated:

"It was particularly pleasing that we saw evidence over a number of meetings that, at the political level, there is a strong bipartisan support for our industry and for the local/ regional communities which rely for their viability on profitable apple and pear markets."

The letter included background details on a number of issues that were raised during the meetings. The letter was part of APAL's ongoing effort to develop strong relationships with relevant federal politicians and have them aware of the significant issues the apple and pear industry is facing. ■

Ag Minister Joe Ludwig.

Meeting with South African research managers

A South African research administrator is impressed with the advances that have been made in the Australian apple and pear industry.

Tony Russell and Technical Manager Richard Hawkes met with General Manager of the temperate tree fruit research organisation in South Africa, Hugh Campbell, along with a director of that organisation, Stephen Rabe.

Hugh Campbell has made many visits to Australia to see what is happening in the pome fruit industries. He expressed how impressed he was with the developments that have occurred here, particularly with the focus on improving orchard productivity.

"Australia has made enormous progress over the past 15 years. In fact what you are doing here is more relevant to us than what is happening in New Zealand."

On that basis, Hugh intends to bring a group of South African orchardists to Australia on a study tour, rather than go to New Zealand. ■

Presentation to Productivity Commission hearing into rural research funding

APAL presented arguments to a Productivity Commission (PC) hearing that there is little justification to change the current R&D funding arrangements.

The hearing was told that APAL was disappointed the PC recommendation did not provide an assessment of the impact their recommendations would have on industries and their levy rates, and what impact reduced levies could have on the future productivity of Australian agriculture.

It was stated that there are many features of the current Horticulture Australia Ltd (HAL) model that are worth keeping, such as the compulsory levy, research and development funded through voluntary contributions, the dollar-for-dollar matched funds where the government matches grower's levy contributions for research and development, the cross-industry program and grower representation in decision making.

The PC was told funds to create Rural Research Australia, which aimed to conduct more 'public good' or across agriculture programs, should come from the government, and not be taken from rural industries.

The apple and pear industry supports the reintroduction of research activities undertaken by the now disbanded Land and Water Australia.

Another point made to the PC was that, while investment in rural research by government had yielded direct benefits to rural industries, the general community had gained benefits as well, particularly environment and social benefits.

Going forward, the two major pressures of climate variability and change, and food security were issues that the community at large should fund and that work not be left to growers alone.

Meanwhile, a written submission to respond to the Productivity Commission report into rural R&D was submitted on 26 November. ■

Tasmania

The FGT 2011 Farm Gate Guide was launched on 29 November at Perfecta Cherries in Ulverstone. There was an increase in entries again this year and FGT have already received enquiries for the 2011 issue. FGT's annual golf day was held on 3 December and sponsors were very generous again this year with a large number of prizes on offer to the many teams who played.

MRL Bulk testing will commence on 13 December. Details of sample dates and testing forms have been distributed to all growers. Tapes and labels ordered are being distributed to growers by Karen Watson.

FGT's Business Development Manager has been involved with the Primary Industry Biosecurity Action Alliance group (PIBAA) and facilitated a meeting in Campbell Town in November with the manager of the Department of Primary Industry's Biosecurity section. As a result, PIBAA has been invited to participate in developing an upgrade of the State Biosecurity Strategic Plan. The Business Development Manager and the Industry Extension Officer also attended a biosecurity training day in Launceston during November.

The Business Development Manager has also raised the industry's concerns in relation to the reported closure by the Government of the post-entry Quarantine Station located south of Hobart in Kingston. The station is an important facility for a number of horticulture industries its closure would have a devastating effect on many Tasmanian industry sectors which rely on the centre to allow the entry of plant materials into the state to introduce new commercial varieties and new breeding materials. FGT continue to pursue clarification from the Government as to the reported closure and what alternative facility may be made available.

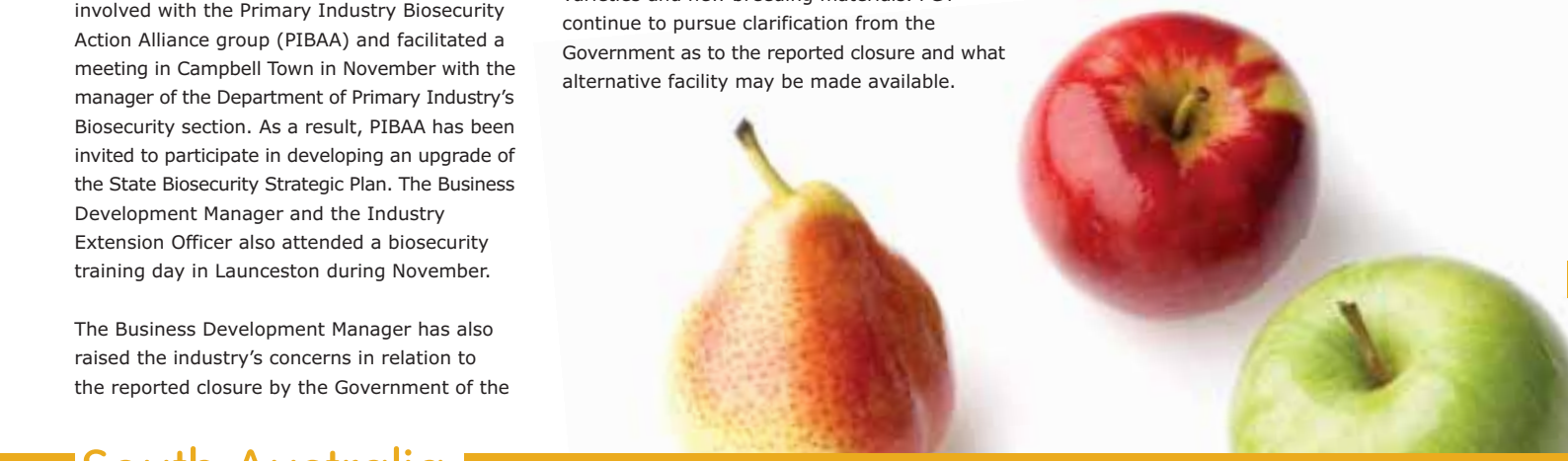
> "Industry concerns have been raised in relation to the reported closure by the Government of the post-entry Quarantine Station in Kingston"

Tasmania continues to experience a mix of warm days followed by 2 or 3 days of much cooler temperatures and recently some quite heavy rain. The threat of frost appears to be over or at least much reduced.

Events to remember

- 25 February: Pome fruit night seminar - FGT office and end of season debrief for cherries/stone Fruit
- 13 May: FGT annual conference
- 31 July 2011: Annual Apple & Pear and Cherry Growers' Conferences, Adelaide

Sally Tennant
Fruit Growers Tasmania



South Australia

Here in South Oz we've just experienced a slightly cooler and dryer October than average. Generally, we've had good blooming conditions with enough windows of fine weather to complete spraying operations. But, the just experienced long cold winter triggered quite a shortened bloom period, which was also two weeks later than usual.

November to-date continues to be slightly cooler than average and - thankfully - nothing like the corresponding period last year when Adelaide experienced eight consecutive days above 35oC, which sealed our hottest run of November weather since records began in 1887.

Bloom on the apple trees has been patchy at best, and bee activity has been reportedly light. In these circumstances, growers have been quite tentative with their spray thinner use. Heavy shedding of fruitlets has been noted even where primary thinners were not used. Some growers report setting a good crop whereas others report a practical wipe out, all in the same district. Time will tell for the apple crop. Pears however, have bloomed heavily across all districts, giving pear growers much more optimism for a good season (much needed, after the disaster of last season).

> "Time will tell for the apple crop. Pears however, have bloomed heavily"

Happily the markets are stronger for apples and pears, showing sustained and strong sales through mid October and into November. All varieties and lines are selling well, even smaller fruit, with the exception of Grannies which continue to be sluggish. High-red-coloured strains of Cripp's Pink and Gala continue to achieve the highest returns. Pear stocks are now rapidly depleting due to limited supplies. The Murray Darling Basin Authority's Basin Plan proposes 27-37 per cent cuts to irrigators' entitlements. If these reductions were applied there would be a major impact on the SA fruit growers and the Riverland community generally. Many Riverland growers have voiced complaints that the plan contains no recognition for already demonstrated water use efficiencies adopted in South Australia, such as piping-in of open channels, ground moisture monitoring and use of drip irrigation. The Association will be responding to the plan on behalf of our effected grower members.

Just to reiterate that the Apple and Pear Growers Association of SA is now at Adelaide-Lobethal Road, Lenswood. The office is staffed two days a week (Tuesday and Wednesday) from 8.30am to 4.30pm. T: (08) 8389 8300, M: 0417 842 558.

Greg Cramond
APGA of SA

New South Wales

"A lot of interest is being shown in the Future Orchards business development program"

What's the old saying – "It never rains but it pours". This certainly has been the case with all the growing regions in NSW. In previous years if we received 20mm it was a big deal. Nowadays we have all become blasé as we empty out 40–100mm per week. In spite of the cold weather and rain the fruit set in most districts appears to be good although cherries and apples on exposed blocks in Orange have suffered damage from the snow and wind chill late in October. The continuing weekly rain is making cherry growers nervous as they move closer to harvest.

The domestic market has taken a significant price rise especially for red fruit and this will lead on to a much smaller carryover of old seasons fruit into next year, so let's hope the market remains firm for the new season.

The Murray Darling Basin Authority roadshow has been meeting with some very vocal irrigators and councils during the NSW leg of their travels so hopefully some notice will being taken when it comes to their final recommendation. The new Future Orchards program is now underway with a lot of interest shown in the business development program which will enable excellent crop/block comparisons to be made.

NSW Apple Promotion has been very active under the guidance of Peter Darley, NSW Farmers Association horticulture section, and will provide 3200 apples for the Sydney Children's Christmas party for disadvantaged children it will be held at Rosehill Racecourse on Wednesday 1 December.

Orange apple growers have supplied apples to the Good Shepherd School at Plumpton for the children to munch on when they have finished their walkathon. Also apples have been provided to St. Vincent De Paul soup kitchen and Anglicare food parcel distribution. Hopefully all this will help reinforce that apples are a healthy alternative. There seems to be a break in the weather so I am off to chase the dreaded black spot and codling moth, so have a Happy Christmas and a prosperous New Year.

David Gartrell

Orange apple growers supplied apples to the Good Shepherd School at Plumpton for the children to munch on when they finished a walkathon.

Queensland

"OrchardNet enables growers to actively manage their orchard business block-by-block"

The first orchard walk for the latest program drew a crowd in early November. Approximately 20 growers attended to hear from Ross Wilson of AgFirst and Stephen Tancred from Orchard Services on a range of topics including managing internal browning, monitoring your crop load and getting the most out of your orchard.

Richard Hawkes of APAL and Ross Wilson also gave a demonstration of OrchardNet® which is the computer program APAL and AgFirst are using to help growers benchmark production and compare each block on their farm with other growers confidentially. The program enables growers to actively manage their orchard business on a block by block basis. Those who attended the session were impressed with the program and it is hoped that quite a few Stanthorpe growers will elect to be involved.

Depending on the number of growers wanting to be involved, John Wilkie from Agri-Science Queensland and Julie Moore from Growcom will arrange another information night to refresh growers on how to use the OrchardNet program. I'd like to advise everyone that the Growcom Brisbane office has now moved to 68 Anderson Street, Fortitude Valley. Our postal address, emails, phone and fax numbers will remain the same. From Growcom and all the growers in Queensland we'd like to wish every-one a happy and safe Christmas and New Year.

Julie Moore
Growcom

Western Australia

"The government's new water license and the ERA pricing proposals are causing concern to irrigators in the South West"

Despite the very dry season that WA has experience, fruit set overall looks good, especially for Fuji and Granny Smith. Royal Gala and Pink LadyTM look normal and in some cases Sundowner appears to be on the lighter side. The dry season has had one benefit. There have been very low pest and disease pressures noted in orchards and this has been confirmed with DAFWA IPM reporting.

Thankfully, we did have good rainfall in the Donnybrook area in mid-November and small amounts of rain occurring almost weekly over the last couple of weeks in Manjimup. Despite the rain, DAFWA has been delivering a 'dry season response' grower education program aimed at water conservation and efficient use of water. Temperatures are expected to be warm for the second half of November.

The WA market has shortened dramatically in the past two to four weeks and growers with quality fruit are experiencing great returns from the market. On another matter, the government's new water license and the ERA pricing proposals are causing concern to all irrigators in the South West area.

Jonathan Cutting
Fruit West

Continued over...

Victoria

"Market prices are holding up and some fruit is becoming scarce"

Victorian growers have experienced their wettest spring for many years and with full allocations in the north of the state, prospects of a good crop are the best for a decade.

Market prices are holding up and some fruit is becoming scarce. Recent Pink Lady™ prices have been approximately 60 per cent up on the same time last year. The higher prices are a function of coolstore stocks and less competition from out-of-season imported fruit. Pears in particular are becoming scarce and could be in very short supply by the time the harvest starts.

The Murray Darling Basin Commission's plan has continued to be a major topic of discussion amongst growers and the community in the northern part of the state. Fruit Growers Victoria (FGV) has been surveying growers to get accurate information for its submission. Inside information from the corridors of power suggest that this will be a long debate.

Some of the hard working volunteers in the VicFruit schools program have recently become movie stars. They have been videoed in action to capture their expertise so that others can learn from their presentation to Prep to Year 2 schoolchildren. FGV has expanded the reach of VicFruit over the last year and plans are on the way to ensure even more children get an education in apple eating. More volunteers are welcome to join the dedicated crews who ensure the next (and current) generation of apple connoisseurs.

The Victorian Cherry Association and FGV have worked closely for a number of years and, with the retirement of Tony Allen, the administration work of VCA will now be done at the FGV office. Both organisations will remain totally separate but the sharing of administrative resources will help keep costs down for both groups.

John Wilson
Fruit growers Victoria

Quarantine stations under review: Planning for the future

Dr Gordon Brown, Technical Editor – Apple and Pear

In modern orcharding, profitable and successful apple, pear and stone fruit orchards rely on growers planting the most up to date cultivars on a regular basis. Many of these valuable cultivars are sourced from overseas and after importation and prior to release to industry these have to be grown for three seasons in quarantine facilities and tested to ensure that they do not harbor any unwanted pests or diseases.

While this has restricted and limited our access to new cultivars, the process has meant that Australia is still free from many nasty exotic pests and diseases such as nectria canker, fire blight, sharka etc. If these were to become established within Australia they would cause major production problems and may see whole production regions become non-viable.

The Australian Government, through AQIS in the Department of Agriculture, Fisheries and Forestry (DAFF), operate the quarantine stations and perform the testing of the new tree introductions to ensure they are pest and disease free prior to release to industry.

A problem that AQIS currently faces concerns the leases of five of their quarantine facilities at:'

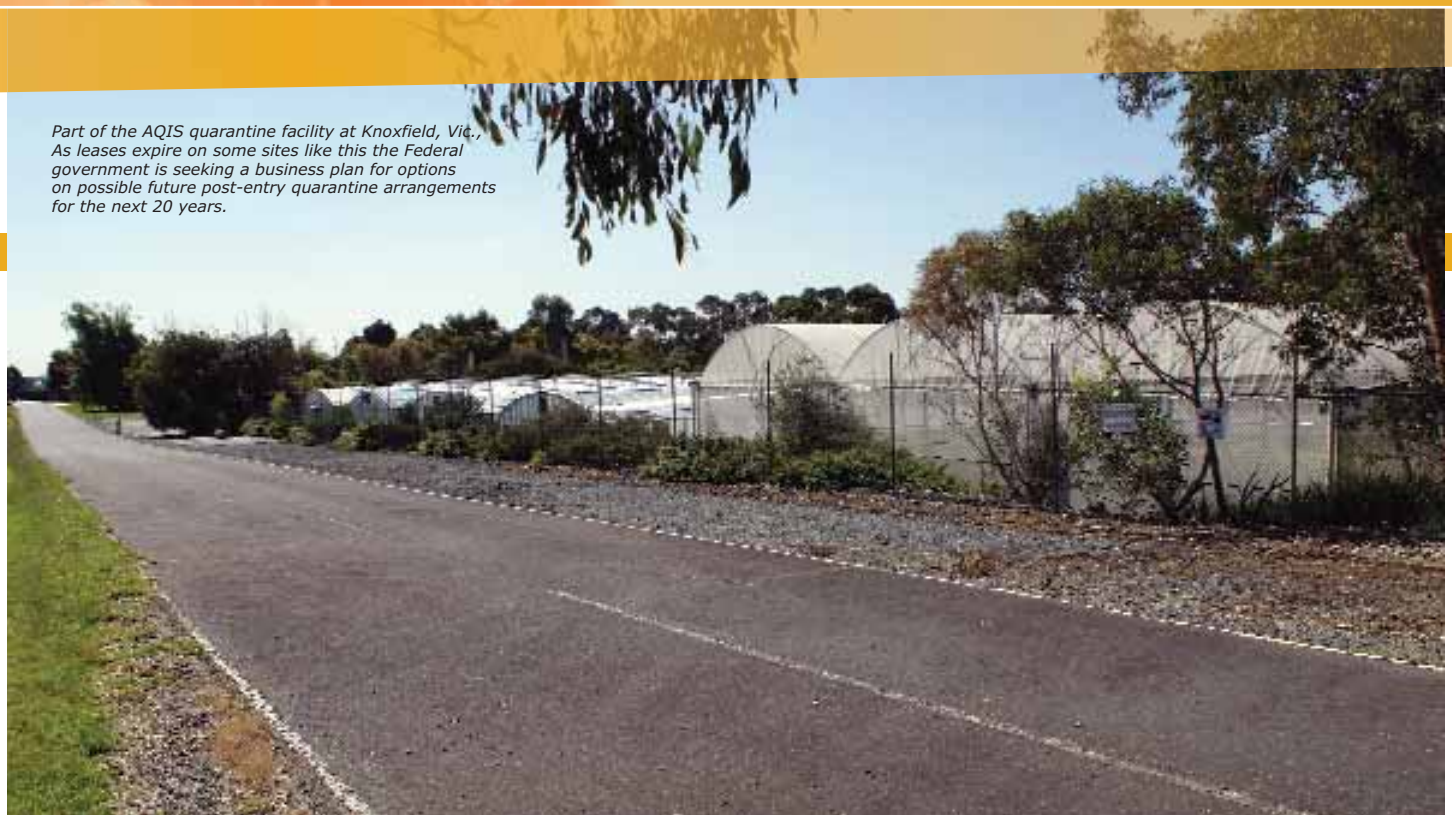
1. Eastern Creek, in New South Wales;
2. Knoxfield, in Victoria;
3. Spotswood, in Victoria;
4. Byford, in Western Australia;
5. Torrens Island, in South Australia

Leases on all these facilities are due to expire between 2010 and 2015. As some of these stations are responsible for the clearance of newly imported apple, pear and stone fruit varieties this has potential to impact on our industries.

Extensions of existing lease arrangements are either not possible or not assured.

As it is anticipated that replacing these facilities will require capital expenditure of greater than $30 million the federal government has required AQIS to develop and provide a business plan for options on possible future post-entry quarantine arrangements for the next 20 years. These plans will include the expected costs and benefits of potential options, including the estimated 'whole of life' operating costs for each alternative.

The advice is scheduled to be provided to Government in early 2011 and the business plans are currently being developed.
It is important to note that this planning is based on current importation requirements and does not study the importation process.



Part of the AQIS quarantine facility at Knoxfield, Vic.. As leases expire on some sites like this the Federal government is seeking a business plan for options on possible future post-entry quarantine arrangements for the next 20 years.

This process is merely studying options for facilities to carry out the current quarantine requirements.

AQIS has already consulted with industry, stakeholders and State governments in every state except Tasmania, South Australia and the Northern Territory to determine the long term user requirements for future facilities, which will in turn guide the development of options for future facilities. In determining preferred options, the planners are gathering a range of data and considering factors such as project, construction and biosecurity risks and impacts, environment, heritage, location, site availability, cost, and critically, future biosecurity needs etc.

The options range from doing nothing, to full privatisation, to using Commonwealth owned and operated facilities and various options in between. They will also canvass possible relocation and consolidation of existing post-entry quarantine functions.

Any option presented for Government consideration will:

- satisfy existing policy and legislative requirements
- balance biosecurity management and priorities, community obligations and Government expenditure
- include consideration of cost recovery arrangements, and
- deliver best value for money over the life of the arrangement.

Additionally, based on discussions with biosecurity experts, industry stakeholders and interested parties, the following set of selection criteria will be used to identify any potential future location and sites. Any potential location and site must be at least:

- large enough to allow all the final elements to fit on the site/s with space for future growth should it be needed
- located outside any current or likely biosecurity risk exclusion zone
- located away from populations of species in quarantine
- located within easy reach of an international airport
- located to be geographically appropriate for species in quarantine with minimum requirement to create artificial environments
- located to have access to appropriate skills and support facilities (access to academic and research institutions and appropriate industry and communities).

This activity provides AQIS and industry with a unique opportunity to comprehensively plan for Australia's long-term future post entry quarantine needs.

For more information visit
www.daff.gov.au/aqis/quarantine/future-post-entry-quarantine-arrangements. ■

Graham Mason: Six generations in the Adelaide Hills

By Stuart Gray

Graham Mason represents the sixth generation of Masons who have farmed at Forest Range, in the Mount Lofty Ranges (Adelaide Hills) in South Australia. He is the third generation on the current orchard.

Graham's grandfather Cecil purchased the current block after it was divided into farm lots in 1912 after gold mining was finished in the district. He had to get rid of the big stringybark trees to plant apple trees but to hold the family over, he grew raspberries and strawberries until the apple trees were old enough to bear fruit.

Cecil purchased more blocks to have about 16 hectares of orchard by the time Graham's father Harleigh and Uncle Ashley took over in the 1950s. Harleigh and Ashley purchased more land and gradually, Graham and brother Stephen and cousin Noel took control of a 20 hectare operation. Graham said the last 10 years has seen a radical change to their orchard system.

"When I came back to the orchard after leaving school, our plantings were 5.5 metres by 5.5 metres. With the next planting, we doubled the tree density but - in 1998 - we started using dwarf rootstocks and planting trees a metre apart in 4.5 metre rows. Now, a high percentage of the orchard has young trees planted in high density blocks"

"We do have a relatively hilly block so we are limited with row spacing. Our narrowest rows are 3.75 metres. In our most dense block, tree spacing is 0.5 metre but I prefer a spacing of 0.75m x 3.75m which gives us 3500 trees a hectare. About 15 per cent of the orchard is on V trellis at 5500 trees per hectare. We have about 60 per cent of the orchard on M9 rootstock and most of the remainder is on M26. We had trouble finding enough M9 so we grew our own in a nursery we established on the property," Graham said.

"Using dwarf rootstock imposes a very different management system compared to the old wide spaced trees. You have to have them well supported and the trees have to get the right amount of water and fertiliser to produce good quality fruit. You can crop the tree too hard and end up with small fruit which is of little value, so we are all the time trying to balance colour, size and firmness," Graham said.

Netting is becoming a necessity to protect fruit from birds. "We have a hectare of cherries and that is permanently netted. However, last season, we had to use drape nets over apple trees for the first time. We were invaded by huge numbers of rainbow lorikeets and we had to act quickly to protect the crop."

"It seems to be a problem that is getting worse every year and I think a lot of growers are underestimating just how much fruit they are losing to bird damage" Graham said.

Partnership

There are five partners in the Mason business. "Harleigh and Ashley are still involved and they do the business and paper work and truck driving during harvest, and bulldozer work respectively.

"My brother Stephen is very good at mechanical work and manages the irrigation and maintenance and repairs of tractors, vehicles and equipment such as irrigation pumps."

"My cousin Noel is a skilled nurseryman and with young tree management. Noel also looks after the fertigation. My role is to look after staff and casual labour and the spraying program and also QA.

"We really are conventional growers but we do follow IPM precepts. We belong to a pest and disease monitoring group and we do aim to reduce the number of pesticide applications as much as possible while still maintaining orchard health and producing good quality fruit.

"One issue we face in the Adelaide Hills is many orchards are now surrounded by lifestyle blocks and the owners get concerned at the amount of spraying that is required. However, not all spraying is to apply pesticides. We do a lot of foliar application of calcium or other nutrients and you would not necessarily know that looking in from the outside."

"We have made a continuous effort to know our neighbours and we do get on with them very well. I believe that effort has paid off," Graham said.

Rosy Glow

The variety mix of the Mason's orchard, in order of volume is 'Rosy Glow' (PBR), high coloured 'Gala', 'Fuji', 'Granny Smith' and a handful of 'Red Delicious' and 'Golden Delicious'. It is not surprising that 'Rosy Glow' is their most grown variety; it was discovered by the Masons.

"We were walking through the orchard one day in 1997 and the colour of the fruit on this branch on a 'Cripps Pink' tree was outstanding, you could not miss it. We immediately saw its potential and budded some rootstock from the branch straight away. The second generation from that budding proved to be stable and by

this stage, we had the variety in the hands of Graham's Factree to commercialise it. We had previously discovered an interesting striped 'Fuji' and had it IP (intellectual property) protected. We worked with Graham's Factree on that development and, even though that variety fizzled out as the market changed to wanting block coloured 'Fuji', it was the process by which we developed a working relationship with Graham's Factree.

"We could see that 'Rosy Glow' had commercial potential as is could ride on the back of the Pink Lady™ name and success. Pink Lady itself was very challenging to grow and get good coloured fruit on this block. We had to do leaf stripping and summer pruning which became enormously expensive.

"'Rosy Glow' produces good color fruit without that effort and cost. You can still grow poor coloured 'Rosy Glow' if you don't have the right systems and management in place. We still have to think colour, but not as much as with Pink Lady," Graham said.

"It been pleasing to see 'Rosy Glow' has gained quite good worldwide acceptance. We want to support the Pink Lady name and reputation because the success of 'Rosy Glow' rides on the reputation of Pink Lady. I do find 'Rosy Glow' a great apple to grow and it gives me a lot of satisfaction to see awesome coloured fruit on the tree. We consistently produce more than 50 tonnes a hectare with often greater than 90 per cent packout.

"Well managed, 'Rosy Glow' can be a very profitable apple. Obviously, market price is still the most important factor in profitability, but we find that we get a better per bin return from 'Rosy Glow' compared to the other varieties.

"That gives us a lot more satisfaction than the fact we discovered the strain; we didn't breed it - we were just lucky enough that the mutation occurred on our orchard," Graham said.

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Graham Mason: Six generations in the Adelaide Hills

Growers, not marketers

The Mason operation has always concentrated on growing fruit, not marketing it.

"We used to pack our own fruit, but a long time ago. When apple waxing came in, we gave up on packing. But we never did our own marketing. I can't see us changing that situation in the future" Graham said.

"We do send out fruit to a number of different packing sheds who also do our marketing. We distribute fruit to the different sheds based on what size and variety suits the different markets each shed has. Each shed has its own market and we try to match our fruit to those markets. I suppose it is a marketing strategy, but we are not skilled in the day to day aspects of marketing; we have never been involved with it."

Future Orchards 2012

Graham has been a regular attendee at the Future Orchards 2012 sessions and learnt a lot. "The most important thing was the simplified tree training and pruning. It was presented in such as straightforward way which also made it easier for me to teach people how to prune. It was never easy to teach people how to prune a vase shaped tree."

"I think the simpler system has improved the quality of our buds and that helps fruit quality. I also think we have more to learn in the area of tree nutrition, particularly on how to increase yield, size and quality all at the same time."

"Other things that impact are new diseases that keep cropping up. This year we had Altenaria for the first time so we have to learn how to manage that. And really, every year is different. Weather, pest and disease pressures, flowering, fruit set, thinning are different from year to year so there are always challenges".

"We have started consulting an orchard advisor to help us with our decisions as it becomes more and more critical to make the right decisions and avoid mistakes," Graham said.

Imports and water

Graham said the prospect of apple imports is creating a lot of uncertainly in the business. "While in one sense, it is business as usual but with apple imports not far off, we can't confidently make business decisions because of the uncertainty. We will survive with good prices and overcome the problems we have with birds, pests and diseases etc, but we are a bit under a cloud with the prospect of imports.

"Another major issue we face in the Adelaide Hills is we cannot expand our area of irrigation nor can we use more water than we were using in 2004 when a moratorium placed restrictions on water use. I believe there is enough water to allow for some expansion, in fact I don't believe there was a problem until the government made one for us.I see it as an unreasonable restriction on a business which needs flexibility to grow. As a consequence, we are largely under-irrigating," Graham said.

On a personal note, Graham is married to Alison and they have three children Victoria 7, William 5 and Edward 2. Graham enjoys fishing and working in their home garden. ■

Growing your market

By Ross Wilson, AgFirst


Ross Wilson

In the last issue of Australian Fruitgrower we covered important things to do to grow your market. The list included; identify the market requirements for each block, how to get the right fruit size, what is the optimum crop lead and setting crop load targets. In this article, we look at more parameters that will help you grow your market.

Colour

Most Australian markets pay premiums for good fruit colour. The colour of the skin is an important quality attribute of most varieties. Colour development is, in principle, genetically determined but, in addition, cultural and environmental factors play a significant role.

Replacing the lesser-coloured apple varieties with better, high-coloured strains, e.g. 'Rosy Glow', 'Buckeye' and 'Brookfield Gala', will have the greatest impact on colouring in the orchard and are clearly the good long term option. However most orchardists are unable to afford the cost of full scale redevelopment and therefore need to use all techniques available to maximise fruit colour on many existing blocks. Marcel Veens' paper (Veens, 2009) on the Future Orchards (FO) website is another great read.

For a number of fruits, such as apple, peach and pear, direct light is required for anthocyanin synthesis. This means that good pruning and thinning are critical to ensure the bulk of the fruit are grown in sufficient light and are not carried excessively in bunches where inter-fruit shading can prevent colour development. To get the required light on the fruit, some form of vigour reduction is often necessary and sometimes summer pruning or even leaf stripping is necessary on more vigorous trees. Leaf number per fruit is an important factor involved in colour development in the apple skin. A sufficient accumulation of sugars in or near the fruit is essential. At least 25 to 40 leaves per fruit (depending on the variety) have been found to be needed for the production of high-quality, high-coloured fruit. An excess Leaf Area Index (LAI) is also negative, as explained by Middleton (Middleton, 2007)

With respect to light quality, it has been shown that ultraviolet light and blue violet light are important for fruit colouring. The usefulness of ultraviolet light explains the production of well coloured fruits at higher altitudes. The usually lower night temperatures at greater altitudes can also favour blushing due to lower respiration rates during the night. In hot climates, night temperature cooling with sprinkler irrigation has been shown to be effective.

The combination of sunny days and cold nights during the period shortly before harvest is particularly important in stimulating red colour development. This is proven in research done under controlled environmental conditions on apple trees.

High nitrogen (N) contents reduce fruit reddening. On the other hand, N deficiency favours colouring. Potassium (K) is regarded as a positive factor in the fruit colouring, as is phosphorus (P) which also increases the concentration of flavonoid compounds (this gives the red colour). Any nutritional deficiency that prevents the plant producing carbohydrate and anthocyanins can be detrimental to fruit colouration. Leaf testing to confirm plant nutrition status is very useful so that you can add elements that are in short supply.

Reflective cloth is a good product to use to get more light in the bottom part of the trees if your natural colour development is lower than target. Reflective mulches can increase foreground colour on average by 10 per cent of the surface area of the fruit. While that might not sound a lot, it can be highly significant. Extended periods of 30°C and above reverse the accumulation of anthocyanins (red coloured substances) and may cause sunburn. In some Australian climates the reflectives, particularly during the hot parts of the year, may be detrimental.

Market timing

Market timing can be absolutely critical to the profitability of certain blocks of trees within your orchard. Some growing regions and even blocks within an orchard are capable of producing early fruit, but don't have good storage quality. In these cases setting the block up to maximise earliness will be critical.

In other cases the best markets might be in October-December so early harvest is not the driver, the driver becomes growing fruit that has excellent storability.

In both the above scenarios we should still all be trying to maximise eating quality for whatever the selling season. There is nothing worse than growing early fruit that tastes like cardboard and then having no customers to buy all your later fruit. On the other hand, there is no point placing high SPI (starch pattern index), low Brix, low pressure fruit into long term storage. This will also result in very disillusioned customers.

Harvest maturity can be manipulated by:

- Crop load has a huge impact on harvest timing. The heavier the crop load, the longer it will take to reach maturity. At excessive crop loads colour development is negatively affected, meaning that fruit can't be harvested early and certainly will not be able to be harvested at an SPI or pressure level that will enable good long-term storage.
- Dormancy breakers can advance bud-break and hence bring harvest forward.
- Trunk girdling between petal fall and four to six weeks prior to harvest will advance maturity. Response is variety and rootstock dependent. 'Royal Gala' is fairly responsive, with four to seven day harvest advancement possible. High vigour rootstocks are more responsive than low vigour rootstocks.
- Ethephon application at commencement of ripening process. Response range in 200 to 400ppm or higher dose rate. Higher rates adversely affect post-harvest storage and shelf life, so are not recommended. Anecdotal evidence indicates pre-harvest ethephon application suppresses fruit sizing.
- Harvest maturity can be delayed by application of Retain® three to four weeks prior to anticipated harvest date. 'Royal Gala' is particularly responsive. A delay of up to seven to 10 days in harvest maturity is possible under optimum conditions. Fruit continues to size following Retain application.

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Growing your market

Eating quality (fruit firmness and Brix)
Optimising the eating quality of your fruit is probably one of the most important targets you should be aiming for. Eating quality is best measured currently by Brix and pressure. There are vast numbers of scientific papers showing that fruit firmness and sugar levels are strongly determined by crop load as the table above shows:

Brix and pressure increases of up to 18 per cent have been measured in the above data due to reducing crop load. When we look at the grape industry, this should come as no surprise. They almost consistently lower crop loads to maximise the Brix levels of the grapes. Apples are no different. It is a simple carbohydrate balance. The tree is only capable of producing a finite quantity of carbohydrate. The higher the crop load, the less carbohydrate is available to each individual fruit.

However, crop load, although the most powerful, is only one variable that will influence fruit quality. Some of the other variables that can increase Brix and pressure include:

- **better light levels**
- **lower vigour**
- **cincturing**
- **partial root zone drying or deficit irrigation**

These tree manipulations are all attempting to maximise the carbohydrate flow to the fruit.

Better light levels: To grow a high quality consistent crop requires a Leaf Area Index (LAI) of < 2.5 or > 50% direct sunlight to hit the spur leaves close to the fruit. (see 'works cited' Middleton S, *Australian Fruitgrower*, Nov. 2010 p25). In a very dense canopy the fruit on the extremity of the tree might be good eating, but the fruit from the inside of the tree will be tasteless and soft after only a moderate length of storage.

Brix and pressure table:

Variety	Specific Crop Load (fruit/cm²)	Soluble Solids (Brix)	Fruit Pressure (kg)
Royal Gala	9.2	10.9	
Royal Gala	5.1	12.2	+0.5 kg f
Fuji	12.7	12.5	5.9 kg f
Fuji	8.2	14.7	6.3 kg f
Pink Lady™	15.4	13.3	7.5 kg f
Pink Lady™	5.9	15.2	8.8 kg f
Braeburn	Regular crop	10.9	9.6 kg f
Braeburn	Light crop	11.3	9.8 kg f

Lower vigour: In a high vigour tree, carbohydrates are needed to feed the growing shoots rather than being available for fruit. If we can reduce vigour but still have enough leaves, more carbohydrates are available for fruitlet carbohydrate supply.

Cincturing makes a cut down to the cambium layer, temporarily blocking the supply of carbohydrates to the root system. The carbohydrates that would have normally been distributed to the roots are now available for fruit. Hence, cincturing will tend to increase fruit size and Brix. As with all good things though, there is a downside. Starving your roots for a period of time can be negative in some situations.

Figure 4: Rosy Glow 4th leaf showing high foreground colour enhanced by Extenday™.

Partial rootzone drying or deficit irrigation implemented carefully can lower the flow of water to the fruit and not impact on fruit size. Anne Maree Boland presented a very informative paper in September 2009. If you need a reminder go to the paper on the Future Orchards website. (Boland, 2009). Brix is a concentration of soluble sugars. High water availability can dilute the sugar concentration resulting in lower Brix and, in extreme situations, poorly flavoured fruit. Too much water stress on the other hand can turn your fruit into a piece of wood. The skill, as always, is to achieve the best balance.

When you set up your block objectives in 2010-11 you need to be very mindful of our fruit Brix and pressure targets. Your own historical results and local experience will be your best guide on the likely result under different crop load levels and various manipulations.

Block VC40 ('Royal Gala', B & S Witchell, southern Victoria) achieved good Brix and pressure in 2010 at a crop load of 12.2 fruit/cm2 in 2010. With trees entering their 5th leaf this year, Shaun Witchell is conservatively increasing the crop load to 12.9 fruit/cm2. His expectation at that crop load is that Brix and pressure will be maintained. No major tree manipulation is required as the M26 dwarf rootstock is achieving a good vigour balance. If rainfall allows, Shaun will back off the irrigation three weeks out from harvest, however, up to that point he will ensure sufficient moisture to continue to grow this young canopy. ■

More efficient use of farm inputs key to growth

More efficient use of farm inputs is critical to ensuring continued productivity growth in Australia and New Zealand agriculture, according to CSIRO scientist Dr Michael Robertson.

In an address to the Food Security from Sustainable Agriculture conference in Christchurch, New Zealand, Dr Robertson said a sizable gap still exists between what farmers in both countries are producing and what is potentially possible.

"In most cases, agriculture in Australia and New Zealand has maintained consistent growth in production per hectare, per animal and per labour unit over the last 30 years across a range of industries from wheat to dairy," Dr Robertson said. "Much of this growth has resulted from increased use of inputs, such as fertiliser, fuel, feed, land and labour.

"In contrast, maintaining growth in coming years will depend on more efficient use of inputs. As researchers we now have a vital role in generating new technologies to meet the input use efficiency challenge and close the yield gap. Extension and adoption programs that take these new technologies onto farms will be crucial." Dr Robertson said the use of inputs in agriculture is constrained by many factors including: rising costs of key inputs like chemicals, land and labour; concerns about pollution; lack of land for expansion; decline in R&D investment into agriculture in Australia and New Zealand; increasing financial risks and climate change.

"The next 30 years will still see a revolution in the ways farmers collect and interpret information about what is happening on their farms and how they communicate with each other and with other key sectors of the industry, leading to new ways of improving production and continuing growth for our agriculture industries," Dr Robertson said. ■

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Consolidation at Lenswood reduces packing costs

Report by Stuart Gray

Lenswood Co-op has spent $6 million upgrading its equipment to develop a state of the art facility and even before the systems are fully settled, they have been able to reduce packing costs to growers by 20 per cent. The move will make a big impact on the Adelaide Hills apple and pear industry. Stuart Gray visited the upgraded facility.

At a recent workshop held by APAL, a group of industry people identified regional packing shed rationalisation as an important step to improve the overall efficiency of the apple and pear industry. Many of those people may have had in mind the changes at the Lenswood Cold Stores Co-operative Society in the Adelaide Hills.

General Manager of Lenswood Apples, Michael Cox, said a number of pressures on their facilities at the Co-op forced the board and management to do some hard soul searching and number crunching to find ways to increase productivity but reduce the cost of packing to growers.

"Our systems had become inefficient and labour intensive and we saw that, without changes, packing costs would steadily increase, we estimated, by between four and five per cent per year. That would mean the $150 average bin packing cost in 2009 would be about $170 in 2012.

"The final push to make changes came when a major customer, Woolworths, wanted to move to selling punnets of apples and the Co-op was not set up to efficiently meet that request.

"So we went back to basics and asked 'what would be ideal for the Co-op, how much fruit would we need to process and would a major upgrade be worthwhile? Our throughput of 17,000 to 20,000 bins a year was not enough to justify a huge outlay so we contacted a number of the 10 packing sheds in the Adelaide Hills and asked them to consider a future with us.

"The sheds were Mark Joyce's Joysons Orchards, Plummer's Border Valley Orchards and Ashley Green's Hillview Fruits and, between them, they process about 22,000 to 25,000 bins a year. These growers and packers saw what we were offering was beneficial to them as well and with them on board, we had the throughput needed to justify the expenditure required for a major upgrade. This year, we will pack about 35,000 bins, which is about 65 per cent of the Adelaide Hills' apple crop. We do have the capacity to do 50,000 bins with a single shift all year-round. Obviously, we could do more with double shifts. We believe the 20 per cent reduction in packing costs we achieved this year, down to about $120 a bin, will be maintained for some time to come," Michael said.

New equipment

The following equipment was installed at Lenswood:

Pre-sizer: This water flume machine automatically sizes fruit to preset variables. The process removes waste fruit which means it is not packed or stored, which reduces costs. Marketing of the fruit is greatly enhanced by grading fruit to predetermined sizes and colour levels. This pre-sizer uses the latest technology and is a great improvement on the two existing pre-sizers in Australia which are older than 15 years. Only three staff are needed to operate the machine, which can easily pre-size 170 to 200 bins per day.

Tri-belt packing line: Operates to ensure a swifter packing line based on the pre-sized fruit. There is only one of these machines in Australia, and again the technology is significantly improved. Approximately eight to 10 staff are required on this line.

Speed packing line: An automated line that puts fruit directly into cartons or crates (via a suction lifting process that reduces bruising). This is the only machine of its type in Australia. Approximately five people are needed on this line.

Pre-pack line: An automated line to pre-pack fruit. No other packing shed in Australia uses this technology. This includes a flow wrap machine which is required to serve Woolworths, and increasingly the independent retailers. Approximately five people are needed on this line.

Carton erectors: To improve the efficiencies in erecting cartons and crates, carton erectors from Visy were installed.

Flow wrap machine: A flow wrap machine is required to flow-wrap punnets as pre-packs to serve Woolworths to move away from bags. All eastern seaboard suppliers to Woolworths already have these machines. Other retailers are also following this change to punnets. The flow wrap machine will form the end of the pre-pack line.

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The upgraded Lenswood Co-op packing facility is state of the art and hi tech.

Continued...

Consolidation at Lenswood reduces packing costs

Marketing

Michael said the move to bring the three packing sheds into the Co-op has changed the customer base of Lenswood.

"We used to supply about 50 per cent of the Woolworth's apple order in South Australia and Northern Territory, but two of the newcomers supplied Woolworths as well and we have retained those orders, so now we supply at least 95 per cent of Woolworth's apples in those markets. Woolworths represents about 55 per cent of our business," Michael said.

Another of the newcomers had a Coles contract so now Lenswood Co-op provides apples to Coles in SA.

"This represents another five per cent of our business."

"We supply two agents at the Adelaide Produce Market who in turn supply independent grocers and independent grocery chains. This represents another 20 per cent of our business.

"The remaining business is to the Melbourne market (about 10 per cent) and the Sydney and Brisbane markets (about five per cent).

"The remaining five per cent this year is taken with Pink Lady™ apples exported to the United Kingdom, though in the last two years, we did not export anything."

Michael said they had learnt and developed a lot with the new arrangements.

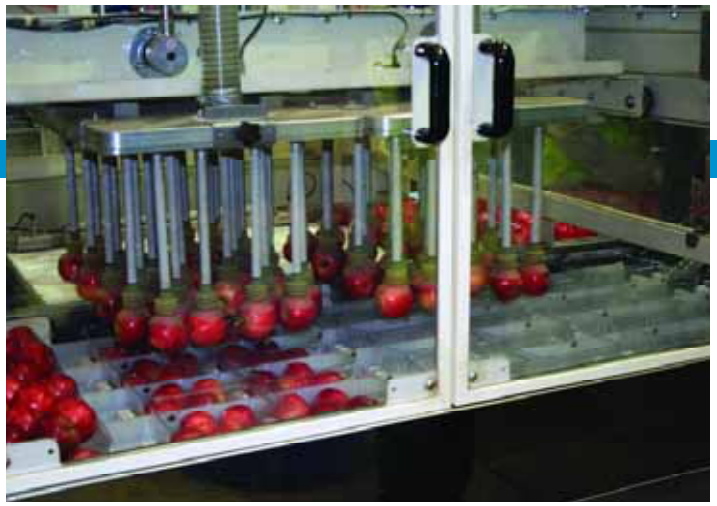
"We have sold more fruit into South Australia this year as the market has been strong, and that has allowed us to develop more personal relationships throughout the supply chain which has led to better service and the ability to create more options to provide fruit to markets.

"We don't carry as much packed stock but we are now faster to get orders to market. We also have a more accurate stock record and it is easier to pack a spot buy.

"And when we are exporting, we have halved the time it takes to fill a container. We can fill a container in one day compared to two days previously, and we now use less people," Michael said.

Benefits

While all the analysis done before the equipment upgrade showed that there would be significant benefits, Michael said the benefits they have achieved exceeded their expectations, and they are still gaining benefits as they bed down the systems.



"We have achieved benefits for the growers, for the Co-op and for the community at large. The most obvious benefit for growers is a reduction in packing costs of at least 20 per cent on last year. But we have been able to reduce marketing charges and create some savings by not storing unsaleable fruit as it is removed during pre-sizing. We have also made savings on transport costs with consolidated and better co-ordinated transport arrangements.

"The better handling capability means less fruit damaged through bruising and, with the increase in scale the new system has allowed, we are better able to access substantial markets with improved marketing processes. By improving our processes, we have freed growers to concentrate more on what they do best and this is, grow good fruit," Michael said. "For the Co-op, we have overcome some glaring inefficiencies and we still have room for improvement as we all get to better understand the new system. The new equipment has provided significant improvements in fruit handling and improved fruit finish.

"We have been able to consolidate supply to our major supermarket customer and bring Coles on board as well. We have also improved our marketing processes so fruit is sold at the right time in the right market.

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Consolidation at Lenswood reduces packing costs


Cam Stafford, Chair of Lenswood Co-op (left) and Michael Cox, General Manager

"We have more optimism about our ability to develop and supply export markets as well as we have access to more fruit and the ability to pack this fruit at a competitive price and with improved fruit handling. And I believe we have more confidence working with growers now to achieve quality standards and meet the commonly used quality assurance programs from the orchard to the customer."

Michael said the Co-op runs three to four field days each year that are available to all suppliers, no matter what their size.

"And we have an orchard development program to ensure growers have the best variety mix and we offer interest-free loans to growers who upgrade their orchards with new trees."

Michael said the community will also see benefits from the changes made at the Co-op.

"By closing three packing sheds and upgrading the Co-op system, we have made overall savings on water and power, even though the Co-op is using more than previously.

This means a reduction in the carbon footprint of the apple industry in the Adelaide Hills. I think we also have a stronger community focus and there are benefits for staff as they develop more skills and take pride in the quality of the fruit that we now present."

Michael said that the $6 million investment will be recouped in five to seven years.

"It is a state-of-the art facility and we are happy to show people through, particularly if they are considering consolidation of packing sheds, we are happy to share our experience," Michael said. ■


"They have been able to reduce packing costs to growers by 20 per cent"

Australian Pink Lady exports 2010

By Neil Offner, Pink Lady Australia

The Australian program of Pink Lady® apples continued in 2010. While the volume was a very modest 19 containers, one really positive development this year was that exports were made from three Australian production areas.

Fruit was exported in 2010 from Western Australia (through Craig Mostyn), South Australia (through Lenswood Cold Stores Co-operative) and Victoria (through Montague Fresh).

Most of the Western Australian fruit was sent in bulk format and this followed previous small volume shipments via Western Australian packer Newton Bros, and comprehensive technical and economic evaluation trials completed in 2009. The installation of latest technology pre-sizer grading equipment by Newton Bros has really raised the practicality and feasibility of bulk shipments to another level. The outturns as demonstrated in the trials and in 2010 were excellent and costs saved from the supply chain.

The Australian business was supported in the United Kingdom in 2010 through retail promotions in Marks & Spencer, Waitrose and Booths. Promotional activities comprised in-store demonstrations (M&S), front-of-store displays (Waitrose) and shelf barkers (Booths). Point-of-sale material highlighted Australian origin.

Pink Lady Australia was represented at the September Hong Kong Fruit Logistica Pink Lady stand by Neil Offner. A highly professional display was organised by APAL and the Association of Pink Lady Europe and a number of encouraging meetings held with Asian buyers. There is some focus now on Australia's near markets of Asia and the Australian industry is encouraged to engage in this development.

The Australian company, Craig Mostyn, has been granted the Pink Lady import master license for Singapore, Malaysia and Brunei. Australian growers, packers and exporters exploring opportunities in these markets should contact Craig Mostyn.

The 2010 AGM of Pink Lady Australia was held in Manjimup, WA, on Tuesday 9 November and the meeting included presentations from Andrew Dick (2010 export program), Neil Offner (promotions and the Apple & Pear Export Committee Exporter's Workshop) and Murdoch University (Vapormate research).

There is consideration being given at present to a change in the structure of Pink Lady Australia given the low volumes of export and the concentration of volume out of Western Australia. All-in-all an interesting year - as always - with Asia coming into more focus. ■

Table 1 *The number of infection risk events recorded from 1 September to 15 November over the past three seasons. Number is the average from four orchards near Swan Hill and three orchards near Shepparton.*

Season	Swan Hill	Shepparton
08-09	5	6
09-10	10	6
10-11	8	10

Brown rot: Infection risk and spray timing

By Robert Holmes, Simone Kreidl, Oscar Villalta, Mofakhar Hossain and Chin Gouk, DPI Victoria

The summerfruit and canned fruit industries are co-funding a project with DPI Victoria to develop and implement innovative and efficient ways of controlling brown rot.

The project is investigating key management strategies including:

- reducing the carryover of disease-causing inoculum from one season to the next,
- predicting when infections have occurred to optimise the timing of curative fungicides,
- understanding how the susceptibility of fruit to infection changes over the growing season,
- controlling pests (eg. *Carpophilus*) which encourage brown rot and
- predicting the potential for postharvest rot development in the supply chain

In this article we discuss recent work on predicting when infections have occurred, understanding the susceptibility of fruit to infection at different growth stages, the influence of *Carpophilus* on brown rot and fungicide resistance management to maximise the benefit of chemical controls.

Weather events and infection risk

The brown rot pathogens *Monilinia fructicola* and *M. laxa* infect during flowering, fruit development and postharvest, but in many cases the disease remains latent in the fruit until the fruit softens pre- or postharvest. Spraying when the disease becomes apparent would therefore be missing the critical infection period when a curative fungicide is effective.

For infection to occur three conditions need to be met:

1. The pathogen needs to be present, and this is nearly always the case, especially when the level of the pathogen in orchards builds nearer to harvest
2. The plant needs to be in a susceptible phase (discussed in the next section below), and
3. A period of sufficient fruit wetness needs to occur.

In this project 12 field sites have been established in the Murray, Goulburn and Yarra Valleys. Weather stations located at each orchard provide site-specific data of the wetness interval and temperature for an infection risk calculation. Over five seasons, a weather-driven infection risk model (Tate et al. 1995) has been evaluated.

Infection risk is calculated by multiplying the hours of leaf wetness by the mean temperature during the wet period. The infection index is expressed as 90-120°h = marginal risk, 120-150°h = slight risk, 150-180°h = moderate risk and >180°h = severe risk. Participating growers are sent text messages when a moderate or severe infection index occurs and they make the decision to spray according to the expected persistence of chemicals applied in the recent past.

To evaluate this approach, chemical applications at each orchard are plotted against the observed infection events and any unprotected periods identified. The number of unprotected events during susceptible stages is compared to the levels of postharvest infection found in the orchard. In the Goulburn and Murray Valleys, where infection periods are less frequent, well timed fungicides - targeting infection risk events - suppressed infections and growers demonstrated continuous improvement in rot control over two to four seasons, as they adopted responsive, rather than calendar spraying.

In wetter regions however, and especially this season, the infection risk periods have been more frequent and continual protection through calendar spraying is looking equally effective. In this current season, predicted infection events to date have been far more frequent than in the past few seasons (*Table 1*).

This trend is likely to continue until January 2011 and possibly beyond for all eastern and south-eastern Australian districts (http://www.bom.gov.au/climate/ahead/rain.seaus.shtml). In such a challenging year chemical choice, rotating chemical activity groups and postharvest dipping need to be more carefully considered.

Phases of susceptibility

It is a common belief that green fruit are more resistant to brown rot infection than fruit approaching harvest, but this is not totally correct. While fruit approaching harvest are highly susceptible, so too are fruitlets up until the pit hardening growth stage. Depending on variety, pit hardening occurs about six to 10 weeks after bloom (*Figure 2*). We are continuing to research this phenomenon in both nectarines and peaches to gain a better appreciation of the need for more judicious spraying prior to pit hardening.

Influence of Carpophilus beetle populations

In the 2008-09 season, "attract and kill" traps for control of *Carpophilus* beetle were deployed in two orchards and beetle numbers monitored using synthetic co-attractant monitoring traps and assessed weekly throughout the season. At harvest, fruit were collected and incubated from both treated (attract and kill) and untreated blocks (monitoring traps only). The level of brown rot occurring in harvested fruit 7 and 12 days after commercial harvest was compared to beetle numbers in the treated and control plots.

Large numbers of *Carpophilus* beetles were present in the trial orchards throughout the season. Trap catches dropped sharply in the treated blocks after deployment of "attract and kill" traps and remained low until the end of the season showing that this is an effective way of reducing the beetle population. Controlling *Carpophilus* significantly reduced postharvest rots (*Figure 3*).

Fungicide resistance management

More than 200 cultures of the two pathogens *M. fructicola* and *M. laxa* were collected from diseased flowers twigs and fruit over five years. ▶

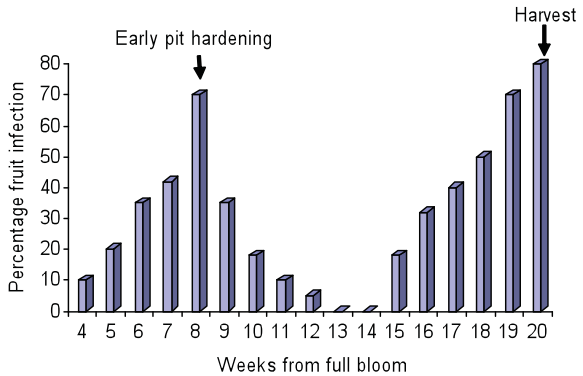

Figure 2 *The relative susceptibility of peach fruit (percentage fruit infection) over the growing season (adapted from Biggs and Northover 1988; Mari et al. 2003).*

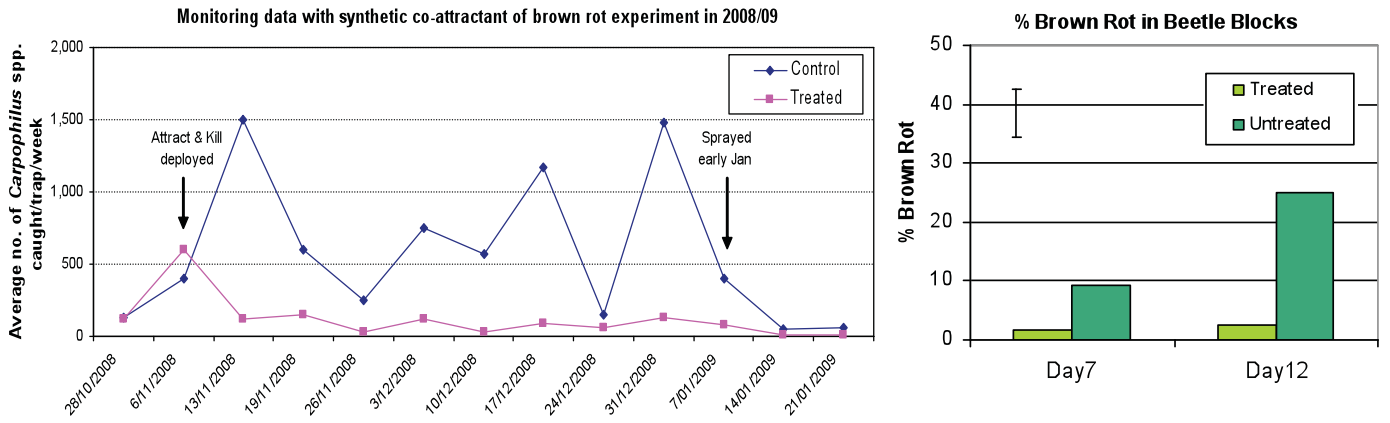

Figure 3 *Numbers of Carpophilus beetles caught in monitoring traps in treated (attract and kill) and untreated blocks and the corresponding levels of postharvest brown rot seven and 12 days after harvest.*

A representative sample of these were tested in culture for their ability to grow in fungicides (iprodione, thiabendazole, propiconazole and fludioxonil) of increasing concentration. It was encouraging to see that all but one of the cultures was inhibited by fungicides in the normal range. The one culture that was highly resistant to thiabendazole, derived from an orchard where carbendazim had been used twice consecutively preharvest and also post-harvest. Applications of that frequency contravene the Croplife (formerly Avcare) fungicide resistance management strategy and are therefore considered bad practice.

Research outcomes and recommendations

The control of brown rot is best managed by a through chain approach targeting all stages of fruit production and handling.

- Well timed fungicides, targeting infection risk events, suppressed infections and growers demonstrated continuous improvement in rot control over two to four seasons, as they adopted responsive, rather than calendar spraying.
- Rot control this season has been more challenging than normal. Growers are encouraged to pay full attention to chemical choice, rotating chemical activity groups to avoid resistance and using an approved postharvest dip for fruit considered high risk or destined for longer supply chains. Where brown rot is evident in the orchard before harvest, postharvest rot is extremely likely and attempting to store fruit would be unwise.
- Controlling *Carpophilus* beetles using the "attract and kill" traps significantly reduced postharvest rots in canning peaches.
- The susceptibility to brown rot infection changes throughout the growing season and is highest in the weeks prior to pit hardening and in the three weeks before harvest. Indications are that nectarines and canning peaches also have these two phases of susceptibility

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Dimethoate and fenthion review: The challenges of managing Queensland fruit fly in crops

Report by Katina Lindhout, Jenny Ekman, and Robert Nissen

Part 2: Pre-harvest management options for Queensland fruit fly

Part 1 in this series (Australian Fruitgrower October 2010 issue, pp32) introduced the concept of a systems approach to Queensland fruit fly (QFF) and discussed barriers to adoption as a market access tool for tropical and sub-tropical crops, including stone fruit. The use of integrated pest management (IPM) programmes for the pre-harvest control of QFF was also introduced. This article summarises current and potential management options that could become components of an IPM programme for QFF.

Cover sprays

Chemical cover sprays such as dimethoate or fenthion have successfully controlled QFF for many years. However, the use of these chemicals may be restricted in the near future. Trichlorfon (Dipterex®, Lepidex®) is registered as a cover spray for QFF in a wide range of crops, including stonefruit, and may provide some security in the short term.

To be effective, insecticides used as cover sprays for QFF need to be systemic (i.e. taken up into the plant/fruit) and be able to be applied right up until harvest. With increasing consumer demand for fruit and vegetables to be completely free from pesticide residues, cover sprays may not be an acceptable method of QFF control for much longer.

Although there are other insecticides that have the potential for QFF control, they are currently not registered for that use. Furthermore, many of the alternatives to dimethoate and fenthion are also based on older chemistry, so it is probable that they too will be reviewed by the APVMA.

Splash baits

Splash baits are a mixture of protein (yeast autolysate) and an insecticide applied to foliage and bark of crop plants and surrounding vegetation. Maldison is the most commonly used insecticide, although trichlorfon is also registered for this use pattern. Naturalure®, containing spinosad, is a pre-mixed alternative which is also suitable for organic production.

A commercially available fruit fly trap used for monitoring Queensland fruit fly numbers in orchards.

When used early and often, splash baits can be a very effective method of QFF control and target both male and female flies. However, unlike a cover spray which protects the fruit directly, splash baits do not provide complete protection from QFF. Other disadvantages include poor field retention - especially in high rainfall areas, damage to fruit (if direct contact is made with the bait spray) and the risk of residues in some crops.

Splash baits may be improved in the future by the addition of gelling agents to increase the time they remain active in the field. The use of "bait stations" (e.g. bait painted on plywood squares hung in the orchard) could reduce the risk of phytotoxicity and residues. Applying baits to a vegetative "fence" (e.g. rows of cow cane) or synthetic fence (e.g. netting) surrounding an orchard could be used to create a barrier to flies trying to enter the orchard.

Data need to be collected to support these uses and if successful, apply for a change to the labelling of these products. Better understanding of how to use splash baits more effectively in combination with other control methods will improve their value in an IPM program.

Male annihilation technology (MAT)

MAT involves the use of a block or wick impregnated with a mixture of Cuelure® (male QFF attractant) and a pesticide (usually maldison). The idea of MAT is to kill off male fruit flies, leaving the female flies unable to mate and produce eggs.

Cuelure is a very good attractant for male fruit flies and the blocks last more than three months in the field, so MAT can be a very effective control measure when used consistently over a wide area.

However, Cuelure is also the attractant used in traps for monitoring fruit fly populations. This means that MAT can result in reduced QFF numbers in monitoring traps, indicating low fruit fly populations when there are actually still high levels of female fly activity in the orchard. MAT can be used most effectively in combination with other control measures, such as splash baits. It has the best impact when used over a large area, including not only the orchard but also surrounding blocks and vegetation.

Trapping and monitoring

Trapping fruit flies is not strictly a control method, but is an important component of an IPM system. Understanding when fruit flies start to appear in your area will help you to plan your fruit fly control program. It is critical to control fruit flies as soon as they appear, or better still, predict when fruit flies are likely to start showing up in traps. Trapping is the

"Cover sprays may not be an acceptable method of QFF control for much longer"

easiest way to do this, although traps containing Cuelure could be affected by MAT and female fruit flies are notoriously difficult to capture.

Orchard and farm hygiene

QFF larvae develop in fruit and then hop out of the fruit to pupate in the soil. A pupa (plural: pupae) is the case in which the larvae develop into adult flies before emerging from the soil. Regularly removing fallen fruit and keeping the ground under trees clean and mown can therefore break the QFF lifecycle.

It is also important to identify any other sources of fruit flies, such as backyard fruit trees and feral or untended trees. Adult fruit flies are thought to travel around one kilometre during their life, so any host plants growing within this distance could be a source of infestation for the orchard.

Sterile insect technique (SIT)

The principle of SIT is to flood the natural population with large numbers of sterile male flies, which compete with the wild male flies for mates. A wild female fly that has mated only with a sterile male cannot produce fertile eggs. SIT can be very effective in areas with low numbers of QFF, in isolated orchards and towns or as part of an area wide management program.

Biocontrol

A number of native wasps lay their eggs into QFF eggs and larvae, parasitising them so that the eggs develop into adult wasps instead of QFF. Parasitoid wasps may be mass-reared and released as part of area wide management program, in isolated orchards and towns and to supplement SIT. Research is currently underway to optimise this technique.

Many microorganisms including bacteria, fungi and nematodes (microscopic round worms) attack and kill insects. There is the potential to identify and develop such organisms as biocontrol agents for QFF. For example, there may be nematodes and fungi that could be applied as a soil drench, infecting pupae in the soil and breaking the lifecycle of QFF.

In the case of Mediterranean fruit fly, scientists have found bacteria occurring naturally in some fly populations that make infected and uninfected flies unable to mate successfully. Infected male flies, released into uninfected wild populations as part of a SIT program, would be even more effective at reducing and suppressing the wild population. Such strategies may also be used for QFF.

Mineral oils

Mineral spray oils (summer spray oils) have been shown to repel insect pests - including fruit flies - when applied as high volume, low concentration sprays (<1% v/v).

Laboratory tests and small-scale field trials on tomatoes have been conducted on QFF. Results have been promising but there is a need to trial the oils on a variety of orchard crops for the purpose of pesticide registration.

The new generation spray oils are ultra-pure, which means they should have fewer phytotoxicity issues than the older oil formulations. They also have the added benefit of controlling other insect pests such as aphids and scale. Mineral oils are generally regarded as safe and are allowed in organic production systems.

Kaolin clays

Kaolin clay is normally used to reduce sunburn on fruit, but overseas researchers have also found that kaolin clay application can help protect fruit from fruit fly attack. So far, no research has been conducted for QFF, although preliminary trials are now underway in New South Wales.

It is thought that the clay particles act as an irritant, blocking the insect's spiracles (breathing holes) and/or damaging their outer cuticle (skin). Kaolin clays are regarded as safe for humans and are allowed in organic production systems.

The major problem with using kaolin clay is that the clay residues can be difficult to remove from the fruit surface after harvest. Residues are easily removed on smooth-skinned fruit that is normally washed and/or waxed during postharvest processing. However, removal from fruit with furry or rough peels (e.g. peaches) may be difficult. The product is not likely to be suitable for fruit which is not cleaned after harvest (e.g. berries).

Combination treatments

Pre-harvest QFF management tools will be most effective when applied in combination, such as with an IPM strategy. Unfortunately, not enough research has been conducted to determine the most effective way to combine

Squares of plywood painted with protein bait being prepared for use in Queensland fruit fly experiments.

treatments and many potential treatments have not been assessed for QFF control.

It is also important to evaluate the effect of new strategies for QFF management on fruit quality, as well as the effect on other pests, diseases and beneficial insects within the crop.

Strategic use of management methods could mean using a "push-pull" approach. For example, mineral oils could "push" QFF out of the crop while bait sprays applied to a border crop could "pull" the flies out of the crop at the same time.


A commercially available MAT block containing wick impregnated with Cuelure® fruit fly attractant and maldison.

Continued over...

Continued...

Dimethoate and fenthion review: The challenges of managing Queensland fruit fly in crops

Another strategy could be the use of "trap" crops. For example, loquat trees which fruit early could be used to attract fruit flies, allowing them to lay their eggs. The fruit could then be harvested and destroyed, reducing the fruit fly load in the surrounding area before the commercial crop becomes susceptible. Again, the effectiveness of such strategies needs proper evaluation.

Area wide management (AWM)

AWM has potential in many cropping areas. However, it is difficult and expensive to maintain in areas with naturally high populations of QFF. AWM requires the co-operation of all horticultural producers in the region, as well as the local councils and town residents. It is also best suited to areas where cold winter nights mostly eliminate QFF, allowing the region to effectively start afresh each spring with a "clean slate".

Summary

The probable future loss or restriction of dimethoate and fenthion cover sprays is going to make it difficult for many growers of summerfruit to produce a harvestable crop, even before they consider how their crop will access QFF free markets. There is no single treatment available to replace these chemicals.

A number of alternative treatments for QFF do exist and there is plenty of potential to develop new controls into the future. As these will not be the "magic bullets" of the past, such treatments will need to be applied strategically as part of an IPM program to get the best results.

Research targeted at understanding how various controls are best combined and applied under commercial conditions is required if IPM is to be the future of QFF control in the field.

The next article in this series will outline some postharvest treatments that could be used to secure market access for fruit in the absence of dimethoate dips and sprays.

Authors

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Residue testing goes online

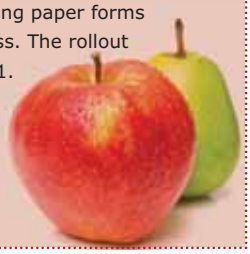
By Kevin Healy, NRS

Information on apple and pear samples that are collected for residue testing will be entered directly into a new online information management system to be implemented by the National Residue Survey (NRS) next year. The new information management system will replace the existing system that was introduced in 1997.

For NRS clients, the new web-based system will replace the existing paper-based system for completing forms and receiving results. Currently, data entry is entirely manual with handwritten sample forms completed in triplicate by the sample collector and entered into the database by NRS staff located in Canberra. The redeveloped database system will allow web-based data entry and retrieval capabilities for sample collectors and contract analytical laboratories.

The system will allow NRS to be more responsive to industry requests for changes to residue testing programs and for access to residue testing data. The NRS conducts residue testing for a range of animal commodities, plant products, fish and honey. Commodities include cattle, sheep, grain, horticulture and pigs with a total of about 20,000 samples collected and analysed by contract laboratories per year.

The draft sample entry form is similar to existing paper forms to make it easy to transition to the new process. The rollout of the new system should occur on 1 July 2011.



Further information: *e: nrs@daff.gov.au; or Alastair James, Assistant Manager Plant Programs, t: (02) 6272 3187; NRS Director, Ian Reichstein, t: (02) 6272 5668.* ■

Batlow Apples launches premium cider

Batlow Apples has launched a premium hand-crafted cider as the inaugural product from the newly established Batlow Brewing Company.

A joint collaboration between Batlow Apples and Coombes Bros, the company has been formed to create Batlow Premium Cider.
Rich Coombes, director for the Batlow Brewing Company, said: "The continued rise in popularity of cider and the need for a premium, fresh and locally made offering led us to create Batlow Premium Cider. The ability to press our apples and bottle our cider locally ensures that every bottle will be of exceptional quality and taste. We have a vision of turning Australia's favourite apples into Australia's favourite cider.

Unlike many commercial ciders, Batlow Premium Cider uses fresh crushed, locally grown apples, contains no concentrates or added sugars and is gluten free, making it one of the healthiest ciders on the market. Batlow Premium Cider has a golden straw appearance with fine bubbles from natural carbonation. The aroma is fresh, fragrant apples with a hint of earthiness.
It has an alcohol level of 5.5 per cent and will be sold in 330ml bottles in 4-packs and cartons of 24 bottles. ■

Innovation birthday

Bayer CropScience's non-selective herbicide, Basta®, is celebrating its 20th birthday.
Since its launch in 1990, Basta has claimed a reputation for crop safety, quality and consistent performance. Twenty years on and growers still rely on Basta to control a broad spectrum of weeds in a range of crops including stonefruit and tree nuts.
The first trials for Basta began in 1980.
The initial development target for the new product was for chemical fallowing prior to planting broadacre crops. After many trials, Basta found a handy fit in horticulture crops such as apples and stonefruit because of its excellent crop safety. In addition, Basta was active against certain troublesome weeds that had begun to dominate in horticultural crops - the product filled an important gap.
To celebrate the product's 20th birthday, Bayer CropScience is launching a range of promotional materials for growers and advisors, and hosting field days in key growing regions. ■

International apple and pear research update

Compiled by Dr Gordon Brown, Technical Editor – Apple and Pear

Nursery and cultivars

Switzerland

More than 20 apple cultivars were evaluated over 7 years. La Flamboyante produced high yields and the trees were easy to train. Yields were lower in Milwa, and these needed systematic thinning. Among the cultivars resistant to scab, Ariane showed interesting properties as a tree but yield was lower than the standard 'Topaz' due to smaller fruit size.

China

It has been found that 9 introduced pear varieties can flower and bear fruits normally in the Guiyang region of China. Japan 58 and Luyu varieties have advantages of early maturity, 185-210gm average fruit weight, strong special flavour, good internal quality and good tree vigour. The average yield per tree at 4 years age of Japan 58 was 7.3 kg, followed by Luyu at 6.5 kg.

China

Fifteen cultivars of Chinese apple rootstocks were grown in salty conditions and their rate of growth and chemistry analysed and this identified salt resistant rootstocks.

Human nutrition

Japan

In a study of human faecal bacteria before and after consuming two apples a day for two weeks it was found that apple consumption is related to an improved intestinal microflora.

India

A study of 38 apple and 30 pear lines from eight markets around India found that 20 apple lines and 12 pear lines tested positive to the presence of aflotoxins. The majority of the fruit samples that tested positive contained aflatoxin B1 in the range of 100-750 ppb, which is more than the limit fixed by World Health Organisation (WHO) and thus, the consumption of such contaminated fruits is potentially harmful to humans.

Production

Spain

A comparison of 5 herbicide treatments compared to mechanical weed control in 2 apple orchards in each of two regions over a 5 year period found that herbicide treatments increased fruit production compared to mechanical control but there was no difference between the herbicide treatments.

Switzerland

A project to identify important factors relating to apple production technology and structures in different regions of the European Union (EU) compared to Switzerland found that production and labour costs were higher in Switzerland and in addition, many orchardists in Switzerland operate mixed farms, active in the production of milk, meat and fruit.

Republic of Korea

In a four year study GA4+7 with BA was applied to Gala apple trees to increase fruit size. The material increased fruit length, fruit weight, and L/D ratio but it did not affect fruit soluble solid content or acidity. Significant fruit growth was observed when GA4+7 with BA was applied between late May and early of June when fruit cell division had ended; however, high concentration of GA4+7 with BA at this time resulted in soft fruit of poor storage quality.

Spain

Over two seasons the bacterial population of soils under three pear cultivars was studied. The study failed to identify characteristic bacterial fingerprints that could be associated with the pear cultivars. It was found that the microbial communities in the soil changed significantly throughout the year depending on temperature, tree growth phase and rainfall.

China

An electron microscope analysis of leaves from standard and dwarf pear trees revealed that dwarf trees have wider but narrower stomata, thicker leaves and differences in the leaf structure which indicated that dwarf pears have stronger drought and cold tolerance.

Romania

Using radio isotope marked glyphosate in apple orchards it was found that the rate of breakdown of glyphosate by soil microflora is high and affected by a high day/night temperature variations.

Japan

The date of budding and flowering of apple trees since 1977 from 6 regions along compared to climatic records identified that flowering in apple is advanced by 3.8 days per °C increase in temperature suggesting that the advance of apple flowering observed in Japan over the previous decades has predominantly been caused by the temperature increase, due to global warming across the locations studied.

China

The sorbitol transporter gene (sorbitol is the sugar transported to the fruit) in apple has been identified and it has been found that it has the highest expression in the phloem, high expression in source leaves and lower expression in the sink organs. In fruit, expression of the transporter is very low in early fruit development, rapidly rises to a peak 30 days after flowering, maintains a high level of expression in the medium-term development, and reduces in late fruit maturation.

USA

A series of experiments was conducted with apple (*Malus domestica*) and peach (*Prunus persica*) over 5 seasons to evaluate the flower thinning efficacy of the essential oil, eugenol, or the eugenol-based contact herbicide Matran 2 EC. Eugenol resulted in complete burning of all exposed tissue except the bark and within 3 to 4 weeks of application, damaged tissue was not present. Eugenol provided reliable thinning compared to ammonium thiosulfate (ATS) which caused inconsistent thinning. Applications of 1% to 2% eugenol appear promising, but good blossom coverage is critical.

Harvest and Postharvest

China

An apple recognition method for use with a robotic harvester with normalized colour difference (R-G)/(R+G) has been developed. The system is capable of recognising apples under different lighting conditions.

China

A robotic hand based on a flexible pneumatic actuator has been developed which is quite strong and the actuator can grasp apples perfectly and flexibly for harvest.

Chile

A chemical analysis of Granny Smith apples after long term storage that had been treated

with DPA or SmartFresh® or left untreated has confirmed that ethylene plays a major role for superficial scald development.

Spain
The apple cultivars Reinette du Canada (RC) and Reinette Grise du Canada (RG) have been declared throughout the EC as protected designation of origin cultivars. Experiments have been conducted to study the storage performance of these apples without the use of postharvest dips including calcium. Untreated RG showed more skin brightness, higher sugars and acidity than dipped RG indicating that RG would be more acceptable to consumers to storage without the use of chemical postharvest treatments.

Republic of Korea
Fuji apples were cold stored at 0°C for 4 or 6 months after harvest and then packed and transported (simulated) in controlled atmosphere shipping contains prior to shelf life conditions at either 20 or 7°C for 7 days. The CA shipping had no effect on 6 month old coldstored fruit although short-term transport CA significantly reduced respiration and ethylene evolution for the 4 month old fruit. Low shelf temperature at the retail outlet had a big effect and reduced respiration and ethylene evolution, resulting in higher acidity and flesh firmness of the fruit.

China
Harvested pear fruit (*Pyrus bretschneideri*) were stored for 30 days at 2°C and 95% RH in either air or pure oxygen. It was found that pectin degenerated in both atmospheres but at a slower rate in the pure oxygen treatment.

South Africa
In South Africa it is necessary to store pears for 12 weeks at -0.5°C prior to marketing fruit to reduce mealiness and astringency. It has been found that SmartFresh can be used to reduce this storage period and allow for earlier marketing of fruit.

China
The protective effects of chitosan on bruised Yali pears (*Pyrus bretschneideri*) were investigated. Chitosan treatment reduced the levels of reactive oxygen species in bruised tissue and increased the levels of a range of antioxidants for more than 15 days after treatment.

Germany
In human nutrition trials people consumed organically grown or conventionally grown apples. After intake of 1 kg apples, antioxidant blood plasma concentrations increased significantly in both groups, without differences between the two farming systems. In a trial over 4 weeks and 24 hours after last apple consumption apple intake did not result in accumulation of apple antioxidants or degradation products in humans.

Egypt
Using essential oils extracted from several plants it was found that oil from lemon grass, rosemary and clove inhibbited mycotoxin production from Aspergillus and reduced the level of browning of fruit juice stored in a coldroom for 4 weeks. ■

Pests and diseases

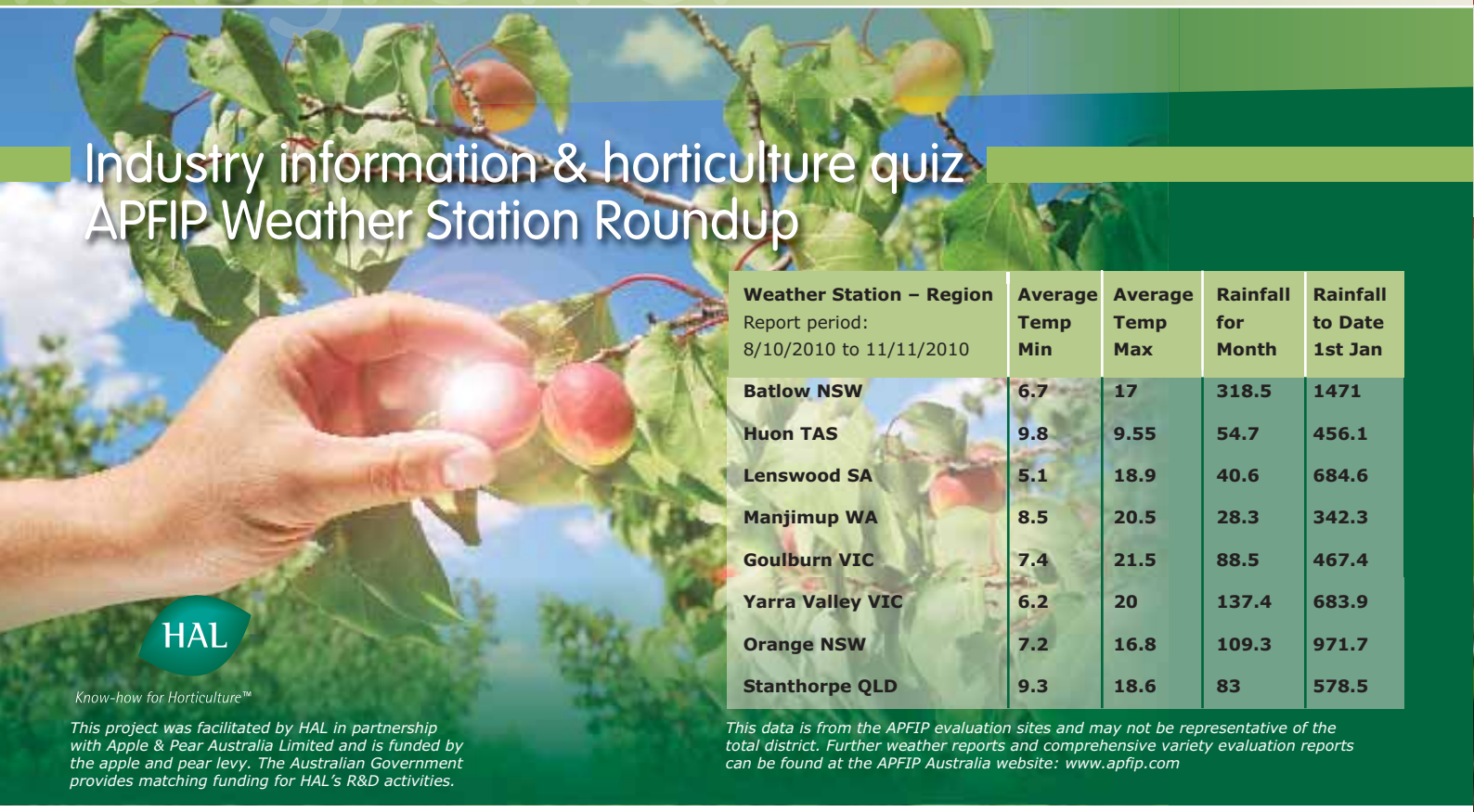
Romania
The efficacy of 7 insecticide treatments against two generations of codling moth found that all the treatments gave better than 92.6% control, with the best results were obtained with Calypso at 0.02%, followed by Victenon at 0.05% or Karate Zeon at 0.02%.

Brazil
The Brazilian apple leafroller, *Bonagota salubricola*, related to light brown apple moth, is a major pest in Brazilian apple orchards. Trials have identified two pathogenic nematodes that effectively control this leaf roller both in the laboratory and in a commercial orchard. This nematode could be developed as a biocontrol agent against this pest.

Belgium
Organic apple production in Europe depends on the use of copper fungicides for scab control (*Venturia inaequalis*) and a 6 year project was developed to study methods for reducing the use of copper in these orchards. The effectiveness of a "during-infection" spray strategy using wettable sulphur (with or without copper), lime sulphur, potassium bicarbonate, silicon and five natural plant extracts (orange peel, soapbark, tea seed, quinoa seed and grapefruit seed) found that low rates of elemental sulphur (≤40 kg.ha-1 per year) combined with low rates of copper (≤2.1 kg.ha-1 per year) provided the best scab control and reduced scab severity on the leaves and fruits by 85-100% compared with the untreated control. In most cases, the lime sulphur spray treatment, which used more elemental sulphur but did not use copper, provided a similar level of scab control while the other treatments reduced scab severity to a lesser extent.

Belgium
In September 2009 2 apple trees in a nursery displayed "witches broom", the typical symptom caused by the apple proliferation phytoplasma Candidatus Phytoplasma mali. This disease, a quarantine organism for the EU, was confirmed and this is thought to be the first report of *Candidatus Phytoplasma* mali in orchard apple trees in Belgium, confirmed by molecular testing.

USA
Following a report in April 2009 of the presence of Japanese apple rust (*Gymnosporangium yamadae*) on crabapple (*Malus toringo*) in Wilmington, (*Delaware*) a study was conducted to confirm and document the pathogen. In August 2009, leaves of apple (*M. domestica*) at the University of Delaware in Newark were confirmed to have *G. yamadae* infection. This is thought to be the first report of this pathogen on apple in the USA.



Industry information & horticulture quiz
APFIP Weather Station Roundup

Weather Station – Region Report period: 8/10/2010 to 11/11/2010	Average Temp Min	Average Temp Max	Rainfall for Month	Rainfall to Date 1st Jan
Batlow NSW	6.7	17	318.5	1471
Huon TAS	9.8	9.55	54.7	456.1
Lenswood SA	5.1	18.9	40.6	684.6
Manjimup WA	8.5	20.5	28.3	342.3
Goulburn VIC	7.4	21.5	88.5	467.4
Yarra Valley VIC	6.2	20	137.4	683.9
Orange NSW	7.2	16.8	109.3	971.7
Stanthorpe QLD	9.3	18.6	83	578.5

HAL
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This project was facilitated by HAL in partnership with Apple & Pear Australia Limited and is funded by the apple and pear levy. The Australian Government provides matching funding for HAL's R&D activities.

This data is from the APFIP evaluation sites and may not be representative of the total district. Further weather reports and comprehensive variety evaluation reports can be found at the APFIP Australia website: www.apfip.com

Greg's Quiz

Question 1:
True or False: The apple is actually a pseudocarp or false fruit.

Question 2:
What is the device used to measure the strength of wood samples called? **A:** Refractometer. **B:** Chainsaw. **C:** Axe. **D:** Fractometer.

Question 3:
Found just under the skin of green plant stems the packing tissue or ground tissue is also called this botanical term?
A: Cambium. **B:** Cortex. **C:** Lignin. **D:** Xylem.

Question 4:
The old apple variety, 'Geeveston Fanny' was named after a township in which Australian State? **A:** SA. **B:** Tas. **C:** Vic. **D:** Qld.

Question 5:
Thought to be induced by mycoplasma-like organisms and causing conspicious flexibility of apple branches because of incomplete lignification, this disease is called what? **A:** X - disease. **B:** Apple Mosaic. **C:** Rubbery Wood. **D:** Apple Proliferation.

Quiz supplied by Greg Cramond, SA

Answers:
Question 1 - Answer: True.
Question 2 - Answer: D: Fractometer
Question 3 - Answer: B: Cortex.
Question 4 - Answer: B: Tasmania, from the town of Geeveston in the Huon Valley.
Question 5 - Answer: C: Rubbery Wood Disease.

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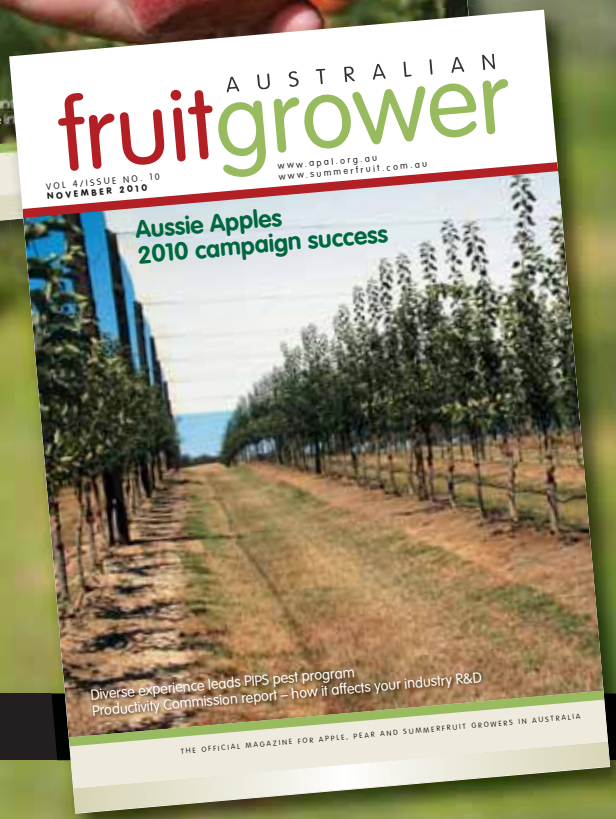

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