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Australian Fruitgrower
Australian Apple and Pear Ltd (APAL) is the peak industry body representing the interests of commercial apple and pear growers in Australia in matters of national importance including regulation, legislation, marketing, research and development. Australian Fruitgrower will be published monthly, except for combined issues in December–January, to bring industry news to orchardists in Australia.

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OUR COVER
Will Thompson, Former Navy diver and General Manager of Lerinda Apples at Stanthorpe. Photo: Sarah Kulman. (Read our Grower Profile on page 12)

FROM THE EDITOR

As this issue of Australian Fruitgrower went to press at the end of the financial year our experiences could be described as ‘anything but boring’ – a mix of good, bad and all shades in between. Various weather extremes, this time mostly of the cold and wet variety, continue to present as the norm. While recent weeks gave us a new Prime Minister and a significant re-valuation of the A$. What a ride! As several reports in this issue attest, growers are broadly experiencing firmer prices contributing to greater general positivity. The A$ movement has been in a positive direction for our renewed interest in exports, although future prices for chemicals, equipment and other growing inputs could move upwards later this year; things may clarify more post-election (the date of which is already being queried).

So, against that colourful background, it’s onward to the combined fruit industry conference in Queensland – the first opportunity in years for those in the industry to more formally compare notes and perspectives with other fruitgrowers beyond apples and pears. Harvest is generally finished and the southern chill has arrived in earnest – added attractions for a fruitful (sorry!) conference on the Gold Coast. See you there.

John Fitzsimmons

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F R O M  T H E  E D I T O R
The tour format follows on from last year’s successful visits, which were conducted at a time of prices which were below the cost of production and many of you were trying to get to grips with this considering the high quality crop produced across the states.

The mood of growers this year is significantly more upbeat than those experienced on our last visit — which is great to see. While prices are still not the best, the message from growers is that fruit is moving reasonably well, prices are holding and there is a degree of optimism there. However, it will take a lot to make up for the poor prices experienced last season.

In addition to the one-on-one visits the evening group meetings have been very successful with a high attendance rate and attendees all contributing to the discussion. Growers have had something constructive or positive to say regarding APAL initiatives or areas they would like to see more focus on.

A consistent theme from each of the growing regions was the need for APAL to invest more in market access. APAL is working on numerous initiatives to increase the opportunities for growers in key export countries. Gaining access to significant export markets such as China for mainland apples remains a key focus for APAL and our Market Development Manager Claire Fitchet is definitely making inroads as she works to build strong relationships in the export space.

As market access is determined by government-to-government negotiation my message to our government is that our industry hasn’t the luxury of waiting years for issues to be resolved. It’s urgent and it needs government focus, an entrepreneurial approach and resources to achieve the outcomes this industry needs if it is to have a sustainable future.

And while APAL continues to work on gaining access to the key Asian markets, it’s important to look at the necessary changes you may need to make to your business to ensure you can hit the ground running once access is granted. Building a viable export market for apple and pear growers remains a priority for APAL which has set a target of achieving 10 per cent of production to be exported by 2015. It is a very ambitious target and we will need to have gained access to additional markets to achieve it.

Having said that, there are still encouraging opportunities already available, with some growers exporting into Asia and the prospect for increased volumes of Pink Lady™ exports into the UK this season.

Recently the Government announced initiatives to support the National Food Plan – with a strong focus on Asia. While APAL welcomes the plan, we need to see action from the government on how it is proposing to achieve its key objective – to feed Asia. However, without some oiling of the wheels from government, Australian agriculture is going to find it difficult to be a ‘food superpower’ and feed Asia. Still, the plan is a step in the right direction but there certainly needs more government investment to make it happen. The greatest impediment the industry will need to overcome is the disparity in wage costs between Australian and our (lower waged) competitors from around the world.

A recent productivity review revealed the manufacturing industry (which of course includes the motor industry) receives three times the rate of government support than that given to food processors. It’s reported that the manufacturing industry has received something in the order of $7 billion in assistance to date. I don’t think agriculture is perceived to be a ‘manufacturer’, but we are precisely that.

So if we are to be the food providers to the world – as the government is projecting – then we really need to push whichever party forms government after the September election to financially back its plans to ensure it happens. The day I’m writing this sees Kevin Rudd reinstated as Prime Minister and I’m delighted to hear him mention in his first press conference that there needs to be greater focus on the opportunities for food and agriculture.

This month saw APAL partner with leading agribusiness education provider Marcus Oldham to deliver the Emerging Business Leaders program. The program will provide aspiring business leaders with the industry with the skills they need to not only advance their careers but also the future of horticulture. The program was
developed specifically for apple, pear, stone fruit and cherry growers and designed to build on experience already gained through working in the industry. At the time of writing there were 22 participants gearing up to complete the five-day program and we will provide further insight in the next edition of Australian Fruitgrower. I’m sure the foundations of the program will assist participants to enjoy a long and prosperous career in the industry.

South Australian grower Brian Vickers has achieved just that, having spent a lifetime working in the industry. He was recently recognised for his contribution to the apple and pear industry after he was awarded a Medal of the Order of Australia (OAM) in the Queen’s Birthday honours. The medal will be presented by the Governor General in a formal ceremony later in the year. We congratulate Brian on his achievement, which coincidentally came as an early 87th birthday present. Well-done Brian.

By the time you receive this edition of Australian Fruitgrower you would (hopefully) be making your way to the combined fruit industry conference on the Gold Coast. If you aren’t making your way...then there still is time to register. As I have said before, the conference is a fantastic event that should not be missed. The team at APAL (together with Summerfruit and Nashi) have put a lot of effort into ensuring the conference program adds value and provides you with an opportunity to view and learn about emerging innovations and trends – all under the one roof.

I encourage you all to make the effort to attend this worthwhile event and I hope to see you there.

John Lawrenson | M: 0417 391 786 | E: jalaw@bigpond.net.au

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See you at the conference 17-19 July

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• Drape Net Curtain Sider (CS) is an exciting new netting system for Australian fruitgrowers the Australian climate and the budget of an Australian grower.
• Drape Net CS has been developed for new and older plantings on trellis from fruit walls to 3D and 2D training systems.
• Drape Net CS is designed to be placed in your trellis row, utilising a light flexible frame and specially purpose-made net.
• Drape Net CS also will have the added benefit of being either a permanent or semi-permanent net.

Drape Net CS will be available in small quantities this coming season, as trials with existing customers have preference. It will be available commercially the following season.
The Future Orchards team created a hive of activity in the northern growing regions last month when Dr Mark Goodwin presented on the importance of good honeybee management. Many growers travelled from neighbouring regions to attend the orchard walks which kicked-off in Shepparton, Victoria, and finished up in Stanthorpe, Queensland. APAL’s Technical Manager Jesse Reader said Mark was well received and gave attendees plenty to think about.

“Mark spoke about hive management, colony strength, the number and placement of hives and how growers should be managing the overall quality of Australia’s apiary industry,” Jesse said.

“He also provided information on auditing hives to manage quality and most importantly discussed how a potential outbreak of Varroa Mite could affect Australian growers and the wider industry.” Jesse said it was good to see participants travel from other regions to the Goulburn Valley and Orange, New South Wales, to hear Mark speak.

A video of Mark’s talk is available on the APAL website.

For more information about the Future Orchards program contact Jesse Reader, E: jreader@apal.org.au.

Apple and pear production down in 2012

Australia’s apple production fell by 3.6 per cent and pears saw an overall drop of 3 per cent in the year ending June 2012.

Figures recently released by the Australian Bureau of Statistics (ABS) compare the last three years, with 2011 producing a larger crop than 2012, which was still an improvement on 2010.

Apple production across Australia stood at 289,000 tonnes and 119,000 for pears in the year ending June 2012. Both were down on the previous year with apples recording 300,000 tonnes and pears at 124,000 tonnes in the previous year. Despite the drop both apple and pear crops are well up on 2010.

Substantial apple crop reductions in 2012 were recorded for New South Wales (down 16 per cent), Queensland (down by 17 per cent) and South Australia (down by 5 per cent) with a slight reduction in Tasmania (down by 3 per cent). These falls offset the significant increase in production from Western Australia (up 13 per cent) and a small increase from Victoria (up 2 per cent).

Despite the increase in Western Australian pear production in 2012 (up 86 per cent), significant crop reductions were recorded in New South Wales (at 33 per cent) and Queensland (at 42 per cent), with Victoria – Australia’s largest pear producer – recording a drop of 8 per cent.

The new-look website features a monthly blog written by industry professionals, a resource library for ease of access to APAL publications and up-to-date information about the industry.

The members’ area of the site is accessible for apple and pear levy payers and offers exclusive information about the Future Orchards® program, APAL strategic plan and Infopome results. If you pay levy and don’t have access to the members’ area contact Richelle Zealley E: rzealley@apal.org.au or T: (03) 9329 3511 to request a login.

APAL’s new website has arrived!
APAL tours the grower regions

APAL Managing Director Jon Durham and Chairman John Lawrenson toured the Western Australian and South Australian grower regions recently to meet with growers one-on-one.

In a similar format to last year, both Jon and John met with growers to answer questions, listen to ideas or issues they may have and to hear feedback on current APAL initiatives. The feedback from growers will help APAL plan its focus for the coming year and re-align activities to meet key needs of the industry.

Proposed biosecurity regulations criticised

The proposed regulations to support the Biosecurity Bill currently before parliament has been criticised by APAL in a submission lodged with the Commonwealth Government last month.

In the submission, APAL argued that the proposed new Biosecurity Import Risk Analyses (BIRA) fails to remove the faults of the current system. The proposed regulations require more clarity and transparency, deny natural justice to relevant stakeholders, and promote secrecy which undermines industry confidence in the biosecurity system.

APAL's Managing Director Jon Durham said it believes the regulatory framework which, underpins Australia's quarantine and biosecurity legislation must be based on sound science and sensible policy.

Jon added the biosecurity arrangements must also be adequately resourced (both in human capacity and funding) to protect Australia's environment, biodiversity and agricultural production systems from exotic pests and diseases.

Review to assist processed fruit industry announced

The Australian Government has announced a review into the importation of processed fruit products into Australia following efforts by industry to stop foreign goods flooding supermarket shelves.

SPC Ardmona (SPCA) was assisted by Fruit Growers Victoria (FGV) in pushing for a review after the processing company was forced to significantly reduce its intake of fruit due to a reduction in demand.

The reduction in demand can be attributed to the increase in supermarkets private label products often containing ingredients from countries that have significantly lower wage rates. Couple this with the ongoing high Australian dollar (brought about by the mining boom) which has made imports even cheaper.

The six month review will be conducted by the Productivity Commission and will determine if the Australian industry has a legitimate claim for temporary protection under World Trade Organisation trading rules. Under the rules countries cannot apply new tariffs or other assistance measures without cause.

The Productivity Commission will investigate whether there has been a substantial increase in processed fruit imports that has been of detriment to the local industry. The review will look at the importation of processed fruit such as pears, peaches, apricots, nectarines and citrus.

For assistance in preparing a submission please contact Annie Farrow, E: afarrow@apal.org.au.
New South Wales

**Good varieties and quality fruit are selling well although uneconomic blocks are again being removed. Investment in countering ‘sugar misperceptions’ could reinvigorate the juice market.**

As the rain continues to fall in all New South Wales regions and the cold weather sets in, one’s hibernation instinct triggers and all of a sudden office work doesn’t look so bad after all.

Pruning has commenced and much to the disappointment of my processing interests the bulldozers are once again removing some of the uneconomic blocks. Good varieties and quality fruit are selling well on the market although packouts are a concern in some lines. There is still a lot of inferior fruit around the markets later in the week which would not be the case if we could somehow lift the processing grade fruit price.

Maybe dollars spent countering the current affairs shows’ love of – “the risk to children’s health of sugar in their diet” with a reality check of natural sugars compared to artificial, may pay off in reinvigorating the pure single strength juice market.

Batlow Cider Festival was well supported both by the industry and the community. Congratulations to the committee and Kevin Dodds (DPI) for all the hard work making it so successful.

The APAL road show will have visited all regions by the time this goes to press. It has been an excellent opportunity for growers to communicate directly with management and a worthy exercise.

The annual conference to be held on the Gold Coast has been well planned and APAL has worked hard in pulling together an interesting range of presenters.

It is sad for the industry to lose someone with such a wealth of experience as Jon Durham; we wish Jon well in the future and hope there will be time for his predecessor to pick up on some of Jon’s skills.

David Gartrell

South Australia

**There has been good rainfall while sales of both pears and apples have been relatively strong for this time of year, with prices firmer than last year. Some blocks are being cleared to make way for new varieties.**

After many long months of bemoaning a lack of water, South Australia has received very good rainfall in recent weeks, officially ending one of the driest seasons on record.

Many growers are busy pushing out blocks ready for reworking to new varieties, trying to get the land cleared before it gets too wet. Others are straight into pruning.

The new Australian Pears cookbook was a great hit in a recent promotion was run at the Adelaide Central Markets. Customers and stallholders alike were extremely taken with the superb quality of the book. Many people enjoyed engaging with the growers that were there on the day and learning about the different varieties.

Sales of both pears and apples have been relatively strong for this time of year, with prices holding firmer than at the same time last year. There are also some solid export prospects again this year which should provide a boost to the local industry.

The recent State Budget has seen further cuts to Primary Industries and Regions SA (PIRSA), with a 13% overall cut to their budget. With cuts across the board, this was a difficult budget for everyone.

There was a small win to the horticultural industries however, with an additional $1 million over four years to enhance the management of fruit fly.

As the last state to be fruit fly free, this is particularly heartening, especially given the recent outbreaks of Med-fly in suburban Adelaide.

Susie Green
APGA of SA

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**WANTED - ORCHARD ALL-ROUNDER**

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- Ability to work in a team or unsupervised
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During busy periods work outside normal working hours will be required.

Wages will be negotiated with the successful applicant based on knowledge and experience. All applications will be handled in a confidential manner.

Battunga Orchards is an equal opportunity employer located in Warragul

Please email applications to sarah@battungaoorchards.com.au
Western Australia

Recent specialist visitors to Western Australia have presented to growers on Med-fly, fruiting wall production and APAL activities, while other growers are heading east to attend industry conferences and the APAL emerging leaders course.

A number of guest speakers have made the trip west and growers have had the opportunity to hear about Med-fly, fruiting wall production and APAL activities. Associate Professor Nikos Papadopoulos, from the University of Thessaly in Greece, provided a series of three public talks as part of DAFWA’s ‘visiting specialists’ program. Professor Papadopoulos, who has researched fruit fly control for about 20 years and worked in the Mediterranean, Middle East and United States, provided information on over-wintering, population dynamics and fruit fly dispersal.

A number of growers headed to Mulallyup for the recent Future Orchards® orchard walk. Growers were particularly interested to hear Alberto Dorionigi’s presentation on fruiting walls and mechanisation of orchard practices.

Many thanks to Tony Giumenti of Blue Moon Orchards for hosting the orchard walk and providing us with some great discussion points.

Growers also had the opportunity to meet with APAL’s Jon Durham, John Lawrenson and Sarah Kulman as they did the rounds. It was great to hear growers in the Perth Hills were also engaged on this trip.

It has also been great to hear a small number of growers are booked in to attend the national conference. We look forward to them reporting back to their orchard improvement groups and through Fruit West to hear what they have learnt and what topics were of particular interest.

Growers can also look out for Fruit West staff reporting back on their recent travels to the PMA, APAL conference and APAL’s emerging leaders course.

Stephanie Faggetter
Fruit West

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The exceptionally dry weather has continued into the early part of winter with some regions recording their driest autumn for many years. Coincidentally the State Government held a workshop with the fruit industry in early June to discuss how growers are managing, or will potentially manage, climate change on their properties including potential changes in frosts, seasonality of rainfall, extreme heat days, chill hours and other extreme weather events.

Fruit Growers Tasmania (FGT) has been to Canberra to talk to DAFF in relation to the export registration fees which are already impacting Tasmanian growers with several orchardists already opting out of export registration for next financial year. FGT also appeared in front of the Rural & Regional Affairs and Transport Legislation Committee in relation to the Federal Biosecurity Legislation. Several key areas of the legislation are of significant concern to the fruit industry in Tasmania.

Senator Fiona Nash also visited Tasmania recently and spent some time at Hansen Orchards, accompanied by Senator Richard Colbeck. Whilst biosecurity was a key topic, other key national issues affecting the Tasmanian fruit industry were also discussed such as market access and free trade agreements.

Congratulations have been extended to the Tasmanian state government which has initiated the Tasmanian Primary Industry Biosecurity Consultative Committee – a collaboration between industry and government to address key biosecurity areas within Tasmania. Already the collaborative approach with industry is showing positive outcomes with all parties informed and engaged in discussion.

In late June the Premier of Tasmania, Lara Giddings, was expected to launch ‘Biosecurity is our Future’ for the Primary Industry Biosecurity Action Alliance (PIBAA) of which FGT is a member. PIBAA, which is represented by 15 peak primary industry bodies, has identified 23 actions and strategies to improve and maintain biosecurity within Tasmania.

Lucy Gregg
FGT

Queensland

Harvesting finished a little later this year, than usual, with no spare capacity in local cold rooms. A Future Orchards orchard walk covered many topics of current interest and proved most popular.

At the time of writing sleet is falling in the Granite Belt and the last apple leaves are doing the same. Harvesting finished a little later this year, than usual, with no spare capacity in local cold rooms.

A Future Orchards orchard walk was held recently, with a good roll-up of growers, resellers and researchers. A highlight of the morning was a presentation on pollination of apples and pears by Dr Mark Goodwin of Plant and Food Research New Zealand. Dr Goodwin also highlighted and explained the risks, to horticultural producers, associated with the likely introduction of Varroa mite (Varroa destructor) into Australia. Steve Tancred of Orchard Services addressed the difficulties of ‘kickstarting’ ‘Gala’ apples growing on M26, when the trees have switched from a vegetative to a cropping stage.

Trent Vedelago generously provided the use of his orchard trees for a pruning discussion led by Steve Spark of AgFirst. The weather was cold and wet, but everyone was well fed thanks to Laurie’s excellent BBQ.

The Applethorpe Research Station (DAFF) welcomes Dr Heidi Parkes who will join the staff as a horticulturist working in the apple program.

Peter Nimmo
DAFF Queensland
There's nothing more satisfying than producing an Apple and enjoying the first bite. DuPont™ Fontelis® fungicide protects your Apples for up to 10 days from Black spot and up to 21 days from Powdery mildew. It provides the start they need to bloom into pack outs which make you proud.

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When Will Thompson left school at the age of 16 to join the Navy, he never thought the path would lead to orcharding. But fast forward 22 years (eight of which were spent in the defence force) and the ex-Navy diver has swapped the sea for apples. From the high seas to chasing high colour apples ... Will is using the skills learnt in the defence force to lead Lerinda Apples to a bright future.

When I was 16, Navy recruiters visited my school to talk about career opportunities in the defence force. Not really sure what I wanted to do at the time they won me over and I left school and joined the Navy as a ‘Quartermaster Gunner’,” Will said.

It wasn’t until a chance meeting with Navy Warrant Officer while on a dive course in Port Phillip that Will’s defence career took a dive – literally! His Warrant Officer convinced him to train as a Navy clearance diver and 18 months later he was fully qualified.

“It had never crossed my mind to pursue a career as a Navy diver but my Warrant Officer believed in me and that motivated to succeed. I ended up spending seven years as a Navy clearance diver; much of it deployed, and was awarded Chief of Navy Commendation. But eventually I felt it was time for a change and left the Navy as a Petty Officer to explore other job opportunities.”

When Will left the Navy he didn’t have a game plan but his highly regarded leadership skills and reputation for dogged determination meant that he wasn’t out of work long.

Once called ‘gun for hire’ or ‘mercenary of the industry’, because he tended to work a job for three years and then move on to the next, Will amassed a lot of experience in different roles before taking up his position at Lerinda Apples.

“I ended up running a fishing and diving business which was the basis for what is now called Tackle World,” Will said. “I received a call from the owner who said ‘you know people and you know diving’ and before I knew it I was leading a successful dive business.”
SO FROM DIVING TO ORCHARDING... HOW DID YOU MAKE THE CHANGE?

“A re-focus of the business saw my position made redundant and I took up a position of Operations Manager on Elliot Island for 12 months,” Will said. “It wasn’t until we hosted a BBQ at home that I received my first insight into agriculture. A few of the parents we had invited worked in the citrus industry and before I knew it my career path had taken another turn.”

“I received a phone call from Craig Meyer offering me a job as a Operations Manager at Central Fruit Packers (Sweetee Citrus) in Mundubbera. I told him I didn’t know anything about working in agriculture...let alone the citrus industry. But once again I was told ‘you know people, we can teach you the rest’”

Will spent four years in the citrus industry before moving to Batlow, New South Wales, to begin working in the apple and pear industry. He has since worked for Batlow Fruit Cooperative in Batlow, Red Rich Fruits in the Yarra Valley, Victoria, and now at Lerinda Apples in Stanthorpe.

WHAT ARE THE BIGGEST CHALLENGES YOU FACE?

“I’d have to say that our biggest challenges are finding good, reliable staff,” Will said.

“When I first took over as General Manager at Lerinda Apples I wanted to increase our core workforce to more than 10 people. I wanted to have at least five local workers so they could partner with backpackers and train them across the business ... but it’s hard to get local workers that want to work on an orchard.”
“We currently have a core team that continually gives 110 per cent and have been trained to cover each other’s roles should they need to.”

“From this point the challenge is trying to reduce our turnover. But because the business relies heavily on backpackers there’s only so much we can do.

WHAT MOTIVATES YOU?

“My team,” Will said. “My core workforce genuinely love their jobs. Seeing the passion they have for what they do motivates me to want improve on my skillset so I don’t let them down.

“I think we all get so consumed in our day-to-day job that we forget to take time out and this causes us to lose focus and the passion for what we do. This creates blinkers to any new opportunities and often we can take it out on those we rely on most – our staff.

“So many of us get into this cycle of working without taking a break; like we are on a treadmill and often lose sight of the positives in the industry of which there are many. We need to stop and reward ourselves for all the hard work and take regular holidays with our families.”

WHERE DO YOU SEE THE INDUSTRY HEADING?

“I think the industry still has another 3-5 years of hard slog ahead of it,” Will said. “I think those in the industry need to start looking ahead and realigning their businesses to meet the future needs of a continually changing retail market.

“Once we overcome these changes – an industry re-alignment of sorts – and providing we unite and work towards creating a single voice for horticulture, we will have a greater opportunity to educate consumers on the cost of farming to ensure a return of fair prices for first grade fruit. This will allow many growers to (once again) reinvest back in their businesses.”

HAVE YOU CONSIDERED EXPORTING?

“I think there is a great opportunity to be had exporting to the Asian market,” Will said. “However, I think it will have to be structured so processes ensure that only top quality fruit is sent and limited to a handful of growers so we won’t flood the market.”

Will said that the industry needs to invest in having someone on the ground in key export markets to receive the fruit on behalf of growers and ensure their best interests are protected.

“Citrus have something similar which was funded through a self imposed levy,” he said. “But I still think more education is needed for growers to understand the risk, opportunities, processes and the different markets before jumping on the bandwagon.

“If we had something similar to the Future Orchards® program – only focused on export – then I think more growers would understand what’s involved better. That would include more
communication across each state to maintain a high quality product and not over-supply any one market to ensure a higher price point is consistently achieved."

WHAT OTHER OPPORTUNITIES DO YOU SEE FOR GROWERS?

"I think there are a lot of opportunities opening up for growers to improve not only their businesses but also to improve themselves," Will said.

"Recent opportunities such as the Emerging Business Leaders program (delivered through a partnership with APAL and Marcus Oldham) have highlighted the opportunity for those in the industry to grow and achieve more out of ourselves. The success of these programs will have a flow-on affect for the industry and will show children from a growing background that there are positives to working in the industry – and money to be made!"

"In addition to these industry programs, I think it would be good to attract more people at a university level. Educate them that there are opportunities to be had in all levels of agriculture."

Will said: “We have a lot of major players now such as Lenswood Co-op, Batlow Fruit Co-op, Montague Fresh and Newton Brothers. All these companies have and need professionals working for them with qualifications. There is a definitely still an opportunity to make good money in orcharding and we need to communicate this to school leavers. Lifestyle + money = win."

WHERE DO YOU SEE YOURSELF IN 10 YEARS TIME?

“I hope to be still here working in the Stanthorpe apple and pear industry,” Will said. “I really believe in the next five to seven years growers within this district will be able to push more product throughout Australia and into emerging export markets in Asia.”

Will added that, after moving around a fair bit, he would also like to stay put in Stanthorpe.

“I have to admit that the main reason I’d like to stay in Stanthorpe (outside my team) is the other growers in our district. Despite some challenges, the young guys coming through like Daniel and Trent are really inspirational,” he said.

“To see old ‘stalwarts’ of the industry like Ugo not only adopting new approaches but pushing the rest of us kicking and screaming makes for a dynamic district. Having been around a bit I feel that if Stanthorpe growers continue on this path — as they have done for the past two years — this district will go from strength to strength, even in a more streamlined fashion to what we see today.”
Risk Management: Control what you can, manage what you can’t

By John Wilton, AgFirst

Whichever way you look at it, pome fruit production is a high risk business. There are many risks including production risks, pest risks, climatic risks, marketing risks, not to mention the financial risks that can escalate rapidly once you get leaned on heavily by one of these risks.

These risks fall into two broad categories; those that you can exert some direct control over, and the ones that cannot be controlled. These ones you have to learn how to manage by having sound strategies to manage your way through them if they occur.

Control what you can

The orchard operation itself should be completely under your control, so here you call the shots on what happens in regard to planting systems, variety mix, production policies, where you pack and market. Apart from climate risk which involves perils such as hail, frost, high temperature injury, and available irrigation water supply, you have a fairly high level of control over on-orchard risks.

The most important ingredient for orchard success is passion for the crop and adoption of the ‘glass is half full’ rather than ‘half empty’ philosophy. Orchard size relative to available resources including capital, management skills and ability and the inevitable land and water constraints, is a major determinant of orchard business success.

With the right postharvest and marketing strategies an orchard business does not have to be large to be highly successful.

The key point is to do it well so that there is good productivity and have a variety mix that is aligned with consumer demand. Consumer demand tends to be fickle rather than constant, but as a rule evolves along an established trend.

Understanding these trends and implementing strategic planning to capitalise on them is your best approach for tackling the problem of market risks. In the 50-odd years I have worked in the industry I have seen many instances of orchard businesses getting into trouble through outgrowing their available resources.

Our experience in Australia through the Future Orchards™ program indicates Australian orchards are no different and often outgrow their most limiting factor, which is often irrigation water supply.

At home here in New Zealand, restraint on money supply due to market returns crashing in the middle of a new planting program is what tends to cause the most grief. This is often a symptom of failing to put in place a good long range planning strategy for orchard redevelopment.

Many orchards grow a range of varieties, often with a wide range of age, yield and quality performance, with some blocks clearly past their ‘use by’ date. Careful analysis of block by variety performance will quickly identify and rank their performance. Those in the lower quartile need to carefully considered for removal or, if retained, strategies developed for their improvement.

Remember, unless you change the production policies for these low performance blocks to overcome their limiting factors, the results will remain the same.

Removal of blocks that fail to cover their running costs releases upwards of $10,000/ha of working capital, and frees up labour and irrigation water for use in places where the returns will be better.

The variety mix

Here, the focus has to be on varieties that:

1. are well adapted to your micro-climate and growing conditions and,
2. command premium prices in the market place, and
3. achieve high Grade 1 volumes in the optimum fruit size range demanded by the market

Maintaining a variety mix with potential to have high margins between returns and production costs is your best way to manage market risk. With few exceptions, market preference always trends towards high colour. This means that, once good red strains of a variety are found, the days of the original standard variety are numbered, even though fruit connoisseurs claim that the original variety strain is a better eating experience.
Even if unit pricing of the red strain and the parent strain are similar, the red strain still has a huge economic advantage for the grower simply because grade 1 recovery is much higher (Figure 1).

An orchard variety mix should be dynamic which means that changing varieties is inevitable. This change should be gradual rather than sudden, simply because few orchard businesses have the capital to make big changes. On the assumption of an orchard life in the range of 20-25 years, 4–5% of the area needs to be rolled over each year. Where orchards are small it may be uneconomic to plant each year, so maybe 10-15% every few years.

Where the variety block to be changed is relatively young, planted along modern lines and the tree health good, grafting is an option for changing the variety mix. With older blocks of unknown health status, grafting becomes a high risk option and can lock you into an obsolete planting system. Remember, a good block is there for a long time (Figures 2 and 3).

Club varieties

Whether you like it or not, some form of variety protection and ownership is the way of the future. Open varieties are now generally the older, well-established varieties, often referred to as ‘commodity’ varieties. They can be grown by anyone and tend to compete on price only, which means that eventually only those growers with the lowest production costs or those sufficiently large enough in their production to control the market will be the producers able to grow them profitably. If you are a small grower with limited market clout, this is not a place to be.

Incidentally, a trend we have seen in recent years has been the establishment of brands within a commodity variety in an effort to lift these branded products into a premium price range above the commodity price level. Usually, the branded variety is a distinct strain, so will differ in appearance from the general run of the mill parent variety, be packed to a higher quality standard, sold under its ‘branded’ rather than variety name and incur some kind of marketing levy to cover the market promotion costs necessary to establish it as a brand in the market (Figure 4).
Most newer variety introductions will be some form of ‘club’ variety. This was a trend started in Australia with the highly successful Pink Lady® club promotion. This is an example of an ‘open’ club without any volume restriction to date; however, to use the name, marketers need to belong to the club, pack to quality standards defined by the group and pay a royalty levy to fund marketing, trademark protection, administration, etc. Some of the newer variety introductions are more tightly managed in regard to production volume than Pink Lady and may have higher royalty payments. Some will also tie you into supplying a particular marketer.

Generally the breeders or finders of new varieties or bud sports seek plant variety rights (PVR, or Plant Breeders Rights – PBR) which protects their rights to the variety for a set time period, usually around 20 years. Then comes the commercialisation stage where the PVR holder will determine the commercial arrangements under which the variety will be developed. Here, there are a whole range of different options possible.

At one end of the spectrum, the PVR holder may just opt for a simple tree royalty payment with open marketing as has been the case with many of the PVR varieties derived from bud sports. In this situation you pay the tree royalty and are free to market the fruit anyway you wish.

At the other end of the spectrum the variety is licensed to a particular organisation which is responsible for the commercialisation program, trademarks a name, develops the market, controls plantings, production, and quality standards, allocate rights to sub-licenses and manages market volume. Jazz™ is an example of a cultivar being managed in this manner. While the variety has PVR protection, no competing organisation can legally try to develop the cultivar. The objective during the PVR period should be to develop a strong brand in the market place so that when the PVR period expires the brand will continue to enjoy premium pricing.

It is my opinion that in the future most, if not all, premium value varieties will be managed under some form of club arrangement. The very best of them, as Pink Lady has shown, will have huge market potential and maintain their premium price category well into the future. However, it needs to be recognised that only the best of the club varieties will succeed. There is not going to be room for all of them in the market.

Undoubtedly, the successful orchards of the future will need to have club or trademarked varieties in their variety portfolio.

Pest and disease control

Crop spoilage through pest and disease outbreaks is an ever-present risk, which can also present market access issues as well for those exporting out of state. Fortunately, in the case of some fruit these are good, well-tested control measures available for their pests and diseases.

Diligent application of control measures minimises pest and disease risk. Our experience over the years shows that trying to take shortcuts when it comes to pest and disease control often ends in grief, with the cost of overcoming the resultant pest or disease problems often outweighing the insignificant savings that are possible through dropping the odd spray.

Because pest and disease control is such a critical part of producing a good crop, the machinery used for spray application needs to be fully maintained and thoroughly checked during the dormant season to minimise breakdown risk over the critical spring period. Scab or Codling moth won’t wait for you to mend the sprayer. Sprayer capacity is also critical. When adverse weather strikes during the critical spring period you need sufficient sprayer capacity to cover the orchard within a couple of days at most.

If the orchard has expanded to the point where it is stretching your spraying ability, you either need to get another sprayer or haul out a few low performing blocks to bring orchard size down to what can be covered by your existing machinery. Incidentally, do not skimp on disease control in your non-bearing blocks. A decent dose of scab in a young orchard will easily extend its non-bearing period, not to mention the problems associated with bringing the disease under control in future years.

Orchard size

As margins become squeezed, orchards have had to increase in area to provide a satisfactory income. Because of the intensive nature of crop husbandry inputs the orchard needs to be at least a two or three person unit so that should a key staff member becomes unavailable there is still staff available to carry out critical tasks such as spraying.

Once orchard size reaches the two to three man unit size, it is questionable whether there are significant economies to scale at
orchard level to support continued growth unless there are other aspects of the business such as post harvest facilities which require higher throughput volumes to be economic.

Beyond the orchard gate there are significant economies to scale, so the trend in recent years has been consolidation of post harvest facilities to enable more efficient utilisation of labour saving automation. With the powerful buying power that is concentrated in the supermarkets, it has also been necessary for the production sector to develop strategic marketing alliances among themselves to help maintain their bargaining power (Figure 5).

Exit strategies

One of the questions that many growers face when approaching retirement age is how to best exit the orchard business.

For those properties on the fringe of urban areas the answer is often quite simple. When the town appears on the horizon it is time to think about a change of land use and probably not a bright idea to continue longer-term orchard development projects.

The answer is trickier for properties that do not have this option. Where the location and site are very well-suited to fruit production, close to good servicing facilities and markets, and capable of high production of Grade 1 quality fruit, it is probable that the orchard will continue to have a very viable future. Here it is best to view the orchard asset as an important component to your superannuation, in which case the production base needs to be maintained, and normal orchard block renewal to improved varieties continue, so that when the time comes to exit the business it will appeal to prospective purchasers (Figures 6 and 7).

One of the big challenges for the fruit growing industry is to create opportunities for young fruit growers to gain an ownership stake in the industry. Maybe some form of partnership or share cropping could provide an entry path for these people, as well as take some of the work pressure off the older fruit grower looking to slow down.

Australia also has orchards in isolated locations, farming under less than optimum production conditions. As a rule, these orchards are marginal when it comes to economic viability, so continuing to redevelop them is likely to be a dead end road. Such properties tend to fade away and will eventually be worth the value of the land, less the cost of pulling the trees out. Even so, if the retiring orchardist enjoys living in the locality, carrying on with an attrition policy that involves progressively removing the least profitable parts of the orchard or varieties, is often an option because it reduces the work load, and will maintain a profit margin at a level which may not be possible if the whole orchard was to continue to be farmed at a less than adequate input level. 

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**Figure 5:** Post-harvest facilities have economies of scale. This “state of the art” Washington packing line handles 110 bins per hour with low labour inputs due to a high level of automation.

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**Figure 6:** Maintaining your orchard through regular redevelopment into new, high producing blocks of preferred varieties preserves its value and will find ready buyers when you want to retire.

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**Figure 7:** This poor performing orchard will struggle to find a buyer and may only be worth land value, less the cost of pulling the trees out.
The apple and pear climate change research program

Prepared by the project team: John Wilkie¹, Martine Combret², Ian Goodwin², Clinton McGrath¹, Lexie McClymont², Simon Middleton¹, Peter Nimmo¹, Lisa Starkie³, Osi Tabing¹, Jenny Treeby²

Late in 2012, the apple and pear industry’s climate change research and extension program commenced. The program is titled ‘Understanding apple and pear production systems in a changing climate’, and is a collaborative project between the Queensland Department of Agriculture, Fisheries and Forestry in Queensland (QDAFF), the Department of Environment and Primary Industries in Victoria (DEPI) and the Department of Agriculture and Food in Western Australia (DAFWA).

This program combines fundamental science aimed at understanding apple and pear dormancy and chilling, high-tech modelling, studies on netting and fruit sunburn, and some extension of the implications and adaptation strategies for apple and pear grower.

This is not the first climate change work that the apple and pear industry has funded. A desktop study investigating the potential impacts of the predicted climate in 2030 on Australian apple and pear growing regions was completed in 2011. Modelling undertaken as part of this project predicted that mean temperatures in 2030 for inland and coastal regions would increase by 1.0-1.2°C and 0.7-0.9°C, respectively, compared with historical temperatures (1957-2009). There was less certainty surrounding the 2030 rainfall, with the predicted change in rainfall ranging from a 4.3% increase in Applethorpe (Queensland) to a 12.1% decrease in Tatura (Victoria) (Putland et al. 2011). It is currently unclear how the altered growing environments created by these potential temperature increases and varied rainfall patterns will impact on pome fruit production across Australia.

A number of important potential impacts on apple and pear production systems were identified in this first project:

- Reductions in chilling for some locations and varieties in some years to below critical levels;
- Variability in flowering time;
- Increased maximum summer temperatures potentially leading to increased quality defects such as sunburn;
- Significant changes in water availability to growing regions relying on overland flow and on-farm water storage, accompanied by likely minor increases in orchard evapotranspiration.

The potential impacts of predicted climate change were extremely complex and at times antagonistic with one another. So it was concluded that, to gain a detailed understanding of how changing climate could impact Australian apple and pear production systems, variety specific phenological models (timing of bud burst, flowering, fruit maturity) would need to be developed.

The overall aim of the new research program is to reduce the vulnerability of Australian apple and pear production systems to climate change. We hope to achieve this by identifying potential impacts through our experimentation and modelling and through discussions with growers about their first hand experiences. With input from growers we will develop strategies to overcome these predicted impacts and communicate our results through workshops, manuals, websites and the APAL communications team.

Predicting apple and pear flowering time now and into the future

The apple and pear phenological clock is reset each year through the annual phenomenon of dormancy. The timing of the resumption of growth and consequently flowering is determined partly by the genetic characteristics of the variety, partly by the effect of the prevailing weather conditions on the time required to accumulate the required chilling and subsequently, by the requirement to accumulate required heat units.

A large amount of research has been undertaken over the years on the chilling and dormancy of apple and pear trees, however, there is surprisingly little specific information on these aspects of modern commercially important varieties. So to develop our phenological model and be able to predict flowering time in current and future environments, we decided we needed to go back to basics and experimentally determine the chilling and
Why will discerning pome fruit growers use Pristine?

- Excellent fruit finish enhances quality at pack-out.
- Two active ingredients working in tandem to control apple & pear diseases.
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heat unit requirements governing the movement of apple and pear trees through dormancy and the recommencement of growth. This experimentation includes some work in controlled environments and also some monitoring of the timing of bud burst and flowering in orchards in the Stanthorpe growing region (Queensland), the Goulburn Valley (Victoria) and near Manjimup (Western Australia).

Some very initial analysis of the field data collected during the 2012 flowering season is giving us an indication of just how exciting the data collected over the next three seasons will be. For example, for the first time we are able to make objective comparisons and see how different the timing of flowering is between Queensland and Western Australia and just as importantly, the extent of the protracted flowering in Western Australia compared with Queensland and Victoria. Is the protracted flowering seen in Western Australia a phenomenon Queensland and Victorian growers will need to manage in the future? We believe the model we are developing will be able to indicate the likelihood of changes in the production system such as this occurring.

![Figure 1: ‘Granny Smith’ apple trees at Applethorpe Research Station with individual buds tagged for assessments of the timing of bud burst and flowering.](image)

**Fruit surface temperature, sunburn and netting**

There are other pressing impacts of severe environmental conditions that warrant investigation, with fruit sunburn being one of the most obvious examples. Orchardists estimate losses from fruit sunburn can range from 6 to 30% depending on season and variety (Lolicato et al. 2011). Understanding any potential increase in the incidence and severity of fruit sunburn with climate change and improved ability to manage fruit sunburn now and in the future is exceptionally important.

Over the past season, the DEPI team at Tatura has been undertaking very detailed experimentation to determine the ability of netting to reduce radiation and fruit surface temperature and so reduce the incidence and severity of fruit sunburn. Some very preliminary results indicate that netting reduced UV-B radiation by 30%, whereas photosynthetically active radiation was reduced by 23%. Maximum fruit surface temperatures were as much as 6°C lower under netting, all combining to have a significant reduction in the incidence of sunburn browning and sunburn necrosis.

This work has important implications in the short term for grower confidence in the effect of netting on fruit sunburn. The real power, however, of the data is that it will be used to develop a model for fruit sunburn under climate change. The model will be used to predict the effect of increased temperatures on the incidence and severity of fruit sunburn across Australian growing regions and the potential for netting to mitigate this.

**General effects of netting on productivity and quality in an extreme environment**

Over the years, work has been undertaken to determine the effects of netting on orchard environment (temperature, radiation, humidity, etc), productivity, quality and tree growth, both in Australia (Middleton et al. 1996) and overseas (Blanke et al. 2010). The apple industry throughout Australia is investing in netting to guard against hail, bird damage and to help moderate extreme environmental conditions. However, some practical questions remain on the economic viability of netting in regions less prone to hail and the effect on orchard environment, productivity and fruit quality in these regions.

The team in Western Australia had the opportunity to use a local netting demonstration set up by the Royalties for Regions program in a commercial ‘Cripps Pink’ orchard. They will compare the effects of two different coloured netting on the environment under the netting, yield and quality. A control area will be left uncovered in the same orchard.

The work will give the industry valuable practical information on orchard performance under netting. Some of the data collected at this site will be used to verify the fruit surface temperature experimentation being undertaken in Victoria.
Capitalising on industry experience and getting the information to growers

All of the components of experimentation and modelling described above will need to be analysed for practical outcomes, integrated and packaged in grower friendly publications. This will be an ongoing process which will start with the formation of Technical working groups made up of apple and pear growers across four states. Feedback provided by the technical working groups will be an integral part of the extension activities associated with this project.

The project team will present updates in the growing regions around Australia twice throughout the project. At the conclusion of the project we will produce manuals of climate change for apple and pear growers. We are yet to determine what topics these manuals will address, because the most important issues for industry will only be determined as we progress through the project.

Additional work

Recently, another deciduous fruit tree climate change project, this one led by the University of Melbourne, has been successful in obtaining funding from the federal DAFF funded Filling the Research Gap program. This new project ‘Crossing the threshold: Adaptation tipping points for Australian fruit trees’, is aligned closely with the apple and pear industry funded program. It will also consider cherries and in general takes a bigger picture view of the potential impacts of climate change and further considers adaptation options to reduce exposure of the fruit industry to climate change. This is a collaborative project between the University of Melbourne, DEPI, DAFWA, QDAFF (Queensland) and the University of Tasmania.

Funding

This project is funded by Horticulture Australia Limited, Australian apple and pear grower levies, The Queensland Department of Agriculture, Fisheries and Forestry, The Department of Environment and Primary Industries, Victoria and the Western Australia Department of Agriculture and Food.

References

Lolicato S (2011) Sun protection for fruit, a practical manual for preventing sunburn on fruit. The Department of Primary Industries Farm Services Victoria Division.


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The importance of high quality feathered trees has been highlighted in surprisingly few research trials. In Australia, Jotic and Oakford, in 2004 reported on industry funded trials (HAL AP98022) where the production of fruit in the second season after orchard planting from well feathered nursery trees was compared to rods at the time of planting (Table 1). While this was an unreplicated trial that cannot be statistically analysed, the impact of higher yields from feathered nursery trees, the second season after planting is consistent across all apple cultivar and rootstock combinations tested and this clearly shows that feathered nursery trees outperform rods.

At the same time as the above trials a fully replicated trial was being performed at two sites in Poland. These trials used one year old rods of ‘Gala’ on M9 versus two year old feathered trees along with herbicide versus black plastic mulch for weed control (Sadowski et al 2005). The results (Figure 1) clearly show a dramatic increase in yield in the first cropping season with the use of the older feathered nursery trees. While the yields were lower than the Australian research, the feathered trees yielded nearly 15 tonnes/hectare compared to just under 2 t/ha for the trees from rods. There is also a marginal, but not statistically significant, increase in yield with the use of black plastic weed control methods as opposed to herbicide strips at both the experimental sites.

As part of the Future Orchards 2012 project, in 2007, John Palmer, from New Zealand reinforced the above message on nursery tree quality with results from New Zealand studies that showed the impact of nursery tree quality with planting density on the first cropping seasons yield (Figure 2).
This clearly shows that feathered trees outperform rods in their first cropping season with the feathered trees yielding just under 19 t/ha and the rods only yielding 9 t/ha when planted at 2500 trees/ha.

So it can be clearly seen from these experimental situations that large, highly feathered trees provide superior yields of fruit in their first cropping season as is promoted to industry. But the question is, how does this translate to the commercial situation? To study this I have drawn upon the data for individual commercial blocks from around Australia studied as part of the Future Orchards program. In this study eight ‘Cripps Pink’ orchards established from feathered rods were compared with five orchards established from rods. For ‘Gala’ there were seven and three orchards respectively. Orchard selection was on the existence of yield data in the second or third season after planting and all had more than 1500 trees per ha. Yield data was adjusted to 2500 trees/ha, for the second and third season after planting.

This showed that the research results demonstrated above do not translate to the commercial situation and the opposite has in point been true from commercial plantings. It was found that rod trees out-yielded the feathered trees in both the second and third season for both cultivars (Figure 3).

Upon closer examination the situation is worse still as, in the trial work described above, the average fruit yield from feathered trees in the second cropping ranged from 14.9 to 35.8 t/ha while in Australian commercial orchards an average yield of feathered trees was only 4.8 t/ha – three to seven times lower than the research findings.

Of interest, though, is that the commercial performance of the orchards established from rods was similar to that found in the research trials for orchards established from rods and in fact the yields encountered commercially were above those in two of the trials. This implies that commercially, to date, the orchard returns of orchards from rods have been superior to returns for orchards established with feathered trees. This unexpected finding highlights that, due to some commercial practice, newly established orchards from feathered nursery trees are performing poorly in the early years of the orchard, however, the orchards established from rods are performing in line with experimental expectations. To make full financial gain from using feathered trees it is important to identify where the problem causing a negative impact on orchard performance is occurring and take steps to rectify this situation.

One possible explanation of this loss of potential yield with feathered nursery trees is transplant shock.

It can be expected that, in trial work on research stations, the nursery trees were grown on the research station. At the time of planting out in the orchard it is possible that trees were carefully lifted and replanted into the trial on the same day. This is vastly different to commercial practice where trees are lifted, by machine, in the nursery and at some point in time transported from the field to a shed where their roots are washed and the trees stored until they are graded, bundled and then accumulated into orders and stored until transport can be organised. Upon arrival at the orchard the trees are offloaded and stored prior to transport to the orchard and planting out.

Transplant shock may explain the slightly improved performance of the experimental orchards established in Poland where black plastic was used for weed control. The black plastic would maintain soil moisture, allow for warmer soils and eliminate all competing weed species thereby reducing transplant shock symptoms.

While it would be easy to blame nurseries for this they are not solely responsible and care needs to be taken in both the nursery and on the orchard. While the source of trees in the block data collected was not detailed, the cost of the trees was recorded. Occasionally, in the notes section, a comment was made that the trees were from the grower’s own nursery. It can be expected that orchards that propagated their own trees were allocated a price below $10 per tree, although inexpensive non-patented nursery trees would potentially also cost less than $10/tree as well. For the two orchards where the use of trees propagated on the orchard was specified the cost allocation was $3.60 (rods) and $4.40 (feathered trees) supporting this hypothesis.
Figure 4 identifies that feathered trees that cost less than $10 per tree, had poor orchard performance in their first cropping season while expensive feathered trees, probably from commercial nurseries, had a higher performance in their first cropping season. It cannot be determined if this difference in performance due to tree cost was due to the source of the trees or due to extra care being placed on tree management in the orchard due to their higher cost.

It is noteworthy to observe that the performance of the two cheapest sets of trees, probably grown in a grower nursery, was superior to trees that cost between $8 and $10, probably originating from nurseries. This implies that cheaper nursery trees are poorly managed. This highlights the importance of careful handling and management of trees once they are delivered to the orchard.

Table 2. The effect transplant shock, through method of nursery propagation, on growth of Forelle pears in an orchard after two growing seasons in the orchard.

<table>
<thead>
<tr>
<th></th>
<th>Potted trees</th>
<th>Bare rooted trees</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Minimal</td>
<td>Transplant</td>
</tr>
<tr>
<td>transplant shock</td>
<td>transplant</td>
<td>shocked trees</td>
</tr>
<tr>
<td>Total length of</td>
<td>9639</td>
<td>3467</td>
</tr>
<tr>
<td>shoots (mm)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trunk cross</td>
<td>510</td>
<td>326</td>
</tr>
<tr>
<td>sectional area (mm²)</td>
<td></td>
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</table>


The impact of transplant shock in pear trees was demonstrated by Ende in trials during the 1980s (Ende, 1994). In one set of trials Ende planted ‘Forelle’ pear trees in a conventional nursery and also in large (19 litre) plastic pots. The conventional nursery trees were bare rooted and transplanted, along with the potted trees into an experimental orchard. After two years of growth the size of the trees was measured (Table 2). Here it can be seen that transplant shock on the bare rooted trees caused a 64% reduction in the growth of the trees. In this publication Ende concludes that transplant shock is a major problem as it limits early production of fruit.

Ende (1994) also briefly describes a second trial studying transplant shock where ‘Beurre Bosc’ pears were established in a commercial orchard as dormant buds or bench grafts and no transplant shock was observed with these trees. This raises a whole new potential method of economically establishing a high density orchard, using cheaper bench grafted trees. When considering this it is relevant to review research by Robinson et al 2007.

Robinson et al (2007) reported that in New York, (USA), growers are attempting to develop orchard establishment methods that utilise less expensive trees and some growers have experimented with planting bench grafted trees. The initial cost of such orchards is substantially reduced when compared with using feathered trees; however, early yields are delayed by a year. Robinson has studied the economic value of such a strategy and found that, in New York, the large-caliper, feathered trees were more profitable, over a 20 year period, at 2,000 trees/ha, while at densities above 3000 trees/ha bench-grafted trees were more profitable (Figure 5). While these American financial figures are not directly relevant to the Australian situation, they do provide a guide and a trend worth considering.
Bench graft trees have additional advantages over feathered trees in that they are less prone to transplant shock as the root-to-shoot ratio is in balance, they are cheaper to purchase, transport and store, they can be used to rapidly establish new apple cultivars ahead of other growers, they can be trained to the desired tree shape easily and they can be ordered and delivered on your desired rootstock within a few weeks of ordering.

The cost of trees has also concerned growers in Europe and in 2011 growers in the United Kingdom funded a new trial to explore the potential of using other nursery tree types, other than feathered trees, to establish their orchards (http://www.hdc.org.uk/sites/default/files/research_papers/TF2020620CSPsg.pdf).

CONCLUSION
Currently the performances of well feathered trees in a newly planted orchard do not meet the expectations from research, probably due to transplant shock. This has meant that the lower quality rod trees, with a lower shoot-to-root ratio, do not suffer so badly from transplant shock so perform better than expected compared to feathered trees. This highlights that nurseries should be vigilant to minimise treatments to induce transplant shock and the importance of extra care at planting to minimise the effects of transplant shock. Under current conditions there is potential for bench grafted trees, planted at extremely high densities, to provide an equivalent return on investment over the life of the orchard. These trees have other advantages such as extremely short lead time, allowing for rapid planting of new cultivars, and less expensive transport and storage costs.

REFERENCES


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**Energy grant boosts growers’ bottom line**

**AUSTRALIAN FRUITGROWERS COULD REDUCE THEIR COSTS BY AS MUCH AS 20 PER CENT AFTER THE INDUSTRY SECURED A $636,970 ENERGY EFFICIENCY GRANT.**

Apple and Pear Australia Limited (APAL) was one of 18 groups to secure the Energy Efficiency Information Grants (EEIG) program from the Department of Resources, Energy and Tourism. The program will assist Australian summerfruit, cherry, apple and pear growers make the required changes to reduce their costs and greenhouse emissions.

APAL Managing Director Jon Durham said energy costs are the second largest faced by fruitgrowers with electricity costs comprising 17 per cent of total operating costs for orchards and packhouses.

“Energy costs are the second largest faced by fruitgrowers. “A recent study conducted by the Department of the Environment and Primary Industries (DEPI) Victoria revealed that energy costs could be reduced by almost 20 per cent through cost effective energy saving opportunities with short payback periods,” Mr Durham said.

“The new program will assist growers to identify where cost savings can be made and the steps to achieve them, helping to increase profitability.

“Growers will be able to see firsthand where potential energy savings could be made and will contribute to reducing Australia’s environmental footprint – and that’s a win for all Australians.”

The program, to commence this month, will conduct 30 energy audits throughout the 10 temperate fruit production regions across Australia to identify energy saving opportunities. The audit findings will then be presented to growers in a series of workshops in pack houses around Australia. Results will be rolled out in the second half of 2014.
Net benefits – the sun protection factor in 2050

By Lexie McClymont*, Ian Goodwin* and Wendy Sessions*

Installation of netting by apple growers has been a widespread response to combat adverse weather events. In addition to providing protection from hail events, netting alleviates sun damage by reducing exposure of fruit to solar radiation.

The cost of netting is weighed against these benefits over many years; current netting products are expected to have a lifespan of 10 years while netting structures may last 30 to 40 years. The effectiveness of netting in preventing sun damage of fruit may diminish if future climate predictions of increased air temperatures eventuate. Studies undertaken in January 2013 will aid modelling of fruit temperatures and evaluate the potential of netting to reduce sun damage in future climates.

**Figure 1:** Thermocouples inserted in ‘Royal Gala’ apples to measure fruit surface temperature in the Goulburn Valley. Circles in lower photos indicate positions of thermocouples. Fruit were selected at upper, mid and lower canopy levels on the western sides of trees so that they would be exposed to direct radiation at some stage of the afternoon.
Netting provides protection by shielding fruit from solar radiation. This lowers fruit surface temperatures and reduces fruit exposure to UV-B radiation. Fruit surface temperatures greater than 46–49 °C (varies depending on variety) for 60 minutes have been shown to cause sunburn browning, while sunburn necrosis results when fruit temperatures exceed 52°C for 10 minutes (Racsko and Schrader 2012). Photo-oxidative sun damage occurs when previously shaded fruit is suddenly exposed to solar radiation (Racsko and Schrader 2012). UV-B radiation is known to contribute to sunburn browning, but the interactions of fruit temperature and UV-B radiation exposure are not well understood.

A ‘Royal Gala’ block located at Geoff Thompson’s North Shepparton orchard provided ideal conditions for examination of the effects of netting on fruit surface temperatures and exposure to UV-B radiation. The site consisted of a partially netted ‘Royal Gala’ block. The absence of netting over part of the block enabled comparison of responses of trees of the same age, variety and rootstock that were subjected to similar management with the main exception being the presence or absence of netting. Surface temperatures of 60 fruit in each of the non-netted and netted areas of the block were monitored by inserting thermocouples under the fruit skin (Figure 1). Weather data was collected within both areas of the block and in an open area beside the block (Figure 2).

Maximum daily fruit temperatures were consistently higher in non-netted areas of the block compared with netted areas (Figure 3).

Over the monitoring period, the maximum fruit surface temperature recorded in the non-netted area was 54.1°C. In contrast, the maximum fruit surface temperature recorded under netting was 49.6°C. A greater proportion of sensors installed in the non-netted area recorded fruit surface temperatures in excess of 46°C (85%) than under netting (45%), and 10% of sensors in the non-netted area recorded temperatures in excess of 52°C. Fruit surface temperatures exceeded orchard air temperature by as much as 17.5°C in the non-netted area and by 14.3°C under netting. Air temperature (within the block or outside the block) was a strong predictor of maximum fruit surface temperature (Figure 4). However, when air temperature exceeded 20°C, variability of fruit surface temperature increased.

Increased variability of fruit surface temperature in response to increasing air temperatures above 20°C supports previous...
conclusions that air temperature alone is inadequate for accurate prediction of fruit temperature (Schrader 2003). However, our data indicate that fruit are at risk of sun damage when air temperatures exceed 28°C (non-netted orchards) or 33°C (netted orchards), based on a 46°C threshold fruit temperature.

Sun damage assessments at harvest showed differences between non-netted and netted areas (Table 1). There was little difference in the occurrence of minor browning between non-netted and netted trees. However, occurrence of more severe forms of sun damage (major browning and necrosis) and damage caused by sudden exposure to light (photo-oxidative damage) appeared to be higher in the non-netted trees than under netting.

A comparison of weather data from the non-netted and netted areas of the block demonstrates the effects of netting on microclimate. Air temperature was similar within the non-netted and netted orchard areas (Figure 5). The perception of lower air temperatures under netting is due to shading; the decrease in solar radiation hitting our skin when we stand under netting means we are cooler, even though air temperature is unchanged. The effect is the same for apples; lower fruit temperatures under netting are largely attributable to lower solar radiation exposure.

Global, diffuse, UV-B and photosynthetically active radiation were all lower in the netted orchard than in the non-netted area. Measurements showed that netting reduced UV-B radiation by 30% whereas photosynthetically active radiation was reduced by 22%. Reductions in UV-B radiation and photosynthetically active radiation are likely to have contributed to the reductions seen in sun damage.

Reductions in photosynthetically active radiation can limit yield by decreasing the production of assimilates by photosynthesis, however, no evidence was seen of this at this site. Different netting products will have differing impacts on the light environment of an orchard. The observed fruit temperature responses under netting and sun damage assessments at harvest confirm the effectiveness of netting in reducing, but not preventing, sun damage under current conditions. Fewer fruit under netting reached temperature thresholds for occurrence of sunburn browning (46–49°C). Fruit under netting did not reach temperature thresholds for sunburn necrosis (52°C). At the study site, netting substantially reduced development of major sunburn browning, necrosis and photo-oxidative damage. A very low proportion (less than 1%) of the fruit grown under netting would have

<table>
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<tr>
<th>Minor browning</th>
<th>Major browning</th>
<th>Necrosis</th>
<th>Photooxidative damage</th>
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<tbody>
<tr>
<td>Non-netted</td>
<td>10.4</td>
<td>2.6</td>
<td>3.0</td>
</tr>
<tr>
<td>Netted</td>
<td>7.7</td>
<td>0.4</td>
<td>0.1</td>
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Table 1. Average percentage of fruit, from netted and non-netted trees, affected by sun damage.

Figure 3: Air temperature outside the orchard (blue line), and maximum fruit surface temperature recorded in netted (red line) and non-netted (green line) orchard areas.
Figure 4: Relationships between maximum fruit temperatures (FST) in netted (red triangles, black line) and non-netted (green squares, green line) orchard areas and air temperature outside the orchard. Data are 10 minute averages of measurements taken every minute.

Figure 5: Air temperature in non-netted and netted areas of a ‘Royal Gala’ apple orchard in the Goulburn Valley. Diagonal lines are 1:1.

been culled due to sun damage, and approximately 8% would have been downgraded due to minor sun damage. The contrasts markedly with the non-netted area of the orchard, where up to 6% of fruit would have been culled due to sun damage and 10% would have been downgraded.

In the next step of this project, the data will be used to verify and, if necessary, modify existing fruit surface temperature models. Following model verification, simulations will be run for 2050 and 2070 climate scenarios to evaluate the potential for netting to continue to provide effective sun protection in the future.

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Acknowledgements

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References


International apple and pear research update
Compiled by Dr Gordon Brown

Nursery and Genetics

Albania
In a study of apple rootstocks, it was found that grafting pears on vegetatively propagated quince EM-A produced superior trees a year earlier than grafting them onto wild pear seedlings.

Germany
Columnar apple trees (Malus x domestica) are characterised by a compact growth habit with fruit spurs instead of lateral branches and these provide significant economic advantages by enabling high density plantings. The columnar growth results from the presence of a dominant allele of the gene Columnar (Co) located on chromosome 10 which can appear in a heterozygous (Co/Co) or homozygous (Co/Co) state.

Netherlands
In a study of 21 apple cultivars for their cold tolerance of their dormant wood it was found that Vista Bella, HanFu, Ralls Janet, Judeline and Granny Smith have a high cold resistance, while Lodi Early Golden, Red Astrachan, Petite Jaune and D. Moen have a lower cold resistance.

Apple rootstocks were subjected to different drought conditions and their performance monitored. It was identified that the drought tolerances of the five rootstocks ranked as follows: Malus sieversii > M. hupehensis > M. micromalus > M26 > M29.

Slovenia
Two trials were conducted in organic orchards to compare the productivity of up to 43 Black spot resistant apples with the industry standard, Golden Delicious. While no Black spot was observed on the resistant cultivars, in terms of cumulative yield, Santana had the lowest yield and Ecolette the highest which approached the yield of Golden Delicious.

Production

Japan
In a study of fruit quality from king or lateral flowers it was found that in a flower cluster with fruit from both the king flower and lateral flowers there was no difference in size or other fruit quality characteristics due to flower origin. If there was only one flower in the cluster then the fruit from king flowers was identical to fruit from lateral flowers in Jonathan and Fuji, however, the fruit from king flowers in Orin was smaller than those from lateral flowers.

France
In a long term study of flower dates of Golden Delicious apples as affected by global warming it was found that continental Europe had advanced flowering by 10 days, western oceanic regions by 7 days and there was a very short advancement in Mediterranean coastlines despite even global warming in all regions. These differences in flowering response were explained by different durations of bud swell and bud burst after release from dormancy.

Spain
In a study of stigma receptivity to pollen in apple flowers it has been identified that the king flower has a very short period of receptivity while the lateral flowers have a longer period of receptivity giving them an advantage in poor pollination conditions such as wet weather.

Argentina
In studies of the impact of 5% urea sprays at flowering in Williams Bon Chretien pears it was found that the treatment increased nitrogen (N) content of flowers and leaves and resulted in increased fruit size prior to the thinned fruit falling off indicating increased fruit size was due to improved fruit nutrition as well as less competition from other fruit.

China
In a trial to compare the tall spindle apple training system with the ‘V’ trellis system it was found that the tall spindle system was very beneficial for Royal Gala by increasing yield with no significant effects on fruit quality while the V trellis system improved yield and fruit quality of Fuji trees.

By studying the patents related to pears in China, USA, Great Britain, Japan, Germany, France and Switzerland, as well as those registered with the European Patent Office and the World Intellectual Property organisation, it was found that there are 1048 patents related to pears of which 89% were based in China.
Postharvest & Human Health

India
After studying the rate of respiration of harvested Royal Delicious apples, between 0 and 25°C, a laminate plastic bag was constructed to maintain a 3.3% O₂:CO₂ atmosphere and these bags doubled the shelf life of the fruit.

Australia
A single pre-harvest spray of methyl jasmonate at 169 to 186 DAFB was effective in improving the red blush and export grade Cripps Pink apples through accumulation of flavonoids in fruit skin without adversely affecting quality at harvest.

Switzerland
To aid in the breeding of new disease-resistant apples, the V2 gene – providing resistance to Black spot and a Malus own gene to impart resistance to Fire Blight – have been inserted into Gala apple trees. This process has used the plant’s own genome and not using extraneous genetic material such that it is hoped that the public will be accepting of the new genetically modified cultivar.

Israel
The DA meter that measures chlorophyll by the ratio of light absorption at 670nm and 720nm was used on Starking, Granny Smith and Cripps Pink apples at harvest and after 6 months of storage. The instrument provided a good estimate of fruit sugars and shows potential for pre-storage grading of fruit.

Palestine
Skin browning in Cameo® apples with long term high CO₂ storage has been found to be negatively associated with the activity of genes associated with polyphenol production such that well coloured apples are less prone to the disorder and apples where CA is delayed allows time for gene activation and this results in less skin browning with storage.

China
Polysaccharides (arabinose, galactose and galacturonic acid) from Cripps Pink apple skins and flesh were isolated and fed to rats and it was found these sugars in the diet reduced oxidation of the liver and preserved its anatomical structure and function.

Iran
In trials to find alternatives to fungicides for the control of blue mould caused by Penicillium expansum in apples it has been found that silicon, applied prior to infection, effectively controls the disease.

Brazil
Different coatings for fresh cut apples slices, stored for 15 days at 4°C were assessed and it was found that xanthan gum, associated with citric acid, ascorbic acid and calcium chloride provided the best results by reducing weight loss and microbial growth while maintaining apple firmness and colour.

Chile
Apple polyphenols extracted from apple pulps can provide a rich source of dietary antioxidants. A study has identified that dried apple powder polyphenolics can be preserved if they are packaged in high barrier metalised film pouches.

Pests and Diseases

India
A genetic study of the Black spot fungus, Venturia inaequalis, has been performed and this has identified that this disease has a larger number of genes associated with membrane transporters compared to other plant pathogens.

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France
In a study of apple aphid population dynamics it was identified that winter active spiders in the apple orchards are the main predator of early season aphid colonies.

India
Twenty one isolates of Alternaria malat (Alternaria mali) which causes severe foliar damage to apple trees in Kashmir, were intensively studied and it was found that there is considerable variation in the isolates for all aspects studied.

Japan
Bacterial Black spot disease of European pear caused by as Pseudomonas syringae pv. Syringae has been identified for the first time in Japan.

Spain
In developing a new method of detecting patulin in apple juice it was found that 50% of commercial juices had patulin levels greater than the European Union maximum allowable level.

Latvia
Apples were treated with SmartFresh® and then stored in air or 1.5:2.5% O₂:CO₂ and then assessed for quality. It was found that the fruit stored in controlled atmosphere had superior fruit characteristics.

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Greg’s Quiz

QUESTION 1:
True or False:
Soil particle size in silts are generally finer than is the case with clays.

QUESTION 2:
Which of these Central Victorian towns has an large red-blushed cooking apple named after it?

QUESTION 3:
Which Order of insects, containing more than 100,000 known species including beetles and weevils, is the largest of the Class Insectivora?

QUESTION 4:
What technique, as shown by recent Italian research can effectively thin apples (see last Australian Fruit Grower)?

QUESTION 5:
What brand of tractor has it’s worldwide headquarters in Osaka, Japan?

ANSWERS:

Question 1 – False (while fine grained the soil particle size of silts are larger than those of clays).

Question 2 – B: Ballarat.

Question 3 – D: Coleoptera.

Question 4 – C: Shading.

Question 5 – A: Kubota.

About weather data

APFIP Ltd is undergoing an upgrade of its evaluation site weather stations. The new stations are live online and display a much larger range of data. The first three have been commissioned and are Huon Valley, Tasmania, Orange, New South Wales, and Manjimup, Western Australia. APFIP hopes to complete the upgrade of the remaining five over the next 12 months.

Growers can login to the stations via www.apfip.com.au under the weather data tab at the top of the home page. A Google map displays the station positions, growers then can click on the station icon and access a number of live reports and graphs.

Anyone requiring more information or navigating the display please contact Mark Hankin M: 0408 503 528 or E: mark@apfip.com.au.
COMPANY PROFILE

Ultimate Agri-Products started developing in-field product solutions for Agriculture in mid-1997 with a small range of only three products. Through further commitment to research and development Ultimate was able to commercially release two new liquid developments for the Agriculture market in 1999. The two products GYP-FLO and PH-PLUS provide maximum field results and are applied by some of the largest producers across Australia.

Today Ultimate has expanded the product range to provide solutions for the treatment of Soil, Crop and Water. Due to this expansion the company now services the Agriculture, Horticulture and Civil Industries Australia wide.

Make Ultimate the first choice for your solution.
“Regalis® will always be a key part of our orchard management system”

Rodney Taylor, Orchard Manager, Montague Orchard, Narre Warren North, Victoria

Block D
- Variety: Rosy Glow™
- Rootstocks: M9 and M26
- Planting: 4.2m x 0.75m (V trellis)
- Trees/ha: 3174
- Age of Trees: Planted 2002

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