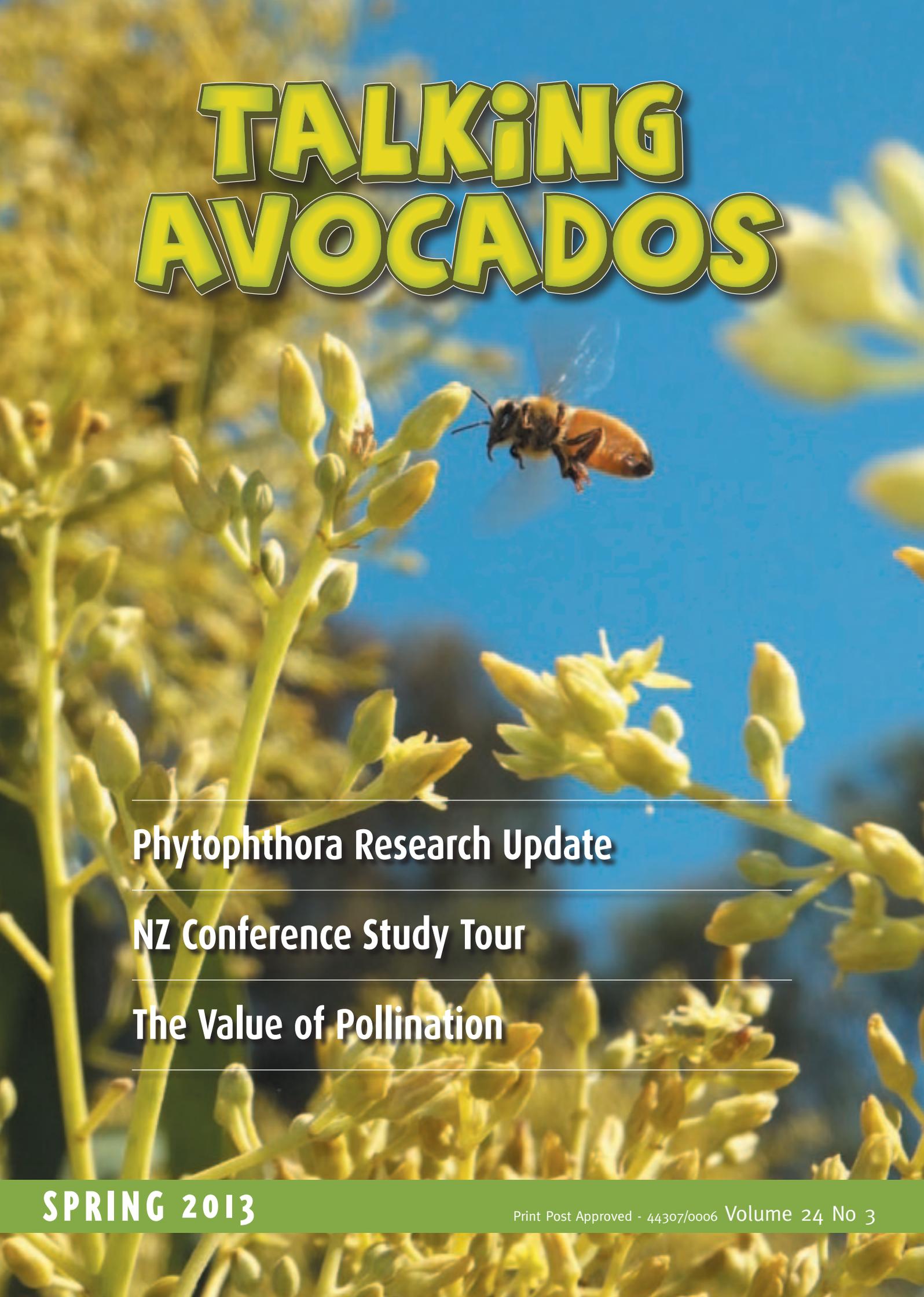


TALKING AVOCADOS

A close-up photograph of a honeybee in flight, positioned in the center-right of the frame. The bee is orange and black with its wings spread. It is surrounded by numerous yellow avocado flower buds and open flowers. The background is a clear, bright blue sky. The overall scene is brightly lit, suggesting a sunny day.

Phytophthora Research Update

NZ Conference Study Tour

The Value of Pollination

SPRING 2013

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We all make mistakes: If we make a mistake please let us know so a correction may be made in the next issue.

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Cover: *A bee in mid-flight pollinating Hass flowers.*
 Photo by Janelle Lendrum,
 winner Front Cover Photo Competition.

Chairman's Perspective

On October the 10th just passed I, as Chair of Avocados Australia Ltd, had the honour to address the opening session of the 5th Quadrennial New Zealand and Australian Avocado Conference held in Tauranga, New Zealand.

Whilst some 100 Australians attended this conference many of you were not in attendance so I would like to take this opportunity to tell you what I said at that address.

"The Australian, New Zealand and South African avocado organisations have had a close relationship for many years and have freely exchanged technical and other information over that time. In fact this conference was the 5th, meaning our relationship with NZ has spanned 20 years."

My address, after the usual acknowledgements of dignitaries and sponsors went on to say:

"Some time ago our two industries signed a piece of paper called "memorandum of understanding" and this gathering of avocado stakeholders and the exchange of information over the next four days is a result of that agreement.



Lately the "memorandum of understanding" has been used as a point to complain about the relationship between us, mainly because of the competition in the Australian summer market between NZ importers and Australian growers.

And, this is a serious concern for Australian growers as it is for growers here in NZ.

However, since we have made an agreement to "UNDERSTAND" then we should take the opportunity to put our respective points across to each other openly and honestly and strive to understand the position of each side.

This conference series gives the **respective industry leaders** the opportunity to exchange ideas.

This conference series also gives our **respective researchers** the opportunity to present and exchange ideas.

This conference gives **you all** the opportunity to meet old friends and to make new friends and for the exchange of ideas, so we can all have a better understanding of the relationship between the New Zealand and Australian avocado industries.

This is the real benefit of our "memorandum of understanding".

This year's conference was a great success and the conference series looks likely to continue mostly because of the comfortable interaction between Australian and New Zealand avocado growers, researchers and all the other stakeholders.

Jim Kochi

Jim Kochi, Chairman, Avocados Australia

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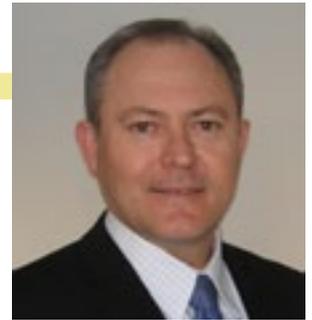
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CEO's Report



Conference hits the mark

Over 400 delegates attended the 5th Quadrennial New Zealand and Australian Avocado Growers' Conference in Tauranga, New Zealand in the second week of September. About 100 Australians made the trip across the Tasman and feedback from attendees has been very positive. At the conference, Avocados Australia convened a networking function for Australian delegates that was also well attended and provided a great opportunity for the Australians to get together. We also facilitated funding support for attendance at the conference which was taken up by ten industry members. Reports from these attendees focussed on specific topics and these appear in this edition of Talking Avocados from page 42 to 50 so as to provide broader industry benefit from this investment. Conference proceedings will be available on-line for delegates in the near future.

Prior to the conference, Avocados Australia Directors met with the New Zealand Avocado Growers' Association Inc. (NZAGA) Board to share information about each others' industries, the challenges and opportunities for collaboration and communication between the two organisations. Discussions centred around opportunities to work together in non-competitive areas of research and opportunities for collaborative export marketing.

Thailand market access

On the 19th of July, a new protocol for market access for Australian avocados to Thailand was implemented. Due to the difficulties with the protocol, which requires cold disinfestation for fruit sourced from outside the Pest Free Areas, trade from Australia ceased on the 19th of July. Avocados Australia has been working with the Department of Agriculture, Fisheries and Forestry (DAFF) over the past 12 months to avert the introduction of the new protocol, without success. The Thai government insisted on gazetting the protocol with the option to amend it once it was in place. We have proposed a number of alternative protocols and submitted supporting research

reports funded through the avocado levy program for conditional non-host status for Hass and a revised short cold disinfestation protocol for green-skinned varieties. To assist the Thai government in processing our proposal, we have offered to fund a review of the Australian data by an independent research agency, nominated by Thailand. On the 26th of September, Avocados Australia was provided a rare opportunity to present to the Thai government the importance of the Thai market to Australia, and our willingness to work with Thailand to achieve a workable protocol. We await a decision from Thailand.

New Federal government

As a result of the change of government, the Hon. Barnaby Joyce MP, the member for New England is the new Minister for Agriculture and the Senator the Hon. Richard Colbeck is Parliamentary Secretary. Over the coming months, we will be working to ensure the new government, and the Department of Agriculture (the new name for DAFF) understands the avocado industry in Australia, the opportunities and challenges and how government can assist.

Qualicado program launched

The new Avocados Australia Qualicado program was launched in Dimbulah, North Queensland in August with a fantastic roll-up. The field day was well attended with about 120 people turning up to receive information about industry best practice, delivered by experts in their field. As part of the program, two packing sheds also received an in-depth systems review by supply chain experts to develop action plans for further improvement. A report on the program is included on page 12. The second round of workshops will be delivered in Robinvale, Victoria for growers and packers and at the Melbourne Markets for wholesalers, ripeners and transporters in mid November. Further details about this program and these events

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can be found in the "Industry Matters" section of the magazine on page 12. You can also find out more about the Qualicado program by accessing the Avocados Australia website at <http://industry.avocado.org.au>.

Industry meets in Mildura

Avocados Australia and the Avocado Industry Advisory Committee recently visited Mildura for a series of meetings which provided a great opportunity to meet growers in the region and to understand the issues for growers in the area. An Avocado Industry Afternoon which included the Avocados Australia AGM, the Annual Levy Payers Meeting and technical presentations from Mr Simon Newett and Ms Lisa Martin was attended by about 50 people from the Tristate region. Feedback from attendees indicated that it was a very informative afternoon and it's a model that we would like to repeat in another region next year.

Horticulture Australia model under review

In July, Horticulture Australia Limited (HAL) announced that it would be commissioning an independent agency to undertake a major performance review of the organisation, with the final report to be completed by

May next year. HAL is the organisation that manages the R&D and Marketing levies that are paid by horticulture producers. The media release stated that: *"This performance review will include an examination of the HAL service delivery model against the benchmark of good governance practice. The review will include the membership structure of HAL, the nature and transparency of funding arrangements and its ability to deliver services in an efficient and effective manner while meeting the future and strategic demands of a fast growing industry sector. The review will also closely examine the efficiency of the existing levy structures and the process by which levies are conceived, implemented, collected and expensed."*

Much of the avocado industry strategic plan is implemented through the avocado R&D and Marketing levies, managed by HAL. The industry has achieved significant gains through the careful planning and investment of these levies over many years. Therefore, Avocados Australia will be submitting its views, as the Industry Representative Body and member of HAL, to ensure any changes to the HAL model are in the best interests of Australian avocado growers.

Trees suffering the effects of waterlogging? Sub-surface drainage may be the answer



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Around Australia

Central Queensland Report

By Lachlan Donovan and John Walsh, Avocados Australia Directors for the Central Queensland Growing Area



In Central Queensland the Hass crop is looking very good with lots of set however Shepard is looking on the light side.



So far we have been experiencing very dry conditions and have had little rain since the floods but we have plenty of water for irrigation.

Trees are flushing back which is a good sign and overall trees are looking better than they did after the flood.

The turnout to the Annual General Meeting (AGM) and the Annual Levy Payers' Meeting (ALPM) held this month in Mildura was fantastic. The presentations from Simon Newett (Principal Extension Horticulturalist at Queensland Department of Forestry and Fisheries (QDAFF) and Lisa Martin (Tristate agronomist) were very worthwhile. The day after the AGM members of the Industry Advisory Committee and Avocados Australia's regional directors took part in orchard visits. The trees down there are very impressive as is the quality of their fruit. Tristate growers do not need to contend with disease and pests like we do. They are more concerned with managing the extremes of temperature.

The 5th New Zealand and Australian Avocado Growers' Conference was a great event with some excellent presentations and delegates had a good chance to learn more about the New Zealand supply chain. It was also good to see the one hundred odd Australian growers networking and having the chance to connect with other growers from other growing regions so the conference was valuable on a number of levels.

Tri State Report

By Barry Avery, Avocados Australia Director for the Tri State Growing Area



The year 2013 will go down in our recent history as the earliest harvest we have experienced, with fruit from Mildura being tested at 28 - 30 density back at the beginning of August.

Good prices plus high demand has seen most of the Hass crop harvested before flowering commenced. This has been an added bonus for growers as the trees have not had to go through the stressful period of carrying two crops.

It has been interesting to see some Hass starting to show tree colour already when we would normally only be starting harvest at this time.

Growers would be aware of the big price difference between fruit in the size 28 range and the sizes 25 and above.

Tri State growers must make every effort to produce that larger fruit, to fully capitalise on their returns, as it not that significantly more costly to produce the larger fruit than the smaller fruit.

I believe that a good nutrition programme is essential to achieve larger fruit, correct irrigation methods are also vitally important in this area.

In finishing this report I wish all growers a successful fruit set.

North Queensland Report

By Jim Kochi, Avocados Australia Director for the North Queensland Growing Area



In early October Avocados Australia held its Annual General Meeting and the Annual Levy Payers Meeting in Mildura, Victoria as part of the process of having these important meetings in each growing area.

This was my first time in Mildura and for those who have never been I recommend having a look. For North Queensland growers the only similarity is the avocado. Mildura growers have to battle minimal rainfall, extreme cold (hence frost fans) extreme heat in the summer (hence duplicate overhead water cooling systems) as well as irrigation.

The similarity comes in that these growers also have some anthracnose issues from the overhead sprinklers and sunburn issues and drainage issues because even a little rain can cause flooding.

The issues around maturity and quality are the same as ours because the customer is the same. The avocado consumer who buys Shepards or Hass from North Queensland growers in the winter are the same "lovers of avocado" who buy Mildura (Tri state) avocados in the summer. We each have the responsibility to keep the consumer supplied with good quality, mature avocado all year round.

I would recommend all North Queensland growers put away the fishing gear and crank up your computers and open the avocado.org.au website and log into the "best practice" module and register for the "Infocado" programme.

2014 looks like it will bring an average crop of Shepard and an average crop of Hass and this could be around 1.5 million tray equivalents. This is similar to 2010 and higher than 2013.

The market for avocado is very strong this summer and this is due to programmed harvests (from WA, Tristate and NSW) and supply and attention to quality. If we do the same we should expect a good market as well.

Unlike Tristate, we have the wet summer to contend with and the experience of many cyclones and flooding rains behind us. We know what has to be done to keep our trees productive. Best wishes for the coming summer season.

South Queensland Report

By Daryl Boardman, Avocados Australia
Director for the South Queensland Growing Area



It has been a very dry argument for South Queensland since I last reported. Not much rain at all to speak of so irrigation systems are getting well used.

I would think that harvest is well under way for this region

and growers have taken the advantage of high prices and getting the fruit off the trees before flowering to allow for a reasonable crop again next season.

Flowering looks to have been good but time will tell if we hold a good crop.

Fruit size has been all over the place this year with most fruit being in the medium range with a lot of fruit having dead seed and not sizing at all.

The recent joint conference in NZ I thought was well worth while and I would think all that attended would have thought the same. These events take a huge effort to put on and without the support of industry and sponsors they just can't happen. Thanks to all that attended and to the great sponsors and exhibitors it was a good event.

I attended the Annual General Meeting (AGM) this month which was held at the Mecure in Mildura. Nearly sixty people were in attendance to hear how the industry is performing and what is in store in future. More information about the AGM appears in this magazine.

I am sure like most others we are all looking for some welcome rain but let's hope that we don't see another 2011, 2013 summer as we have had our fair share of extreme weather for a while.

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Around Australia continued

I read in this week's Guacamole about Avocado Australia's reject bin analysis and picking videos. I think this is just another example of the great work being done by industry to give all growers as much information that they can take and use on their farms every day. The Best Practice resource is shaping up into a great tool for growers. I recommend that growers regularly refer to it as it is constantly being up-dated so is a valuable resource to add to your arsenal.

Sunshine Coast Report

By Peter Annand, Avocados Australia Director for the Sunshine Coast Growing Area



Recently I attended two excellent workshops organised by Horticulture Australia, covering all of horticulture - one on R&D and the other on export markets. It was valuable for me to gain a perspective on where avocados sit in the bigger scheme of things and compensated for the disappointment of not being able to attend the New Zealand conference, because of other commitments.

In R&D I was intrigued by the work of John Triantafilis at the University of New South Wales mapping subsoil structures on broad acre farms and discussed with him possible applications for orchardists assessing the drainage characteristics of their blocks. I also took the opportunity to talk with Grant Thorp from Plant and Food Research, who is now based in Brisbane, about canopy management and tree shape on hillside orchards. This is an exciting topic and very relevant to growers in our hilly country.

The export scene is more complex, with many fundamental policy and strategy issues needing to be addressed in the avocado industry plan that is being worked on now by Avocados Australia. With applications pending by Mexico and Chile to sell avocados into Australia I believe it is important for us to broaden our marketing options by progressing our applications for access to China and Japan, as well as maintaining our access to Thailand and our other existing export markets. We can't know what the future holds in terms of supply and demand for our products and lead times for accessing and developing new markets are long. As in any business, our best strategy will be always to have a range of options at our disposal to keep supply and demand in a healthy, profitable balance. Market access is a government-to-government issue and avocados are a relatively small industry, both for our government and more so for our potential trading partners. We need to agree on a clear, practical plan and work on it together.

At the end of September, most Sunshine Coast growers are finishing picking and observing an encouraging fruit-set after a good level of flowering. A dry August and September were relieved for most by one good drenching but it will still be an anxious wait for the next rain, especially for those of us with limited or no irrigation.

Tamborine and Northern Rivers Report

By Tom Silver, Avocados Australia Director for the Tamborine and Northern Rivers Growing Area



I hope all growers have had a successful 2013 season, though yield and quality suffered, prices were excellent and made up to some point for the supply shortfalls. Trees have flowered relatively well, and the current spring flush is the best I have seen in years, probably a result of the stressful late summer storms and the incessant rainfall of autumn and early winter causing defoliation, and the trees now starting to turn around with some warm dry weather.

In sad news we lost a great grower and an absolutely top bloke in late August. Dave Brine, farm manager at Summerland House With No Steps died suddenly at home from a brain bleed. Dave was integral in establishing the modern avocado and macadamia orchards at Summerland house and then bringing them back from the brink after they had been let go. As well as managing probably the healthiest avocado orchard in the area, Dave's even greater skill was his ability to work with, nurture and educate his staff who in turn loved him. Dave will be missed by everyone who had the pleasure of knowing him.

Western Australia Report

By David Duncan, Avocados Australia Director for the Western Australia Growing Area



The northern [Perth metro/GinGin] area picking season is about over with a crop about half the previous year's. Unfortunately strong winds back in November caused abnormally high rejection rates due to corking and russetting of the skins. Good quality fruit but ugly and consequently unmarketable. Flowering is good, the weather abnormally wet for spring but consequently frost free. This is the season of hope....a good fruit set is hoped for.

In the South West the crop is well down on last year's record levels with similar wet but frost free weather conditions prevailing through spring. Crop estimates to be advised.

If you see a new but old face at the top of this article it is because I believe we have to be represented and grower apathy meant nobody nominated for a directorship, hence a last minute scramble. AAL have copped a lot of flak from WA and I wanted to assess what was and what was not justified.

Disfunctionality; The main example of this is the proposed project to study Alternate Bearing which was conceived of as an international collaborative study. A subsequent survey by Simon Newett indicated that Australia's problem was not Alternate but Irregular bearing. The original proposal was never formally presented to the IAC/HAL, let alone approved or contracted.... An idea whose time never came.... A literature survey was commissioned into the various factors affecting flowering, fruit set and yield. Proposals to fill in the gaps in knowledge are in preparation to be considered by the IAC at their next meeting. So the main problem identified by the meeting at Manjimup a couple of months ago is being addressed. Some strange decisions in the past have been negated and energies redirected to areas that you, the growers have requested.

Queensland centric power base; The IAC is the body empowered to allocate levy funds. Some directors from AAL are also members of IAC being elected to it by their fellow AAL Board members in secret ballot. So we appear to have a situation where buddies stick together and AAL representation on the IAC is 4 from Queensland and one from Tristate and none from WA. The method of selection will have to change in future if AAL want the flak from WA to cease. Since writing the above I have been informed that the AAL board has acknowledged that AAL directors on the Board will be rotated. Other members of the IAC will also be rotated, timeframe and process as yet unknown.

WA is entitled to have 2 directors on AAL board at current production levels, more in future if proposed plantings come to fruition. I started the industry in WA 40 years ago with a planting of 500 trees. Last year the industry here must have turned over \$100,000,000 at farm gate. Many of you have a far larger stake in the industry than me. I would suggest that it is time for more involvement in an industry that has treated you kindly but may not always do so. We need applicants for 2 AAL directorships to replace 1 [me] who has passed his use by date. Get off your butts and get involved.

If you have any queries I can be contacted at david@avonova.com.au, or phone 08 9407 5383 or call my mobile 0409 105 035.

I will try to make personal contact with all WA members of AAL over the next few months to hear of your concerns, if any.

Central New South Wales Report

By Ian Tolson, Avocados Australia Director for the Central New South Wales Growing Area



Many of you will know me through the association I have with our local Avocado growers group or you may have attended the 'AAL Roadshow' held on our property back in 2007. For those of you who don't know me, my wife Alison and I have a 300 acre property along Fishermans Reach Rd Stuarts Point. 175 acres of this property has been planted with Avocados and within the next 2 years a further 50-75 acres will be converted to Avocado production. We also pack and market avocados through our packhouse in Stuarts Point.

The season for our local area (Stuarts Point) is finished. The scale of crops ranged from poor to exceptional. Excellent prices helped ease the pain for those who were on the 'poor' end.

The Comboyne to Mangrove Mountain area's season is a bit of a mixed bag ranging from finished to about to begin. Most growers' crops have been a vast improvement on last year.

The difference in pricing between Premium grade and Composite grade fruit this year is significant. Growers will need to continue good orchard management and spray programmes to ensure they deliver the best quality fruit to their respective packing facility to maximise their returns. The need to deliver quality fruit to ensure return consumer sales, which then leads onto continued growth in consumption is something we should all be mindful of.

I would like to take this opportunity to congratulate Gordon & Margie Burch of GJ & MM Burch Avocados Comboyne, on being one of the 22 finalists from across NSW in the 2013 WorkCover NSW SafeWork Awards for "Best workplace health and safety practices" in a small business. Deputy Prime Minister, Andrew Stoner Member for Oxley has congratulated the couple and said "the couple has spent two years creating a work health and safety management system that specifically tackles the seasonal variations of working in a farming environment with transient labour". Winners will be announced at an awards ceremony on Thursday the 31st October 2013.

I look forward to serving as your representative over the next 2 years. My contact email is: i.tolson@avocado.org.au.

Industry Matters

Engaging with Growers:

North QLD Qualicado workshop draws record crowd!



Jim Kochi AAL Chair & NQ regional director address growers

Approximately 120 people attended the North Queensland Qualicado workshop in mid August! Sony Koci's packing shed was packed with people keen to hear about the Qualicado program as well as topics such as fruit spotting bug, controlling fruit size and optimising phosphorous acid applications.

Thank you to Sony Koci and family for their hospitality, the many guest speakers for their time and all the fantastic people who helped us to bring the day together. ABC Radio covered this event and Workshops are scheduled to be held in all growing regions in the coming months.



Host Sony Koci (right) with fellow NQ growers

All power point presentations from the day have been uploaded to the Best Practice Resource (BPR). To log in go to www.avocado.org.au and click on the Best Practice tab at the top of the page. Once logged in, click on Growing, Qualicado, North Queensland. For more information about Qualicado please see the Qualicado page on the BPR.



Figure 1: Screen shot of presentations available on the BPR from the North Queensland workshop.

Fruit spotting bug research and treatments were thoroughly discussed by Dr Ruth Huwer, Entomologist, NSW DPI, Dr Ian Newton, Senior Entomologist, Queensland Department of Agriculture Forestry and Fisheries (QDAFF) and Mr Karel Lindsay from the University of Queensland.



Dr Ruth Huwer, Entomologist, NSW DPI spoke about the latest Fruit Spotting Bug research.

Mr Simon Newett, Principal Extension Horticulturist & Mr Matt Weinert, Senior Extension Horticulturist both from QDAFF gave practical, hands on recommendations relating to controlling fruit size and optimising phosphorus acid applications.

Mr John Tyas and Ms Julie Petty from Avocados Australia respectively gave an overview of company activities and the Qualicado program.

As the Qualicado program rolls out across Australia Avocados Australia will be regularly spreading the word in the media about the Qualicado program. On the day of the launch radio journalist Charlie McKillop, the rural reporter for ABC Far North Queensland Country Hour, spoke with growers and did a live broadcast interview with Jim Kochi. A series of radio stories have aired since then supported by online coverage on the ABC Rural website.



Charlie McKillop ABC Rural reporter interviews grower Kylie Collins. Photo by ABC Rural.

Feedback about the day was overwhelmingly positive. People were asked how likely they were to use information gained at the workshop to change or improve an on farm practice. The average score was 8/10 with 10 being the highest score.

Qualicado is a program which has been established by

Avocados Australia in collaboration with QDAFF and seeks to provide support and monitoring systems to enable and encourage supply chain members to improve fruit quality and thus the end consumer's experience. Qualicado is focused on education, training, identification of issues and continuous improvement.

A number of attendees at the workshop have already nominated that they would like to participate in this program. Those people who nominate to take part in the program will have their business names uploaded to the Avocados Australia website as shown below.

Company	Package	Workshop / Markets	Other
Avocados Australia Pty Ltd (ABC)	Marketing Assoc. (Pilot) (ABC)	Yes	Yes
Avocados Australia Pty Ltd (ABC)	Avocados Australia (ABC)		
Avocados Australia Pty Ltd (ABC)	Avocados Australia (ABC)		
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Figure 2: Screen shot of Qualicado participants.

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Industry Matters continued

Growers in attendance had the opportunity to undertake a self-assessment questionnaire about their on farm practices. The self-assessments are designed to be a useful aid to monitor practices and identify areas for improvement. The survey results are being reviewed by Avocados Australia and QDAFF to help identify information gaps for the region. To view the self-assessment template please go to the Qualicado page on the BPR where you can download a PDF copy.

For more information about this program please contact Avocados Australia on 07 3846 6566 or log onto the BPR.

Qualicado Program Moves to Victoria

November is going to be a busy month! Two separate Qualicado workshops are planned, one at the Melbourne Wholesale Markets and at an orchard near Robinvale.

Qualicado represents a program of continuous improvement for avocado industry members. Growers, packers, wholesalers, ripeners and transporters are encouraged to participate in this system with the overarching goal being to improve quality for the end consumer.

Avocados Australia is establishing and managing the Qualicado system. The program and services will be rolled out to industry in collaboration with qualified service providers from Department of Agriculture, Fisheries and Forestry (DAFF) and other organisations.

Through Qualicado, support and monitoring systems are being developed to empower industry members to implement changes and track their progress in improving quality. For more information come along to one of the workshops!

Melbourne Metropolitan Workshop

Date: Wednesday 13 November 2013
 Venue: Melbourne Wholesale Fruit, Vegetable and Flower Market Conference Centre,
 542 Footscray Rd, West Melbourne VIC 3003
 (adjacent to gate 1 entrance off Footscray Rd)

Who should attend: All locally based avocado wholesalers, ripeners and transporters

The program includes information on ripening practices, avocado bruising and an opportunity to learn more about the Qualicado program. The agenda as at 9 October is listed below.

Agenda:

9.00am-9.45	Hot breakfast for people who have RSVP-ed
9.45am-10.00	Welcome and Program Overview by John Tyas, AAL CEO
10.00am-10.25	Overview of Qualicado Program Julie Petty, AAL Program Manager
10.25am-10.55	Handling and Ripening – What you can do to minimise risk by Terry Campbell, Queensland Department of Agriculture, Fisheries and Forestry (QDAFF)
10.55am-11.25	Avocado Bruising Research Update by Daryl Joyce, University of Queensland (UQ)
11.25am-11.40	Qualicado Sponsor – Birdwood Nursery
11.40am-11.55	Infocado Program Update Julie Petty, AAL Program Manager
11.55am-12.05	Summary and thanks by John Tyas, AAL CEO
12.05pm-1.15	Lunch

Tristate Qualicado Workshop

Date: Thursday 14 November 2013
 Venue: Bonyaricall Vineyards
 55 O’Connor Lane Robinvale VIC 3549

Who should attend: all locally based avocado growers, packers and their staff

All local growers, packers other orchard workers are welcome to attend this event. You can hear about how to achieve maximum shelf life, information about tree growth cycles, canopy management and more.

Tristate Qualicado Workshop program includes:

- Launch of the Qualicado program which is aimed at assisting industry in improving fruit quality
- The program will include:
 - Information on how to achieve maximum shelf life
 - How to manage growth cycles
 - Canopy management – do you really need to?
 - Weather permitting several different sprayers will be demonstrated with some analyse provided on their accuracy.

Some of our guest speakers include:

- Alec McCarthy, Department of Agriculture and Food, Western Australia (DAFWA)
- Terry Campbell, QDAFF
- Lisa Martin, Ripe Horticulture Senior Consultant
- Representatives from Barham Avocados



Location map for the Tristate Qualicado Workshop:

Confirm your place and RSVP:

If you have any questions or queries about the Tristate Qualicado Workshop please contact Julie Petty on 07 3846 6566 or email supplychain@avocado.org.au.

Acknowledgement of Program Supporters

Qualicado has been funded by Horticulture Australia Ltd using the national avocado levy and matched funds from the Australian Government. Avocados Australia is also proud to acknowledge the support from the following Qualicado Program sponsors:



For more information about Birdwood Nursery or Propak Industries please visit their websites:

Birdwood Nursery: www.birdwoodnursery.com.au.

Propak Industries: www.propakindustries.com.au.

A message from Birdwood Nursery

Birdwood Nursery is proud to be associated with the Qualicado Program as a National Sponsor. We feel strongly that it is in everybody's interest to strive for excellence in quality and to provide the consumer with a high quality product and eating experience. The road to good quality

starts with good quality trees and Good Management Practices in the orchard. We look forward to participating in the rigorous communication program over the next twelve months and to meeting growers and other stakeholders at the field days and marketing meetings.



Birdwood nursery grow new rootstocks & varieties, this is the first 'Maluma' fruit in the country.

Birdwood Nursery specialises in the production of avocado and other subtropical fruit trees, supplying wholesale quantities of the highest quality to commercial growers and retail nurseries throughout Australia. We are accredited to the highest level within Australia for a plant Nursery, including NIASA Best Management Practices (BMP), ECOHORT, BioSecure HACCP, and Avocado Nursery Voluntary Accreditation Scheme (ANVAS) Accreditation. The nursery has received a number of awards in recognition of its performance, including: Queensland Large Production Nursery of the Year 2010, 2011 and 2012, Biosecurity Farmer of the Year for 2011, and Australian National Large Production Nursery of the year 2012/13.

Please feel free to contact us at (07) 5442 1611 or info@birdwoodnursery.com.au to discuss your future tree requirements.

QUALICADO Program Event Calendar

Those interested in attending any of these events can refer to the following calendar and all enquiries can be emailed to supplychain@avocado.org.au or call toll free 1300 303 971. Check your email updates for the details closer to each event. To add your contact details to Avocados Australia's contacts list email them to co@avocado.org.au.

Industry Matters continued

QUALICADO
Program Event Calendar – 2013-2014

Regional Workshops: (Suitable for avocado growers, packers and other orchard staff.)	Metropolitan Workshops: (Suitable for avocado wholesalers, ripeners and transporters.)
Tristate (VIC, SA, NSW): November 2013	Melbourne: Wed 13 November 2013
Sunshine Coast, Qld: March 2014	Brisbane: February 2014
Mt Tamborine/Northern Rivers NSW: April 2014	Perth: July 2014
South Qld: May 2014	Sydney: March 2014
Central NSW: June 2014	Adelaide: April 2014
Western Australia: July 2014	
Central Qld: September 2014	

of Avocados Australia. One of its outcomes was the successful appointment of two new regional directors. The two new directors include Mr David Duncan a grower representing the Western Australia region, and Mr Ian Tolson a grower representing the Central New South Wales growing region. One directorship is still vacant for Western Australia as this region is eligible to have two growers representing their region.



AAL Directors visit orchards in the Tri State region.

Avocado Industry Afternoon & Mildura Orchard visits



John Tyas provides a report at the AGM.

On Tuesday the 8th of October, Avocados Australia presented an Avocado Industry Afternoon at the Mecure in Mildura and many Tri State growers were in attendance along with other representatives from the region. All of Avocados Australia's (AAL's) Directors and the members of the Avocado Industry Advisory Committee (IAC) were there so it was a rare opportunity for Tri State growers to engage directly with Australia's Avocado Industry leaders. The afternoon included the 10th Annual General Meeting

The Avocado Industry Annual Levy Payers' Meeting (ALPM) was held after the AGM. During the ALPM those in attendance heard about the avocado R&D program and the new marketing strategy. Printed copies of the Avocado Industry Advisory Committee Annual Report for 2012/13 and the Avocados Australia Annual Report were handed out to members on the day. Copies of these two reports are also available from the Avocados Australia website at <http://industry.avocado.org.au> or by emailing co@avocado.org.au.

An informative session followed the ALPM which featured guest speakers Simon Newett (Principal Extension Horticulturalist at Queensland Department of Fisheries and Forestry (QDAFF)) and local agronomist Lisa Martin (Director and Senior Consultant of Ripe Horticulture).

The day after the AGM and ALPM AAL's Directors and the members of the Avocado Industry Advisory Committee (IAC) took part in orchard visits. The Avocados Australia director for the Tri State region, Mr Barry Avery, toured growers around the area. He sees a positive future of growth for the Tri State growing region.



Barry Avery at Bonyaricall Vineyards discussing recent high winds and other weather events and approaches that are significant to the region.



Tristate grower Lindsay Camera took questions from industry leaders at the orchard P & M Camera Pty Ltd.



Peter MacIntosh at Boreray Pty Ltd welcomed the industry leaders and discussed the prospects for avocado farming in the region.



Barry Avery leading a discussion on the progress of the avocado farming at Lindsay Camera's property.



A frost fan unique to southern growing regions



Duncan Sinclair, Marketing Manager for Avocados, addresses growers on the industry marketing program.

Industry Matters continued

Avocado R&D Network Forum targets Productivity



Avocado R&D Forum held in Brisbane 30 July.

On the 30th of July this year some of Australia’s leading researchers, the Avocado Industry Advisory Committee (IAC), AAL Directors, Horticulture Australia (HAL) Portfolio Managers, industry leaders and Avocados Australia management met for the Avocado R&D Forum that took place at The Point Hotel in Brisbane.

The R&D Forum provided researchers and industry leaders with the opportunity to discuss potential research ideas to address on-farm productivity leading to better informed industry R&D planning for the avocado industry.

The forum focused on forward looking perspectives on R&D related to Rootstocks, Irregular Bearing, and Disease Management. The day provided members of the Avocado IAC with an opportunity to hear from leading researchers on the key topics, receive reports from independent expert reviews and discuss the R&D opportunities. The outcome from the forum will guide decision-making on the future R&D investment required around these three key areas of research.

Researchers and industry leaders that took part in the R&D Forum include:

Dr Roger Broadley, The Department of Agriculture, Fisheries and Forestry, QLD (DAFFQ); Mr Terrence Campbell, DAFFQ; Dr Elizabeth Dann, The University of Queensland (UQ); Dr Andrew Geering, UQ; Mr Mark Hicky, New South Wales Department of Primary Industries (NSW DPI); Prof Michael Jones, Murdoch University; Prof Daryl Joyce, UQ; Ms Jenny Margetts, Plant and Food Research (PFR); Ms Lisa Martin, Ripe Horticulture (VIC); Dr Neena Mitter, UQ; Mr Simon Newett, DAFFQ; Mr Ken Pegg, DAFFQ; Dr Grant Thorpe, PFR; Mr Matthew Weinert, DAFFQ; and Dr John Wilkie, DAFFQ.

Many of the researchers and industry leaders involved in the R&D Forum will also have opportunities to speak to growers through the Qualicado Workshops that have been scheduled over the coming 12 months. Avocados Australia encourage growers to attend these events to hear directly from our industry’s researchers.

The day successfully achieved a solid analysis of avocado Productivity R&D with recommendations for the Avocado IAC to consider when planning R&D priorities later this year.

The Avocado Industry Advisory Committee (IAC) Meeting took place the day after the R&D Forum so the IAC was able to further discuss the outcomes from the Forum. Updates about planned avocado R&D activity will follow via our Grower Update communiques.

Avocado Best Practice Resource – Are you Registered Yet?

Want to know what are the latest recommendations for treating Phytophthora or Fruit Spotting Bug? Do you know what temperatures you should pre-cool ripe Hass to before transport?

The answers are a few easy clicks away. Check out the Best Practice Resource (BPR) now!

The BPR is an online, one stop shop for all members of the Australian supply chain for all information relating to best practice. Online training modules are available for staff members to work through and employers can monitor their staff member’s progress through the training.

The Best Practice Resource (BPR) is available from the www.avocado.org.au website. Simply click on the Best Practice tab at the top of the page.



Figure 1: BPR log in page.

How do I access the site?

As a first time user to gain access to the site, simply type in your email address and click *Apply for Access*. You will then be taken to a screen where you will be asked to record your business details and interests. After completing the form, click *Apply for Access* and your request will be emailed through to the Avocados Australia office for approval.

Avocados Australia will process your application and you will be sent a confirmation email. You will be given access to topics relevant to your business on the site and should be able to use your log in as soon as you are approved.

What can I do on the website?



Figure 2: Business owner/manager homepage.

Once logged in you can (see Figure 2):



1. View best practice recommendations for growers, packers, wholesalers, ripeners and retailers.



2. Should you have any concerns or questions you can contact Avocados Australia directly, or click on Contact Us while you are logged into the BPR.



3. Personalise your Business Fact Sheet page with your business information. This will be the first thing your staff members see when logging in after you have registered them on the site. You could include farms maps, emergency contacts and other business information.



4. View the training courses you can get your staff to do. These can also be customised.



5. Search for a particular topic if you don't know where to find it.

What kind of content is on the website?



Figure 3: Screen shot of content available about Phytophthora Root Rot.

Figure 3 shows an example of the comprehensive information available to help you to manage Phytophthora on your orchard. There are number of short videos on the site on topics such as how to inject trees for Phytophthora management, why you should do a reject bin analysis, a training video on how to pick avocados and a summary of research findings on where bruising is occurring within the supply chain.

Additional content relating to export and Workplace Health and Safety will also be developed in the coming months. The content will be updated as new information becomes available. In particular, new information in the Growing section will be added over the next 12 months.

Industry Matters continued

Registering employees and completing training courses

As the business manager or owner, you have the ability to register your employees on the system. You can also personalise the site so that you and your employees can view information specific to your business and practices. The information you add will only be accessible to you, your employees and the site administrators.

You will be able to customise content within the training courses by clicking on Manage Course (see figure 2). Clicking on Manage Course will take you to the back end of the site where you can upload content. Each page within each of the training modules will be listed and you will be able to add content to the notes section. This content will appear on the relevant page in the training module and will thus allow you to incorporate any existing employee training resources you have into the BPR.

You will be able to track what modules your employees have completed and when they did so. You will be able to reset the training so the employee can redo it if necessary. From a reporting perspective this tool should be very helpful in keeping track of what employees have been told and when.



Figure 4: Screen shot of transport training module.

Figure 4 shows an example of one of the staff training courses available for employers to customise within the BPR.

Once the employer has registered an employee on the site, that employee can log in straight away and start viewing the content or doing a training course. A full set of site instructions is given to all business owners and managers and ongoing assistance will be provided.

More information

Should anyone have questions about how to use the site or have other feedback they would like to provide to Avocados Australia, you will be able to do so by clicking on Contact Us whilst logged into the BPR (see Figure 2) or by contacting the Avocados Australia office.

This site is designed to evolve and change over time with new content to be added on an ongoing basis. Over time, based on user feedback alterations may be able to be made to system as needed so your feedback is very important.

For more information please contact Julie Petty on 07 3846 6566 or supplychain@avocado.org.au

Front Cover Photo competition – Grower Janelle Lendrum Wins



Photo by Janelle Lendrum.

Janelle Lendrum from Fishermans Reach, New South Wales is the winner of the Front Cover Photo competition for Talking Avocados Magazine. Selecting a winner for the Talking Avocados Front Cover Photo competition was exceptionally hard. All fifteen entries sent in from around the



country were of a high calibre so we would like to sincerely thank everyone who took part.

As you may have already guessed Janelle is an avocado grower and casual photographer in her spare time. Janelle and her husband Alan have been growing avocados for nearly 8 years. Janelle managed to capture the bee shot using her FujiFilm Finepix F550 EXR (small handheld). According to Janelle the shot was not very difficult to capture. Standing in the morning sun she waited for the best photo opportunity and she says that having a little patience and plenty of bees provided plenty of photo opportunities. Congratulations again Janelle and thank you for our front cover!

Winners of the free iPads announced!



John Tyas presents an iPad to OrchardInfo winners Peter & Vicky Jones.

Avocados Australia is excited to announce that **Peter and Vicky Jones of Irymple Victoria** and **Kim and Claire Skoss of Manjimup Western Australia** have each won a brand new iPad! During the last few months Avocados Australia has been running a competition where two free iPads were up for grabs as a reward for growers taking the time to return their 2012 OrchardInfo forms to us by the end of September. Everyone who did so went into the draw.

The OrchardInfo program is designed to collect information about the total number of avocado trees growing in Australia. There are a number of benefits to individual businesses and industry. As a grower you will be provided with better information regarding estimated future production that can assist you with long term business decision making. The data you submit will also ensure that as an industry we are well prepared to market future volumes of fruit.

Both the lucky winners were very excited about the win. Program Manager Julie Petty was thrilled to deliver the good news.

"It's a fantastic reward for these two businesses for taking a few minutes out of their day to send their orchard data into us. I'm so pleased Avocados Australia was able to offer this incentive. Thank you to all the businesses who sent their data into us during this competition. All information will be aggregated and a summarised report will be sent to all contributors in the near future", said Julie Petty.

If you have any questions regarding the form or this system please don't hesitate to contact Program Manager Julie Petty on 07 3846 6566 or infocado@avocado.org.au.

Retail Prices Report

Retail prices continue to be collected on a weekly basis from a variety of stores in Perth, Sydney, Melbourne and Brisbane. Information collected includes: variety, packtype, fruit weight, price, display location and type, country of origin and type of price special (if any).

A range of stores are included in this program including Coles, Woolworths, independent supermarkets, independent fruit and vegetable stores and chain fruit and vegetable stores. This real time information is reported in the Weekly Infocado Reports and on our industry website on a weekly basis. To view the latest retail price data please log onto avocado.org.au and click on the industry tab and then services, retail pricing. To view past Weekly Infocado Reports which include the retail pricing data for that week please log onto avocado.org.au and click on the industry tab and then services, Infocado.



Figure 1: Screen shot of Avocados Australia website

Industry Matters continued

Below are recent examples of the updated information you will receive by following the steps above.



Figure 2: Hass retail prices in Sydney



Figure 3: Hass retail prices in Brisbane



Figure 4: Hass retail prices in Melbourne



Figure 5: Hass retail prices in Perth

For more information please contact Julie Petty on 07 3846 6566 or supplychain@avocado.org.au.

Tribute to David Brine



David Brine is remembered.

Avocados Australia was recently informed of David Brine’s passing. Dave Brine, farm manager at Summerland Farm (House With No Steps (HWNS)) in Northern New South Wales, died suddenly at his home from a brain bleed. This is a very sad loss for the Tamborine/Northern Rivers avocado growing region. Earlier in the year David was kind enough to lead an orchard visit as part of an Avocados Australia field day held at Summerland Farm. We knew David to be generous, supportive of colleagues and also a significant contributor to the avocado industry in his region.

Talking Avocados invited Mark Keen, General Manager Growing Care (HWNS, Alstonville NSW) to say a few words to recognize David’s contribution:

“David has been associated with the HWNS (now Summerland House Farm) for almost 26 years. David’s legacy leaves behind a highly productive and sustainable orchard enterprise at the Summerland House Farm. He has built the farm up over the years to be one of the highest yielding orchards producing some of the best quality fruit in the region. He was extremely committed to the health and management of the Orchard and for the training, safety and wellbeing of the supported employees who have all worked so diligently with David to make Summerland House Farm a success.”

“David was always looking for sustainable, environmental techniques of running the orchards. Soil conditioning, composting and IPM were foremost in David’s way of management. He was not against the older traditional farming methods but understood the need for a systems approach using various management methods.”

"David has been involved with Avocado production for more than 30 years and over this period he became one of the most knowledgeable and respected growers in the industry. He was a very gifted horticulturist and was admired and very well liked by his peers and employees. We miss him dearly."

A new variety of avocado to hit the market 2014

Avocado grower Henk van Niekerk, from DBC Farming, recently stated to an ABC reporter that he was observing production rates of 28 to 30 tonnes a hectare with the new 'Maluma Hass' variety which is performing well in the hot conditions at Dimbulah, situated 150 kilometres south-west of Cairns.



The Atherton Tableland region produces about one quarter of the 9.5 million cartons of avocados produced annually in Australia, predominantly of the Shepard and Hass varieties.

Mr van Niekerk says recent tree flowering has been very positive and if the fruit sets accordingly, he expects to harvest the larger sized fruit in February just as established varieties start to taper.

"There's probably about a one month window of opportunity to get into the market. It might clash with some of the fruit from the south when they get that late fruit coming in but they do have some quality issues with that.

"Hopefully we'll have a couple of thousand cartons this season. We're still deciding what we'll market under.

"We're just setting up all the royalties and everything for it. That's almost finished, so hopefully either this year or the next season, we'll see Maluma Hass on the shelf."

Mr van Niekerk predicts domestic growth will remain strong for avocados for the next decade, but believes the future lies in exports.

Source: <http://www.abc.net.au/news/>

Research to help farmers exploit the Internet's business opportunities

A University of the Sunshine Coast researcher is investigating whether fruit and vegetable growers are making effective use of new technologies to improve their management practices and crop yields.

Sherrill Cooper of Forest Glen is studying a Business PhD in information systems after working in academia and private industry in information systems, business analysis and project management.

"This research idea stems from my career background and my keen interest in social informatics – the human side of technology," said Ms Cooper.

After collecting data from horticultural farmers on the Sunshine Coast and across Queensland, she will analyse their use of Internet-based extension tools and their potential use of Web 2.0 technologies.

Web 2.0 technologies are the latest advances in websites, such as interactive applications.

Ms Cooper recently did fieldwork at Bellthorpe, west of Peachester, after finishing a pilot study with avocado growers.

"My research involves running online questionnaires at various grower group meetings and conducting face-to-face interviews with farmers," she said.

Her online questionnaire has so far been completed by a group of avocado farmers and macadamia nut farmers, to be followed later this year by pineapple, mango and vegetable grower groups.

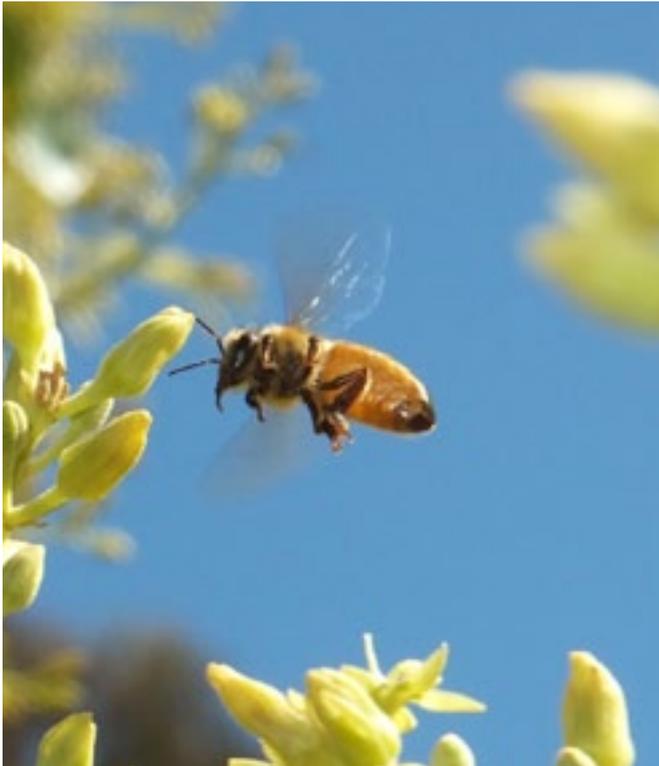
"Farmers need accurate, timely and relevant information to resolve critical issues and in general to manage and adapt their farming processes in order to remain viable and competitive," she said.

"While many farmers have access to various Internet-based extension tools using rural-focused websites and Web 2.0 technologies, not enough is known about the uptake and effectiveness of these tools.

"My findings have the potential to improve decision-making in agricultural enterprises by assessing the usability and effectiveness of existing extension tools and providing guidelines for the development of new tools based on Web 2.0 technologies."

The Value of Pollination

Pollination is perhaps one of the most important factors in fruit production. Many types of commonly grown fruit, including avocados, require pollination in order to bear satisfactory marketable crops. Some fruit trees may carry thousands of flowers, but unless there is adequate pollination, little if any fruit will be produced. So what does the process of pollination involve? Here are some details.



65% of Australia's agricultural production relies on pollination by honeybees. Photo by Janelle Lendrum.

Pollination means the transfer of pollen from the male part of the flower, the anthers, to the receptive female part, the stigma (Goodman, 1994). It is a delicate process but the aim is to get the right pollen to the right place at the right time. In some plant species pollination is achieved by pollen grains carried in the wind however most fruit species require some insect to carry pollen to the flowers.

Fertilisation occurs when the pollen grains on the stigma germinate and grow down the stem of the stigma (the style). The sperms of the pollen unite with the ovules in the ovary of the flower and subsequently produce seed. Flowers may be fully pollinated but not necessarily fertilised because they have received incompatible pollen in which case the pollen does not germinate or grow on the stigma or reach and fertilise the ovules. In such a case, unless the species is parthenocarpic, no fruit will result.

Not all plants require pollination and fertilisation, as some are able to produce fruit parthenocarpically, that is, the fruit will develop without fertilisation of the flower and production of a seed.

Types of Pollination

There are two types of pollination that may occur: self-pollination and cross-pollination.

Self-pollination refers to the transfer of pollen from the anthers to the stigma of flowers of the same plant. In most cases a carrier is needed to transfer the pollen for maximum pollination. Trees that bear fruit through self-pollination are called 'compatible' or 'self-fruitful' as their own pollen is quite compatible.

Cross-pollination refers to when a flower is fertilised by the pollen from another plant of the same species. Carriers or vectors (e.g. wind, insects, birds) are always needed for cross-pollination. In farming the most important carrier of pollen from anther to stigma is the honeybee.

Some plants cannot produce seed and fruit unless they are pollinated by a different variety of the species and these plants are referred to as being 'self-incompatible', 'self-sterile' or 'self-unfruitful'. This process is thought to have developed to ensure out-crossing to create more diversity in the species and thus a greater propensity over time to evolve and out-compete other species and be better able to adapt to different environments. In horticultural production other varieties that flower at the same time must be planted next to these self-incompatible plants to allow successful pollination.

Pollination in Avocados

Avocado is described as being 'compatible' but the avocado flower opens in two stages. If weather conditions are relatively stable then in 'Type A' cultivars (e.g. Hass) the female stage of the flowers is open in the morning and the male stage is open in the afternoon. In 'Type B' cultivars (e.g. Fuerte, Shepard), the male stage is open in the morning and the female stage is open in the afternoon. This flowering system is called 'dichogamy' and means theoretically that avocado trees have a low chance of pollinating themselves (probably for the same evolutionary reasons described for self-incompatible species above), fortunately weather in spring is often changeable and this throws out the timing of flower opening and allows some overlap of male and female flower stages (see Figure 1, page 23). In environments which are marginal for avocado production (usually where temperatures are often too cool at flowering to allow successful pollination) the chances

of achieving successful pollination and fruitset can be significantly enhanced by interplanting the orchard with a variety of the opposite flower type to ensure good overlap of male and female flower stages (see Figure 2 page 23). Avocados do require insects for pollination.

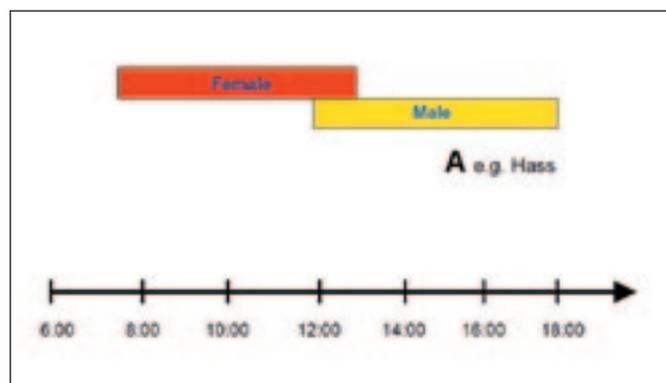


Figure 1. Limited overlap of male and female stages within the same variety

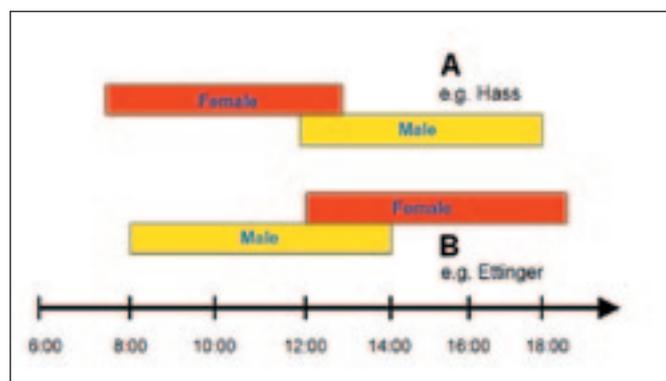


Figure 2. Significant overlap of male and female flower stages when varieties of both flower types are present



Male flower stage open

Female flower stage open

Pictures by Gad Ish-Am, Israel, 1991, sourced via www.avocadosource.com

Effects of weather on bee activity

Temperatures

Little if any honeybee flight activity occurs at or below 10°C. On still, clear, sunny days some flight will be seen at temperatures of 12-14°C. Flight begins in earnest at 16°C and the numbers of bees taking foraging trips increases sharply, as the temperature continues to rise. Above 19°C it tends to reach a relatively constant high level. However there is variation between hives and beekeepers are able to introduce new queens into hives in order to produce bees that will start to become active at lower temperatures for example.

Rainfall

Flight activity ceases during rain. In periods of inclement weather bees may fly between showers for short distances of up to 150 metres.

Humidity

Relative humidity, on its own, is not an important factor in bee activity. However, the combination of temperature and humidity is most important in the ripening of the anthers of the flowers and the availability of pollen to visiting insects. Optimum conditions for pollen release are temperatures of 20°C and over and humidities of 70% or less (although not too hot and dry as to cause the flowers to wither as occurred during the dust storms in 2009). Therefore low temperatures and high humidities have the double effect of reducing bee activity and slowing the release of pollen.

Wind

High winds tend to slow the flight speed of bees and hence reduce the number of flights per day. Bees begin to lose interest in foraging when the wind speed reaches 24 km per hour.

Light

Flight activity is reduced during periods of heavy cloud cover. When the cloud cover is seven-tenths or more, bees begin to lose interest in foraging. Cool, dull, showery conditions will limit bee flights up to about 150 metres from the hive.

The Value of Pollination continued

Plant factors affecting pollination

Temperature, humidity and wind affect the quantity and sugar concentration of the nectar which the flowers secrete, and hence their attractiveness to bees. Most flowers of fruit trees, being open in shape, are very susceptible to changes in temperature, humidity and wind. In general, the higher the sugar concentration the more attractive a nectar is to bees. Higher temperatures (not extreme), low humidities and some air movement are conducive to high nectar sugar concentrations.

Sugar concentration plays a greater role in bee attraction than the proportions of the various sugars in the nectar. Weather conditions aside, different plants naturally produce nectar in different quantities and concentrations. For example, apple nectar is more attractive to bees than pear nectar because it has a higher sugar concentration. Different plants compete for bee visits.

Avocado growers seeking more information about bees and pollination can find this online by logging on to Avocado Australia's Best Practice Resource at <http://bestpractice.avocado.org.au>.

The Pollination Program website also contains useful research reports, and details of past and current projects you can access this at www.rirdc.gov.au/pollination.

Acknowledgements

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Optimising phosphonate use in Shepard avocados

Matt Weinert and Geoff Dickinson
DAFF Queensland, Mareeba

The problem

Phytophthora root rot (PRR) of avocados is still the most destructive and important disease of avocados worldwide despite 30 years of Research, Development and Extension (R&D&E). A recent benchmarking study by CDI Pinnacle Management showed that only 64% of avocado growers in Australia surveyed are actively managing PRR. The heavy monsoonal rains, warm soil conditions and in the main, poor soil types low in organic matter, make the north Queensland (NQ) production areas particularly favourable for PRR.

There is no 'silver bullet' for PRR management. An integrated program using a combination of cultural and chemical controls, colloquially called the 'Pegg Wheel' (Figure 1.), is recommended for PRR in avocados. These controls include:

1. Using a rootstock with some PRR tolerance
2. Only buying trees from an ANVAS accredited nursery
3. Selecting a free draining site or improving drainage through mounding and subsurface drains
4. Keeping the orchard free from PRR
5. Improving soil health, particularly through mulching
6. Ensuring irrigation and nutrition are optimal
7. Using registered chemicals



Figure 1. The Pegg Wheel.

Phosphonate is the principal chemical used in this management strategy. Phosphonate is a systemic fungicide that moves in both the xylem and phloem of the tree - up and down respectively, depending upon application method - and then accumulates at the site of

the most actively growing part of the tree. A phosphonate level of at least 25 ppm is required in avocado roots to effectively manage PRR.

Due to the greater complexity and cost of injecting, some growers have moved to applying phosphonate treatments only once during the year. Others have expressed interest to switch from injections to the practice of foliar application of phosphonate. Maintaining root phosphonate levels through foliar sprays however is more difficult to achieve. Monitoring phosphonate in roots to ensure adequate levels are maintained is an important part of any program.

Data from root samples collected since 2008 shows that with foliar applications post harvest, but before pruning, root levels greater than 150 ppm can be achieved. Twelve months later, follow up analyses taken prior to the next post harvest application, showed root levels well below the 25ppm level required for PRR management. In North Queensland (NQ) this leaves the roots susceptible to attack from PRR at a critical time both physiologically and environmentally, when trees are stressed during fruit development and roots are flushing. This coincides with the wettest time of the year in NQ (January - April), when PRR is most active.

Most phosphonate research has been done on Hass, however limited research on other cultivars has demonstrated that different timings are required to ensure translocation to the roots. Before this research no specific phosphonate research had been conducted on Shepard.

What we did.

Five Shepard avocado orchards were selected, representing a range of growing environments on the Atherton Tablelands (see Table 1). Avocado trees in these orchards had healthy, vigorous canopies, with no obvious symptoms of PRR. Trees in all five orchards continued to receive the grower's standard phosphonate injection program (annual or bi-annual phosphonate injection, see Table 1). Treatment rows in 3 orchards (Numbers 1 - 3) also received monthly phosphonate spray treatment. In each of these three orchards, two rows were selected for sampling, one for the phosphonate spray treatment and one as the unsprayed, but injected, control. Phosphonate spray treatments (Agriphos 600 by Agrichem) were applied in the middle of each month, using the grower's sprayer, at a rate of 8.3mL of 60% phosphonate per litre of water, sprayed at a rate of 2000L/ha.

Monthly root samples and phenology measurements were conducted at the start of each month in all orchards

Optimising phosphonate use in Shepard avocados continued

from May 2012 to May 2013, although the April 2013 measurements were not conducted due to logistical issues.

What we found.

Phenology

Root flush

Root flush ratings were conducted on all sample trees when root samples were collected. In each case roots were rated in an area of approximately 50cm x 50cm. The rating scale was from 0 = no root flush to a maximum of 3 which was >60% of roots flushing. Distinct root flushes occurred in October to December and January to June, depending upon orchard location (Figure 2.). Orchards in the Paddy's Green and Mutchilba area flushed in October while those in the Tolga area flushed in November. There was no discernable difference in the root flush trends for the root flush between January and June. These two root flush periods coincided with two distinct periods of little or no shoot flush (Figure 3.)

Shoot flush

Shoot flushing events fit broadly into two major events, from August to October (commonly called the Spring flush) and December to January (the Summer flush) (Figure 3.) . A smaller less distinct flush also occurred in most orchards in March. Twice during the year there were periods when trees in each orchard were not producing shoot flushes, at the start of November and in May.

Phosphonate treatments.

Phosphonate injection only

Phosphonate root levels in samples from all orchards are indicative of standard injection practices (Figure 4). The

timing of the injection treatments for all orchards is shown in Table 1.

Orchards 1, 2, 3 and 5 were injected after harvest in April/ May 2012. Root phosphonate levels before injection in Orchards 2 and 5, (which receive only one injection per year) were below recommended levels at this time. Root phosphonate levels before injection in Orchards 1 and 3, (which receive two injections per year, in May and November) were above recommended levels. Root levels increased in all orchards after the May injection. Root phosphonate levels rose slower and peaked lower in the single injection orchards, than in the orchards receiving twice yearly injections. By November root levels in orchards 2 and 5 were again below recommended levels (Figure 2).

Orchard 4 was injected in November 2012. Root phosphonate levels varied widely peaking in October, December and February at the same time as moderate root flushes, but remained above recommended levels for the full year. All orchards that were injected in November (either within a single or double injection per year program), maintained root phosphonate above recommended levels, until the trial was completed.

In Orchard 5, in late March 2013, the grower with the understanding that all project measurements had been completed, applied a single foliar phosphonate spray across the entire orchard, based on the results from this study. This coincided with the best root flush seen at this site during the trial. Root levels conducted in early May showed a huge increase in root phosphonate levels as a result of this single foliar spray.

Phosphonate injections plus foliar sprays

In all three orchards, root phosphonate levels at the end of the project were highest in the trees that received foliar

Orchard No.	Location	Annual rainfall (mm)	Main rainfall distribution	Mean max. temp. (°C)	Mean min. temp. (°C)	Soil type	Phosphonate injection dates (Jan 2011 – April 2013)
Phosphonate injection + or – Monthly phosphonate spray treatments							
1	Dimbulah	783	Nov-Apr	35	10	Shallow poor soils of granitic origin	April 11, Nov 11, April 12, Nov 12, April 13
2	Tolga	1400	Oct-Jul	25	16	Deep rich red basaltic soils	May 11, May 12.
3	Paddy's Green	1000	Nov-Apr	30	14	Shallow sandy clay loam	May 11, Nov 11, May 12.
Phosphonate injection only							
4	Tolga	1400	Oct-Jul	25	16	Deep rich red basaltic soils	May 11, Nov 11, Nov 12.
5	Paddy's Green	1000	Nov-Apr	30	14	Shallow sandy clay loam	April 11, April 12.

Table 1. Climate and soil information for the 5 Shepard avocado orchards in this study.

treatments as well as injections (Figure 5). For Orchard 2 it took six months to achieve these results. Initially it was unclear why this was the case, however it was determined that the recommended spray volume of phosphonate was not being applied to the trees in the early part of the trial. Once this was corrected, by the September application, root phosphonate levels began to rise.

The greatest increase in root phosphonate levels in response to foliar phosphonate application occurred between May – July and late October – January. This coincided with two peak periods of root flushing and when shoots had stopped or were only flushing lightly. The least effective period to raise root levels through foliar application was from late August – October when roots were less active and shoots were flushing. This can be seen more clearly in Figure 6, which shows the root levels in the trees that had both injections and foliar sprays.

What does it mean?

Two key time periods to apply phosphonate, based on both shoot and root phenology and measured root phosphonate levels, were identified. These periods were from March to June and mid November to early December.

Monitoring phosphonate root levels in October, prior to treatment in November and in May/June after post harvest treatments, will ensure the correct application method is chosen and that root levels reach the required levels. It is recommended that if root phosphonate levels are below 90ppm in October, phosphonate should be applied. This should maintain satisfactory root phosphonate levels through February – April, during the period when there is a strong root flush and phosphonate root levels are rapidly diluted.

Root phosphonate levels can be easily increased in healthy trees with phosphonate spray or injection applications, when roots are actively flushing. Treatment by either application method (injections or foliar sprays) once a year however, may not provide adequate phosphonate levels in

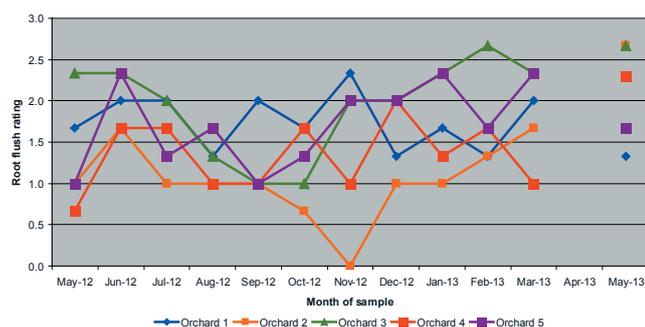


Figure 2. Monthly root flush ratings for all orchards

the roots to provide protection for a full 12 months.

Previous root monitoring data has suggested that increasing levels with foliar sprays can be difficult if root levels are below 50ppm. However if applications occur at the correct time and volume, when roots are flushing, root levels can be increased in trees with levels as low as 20ppm. The post-study test example in Orchard 5 demonstrated that a single foliar application at peak root flushing in late March can greatly increase root phosphonate levels, with root levels rising from 20 to 160ppm in 5 weeks. The effect of application volume on root levels was also demonstrated in orchard 2 where initially application volumes were less than the required 2000L/Ha. Levels quickly rose once application volumes were increased.

The key components to maintaining root phosphonate above recommended levels in Shepard avocados within an integrated PRR program are: timing of phosphonate application based on root growth flushes, monitoring root levels during critical times and applying the correct amount and concentration, either as a high volume spray or through injections. Managing PRR as described in the 'Pegg Wheel' will also help optimise phosphonate applications.

As in all operations in agriculture managing PRR is a case of applying the right amount at the right time - in this case phosphonate - and to measure the effects to ensure you are not guessing.

Other resources

The best Practice resource section of the Avocados Australia website has several resources to help growers manage PRR and optimise phosphonate use.

Data collected during this project has been incorporated into the NQ Shepard Crop Cycle Calendar in the Growing section of the Best Practice Resource (BPR) on the Avocados Australia website. A Power Point presentation

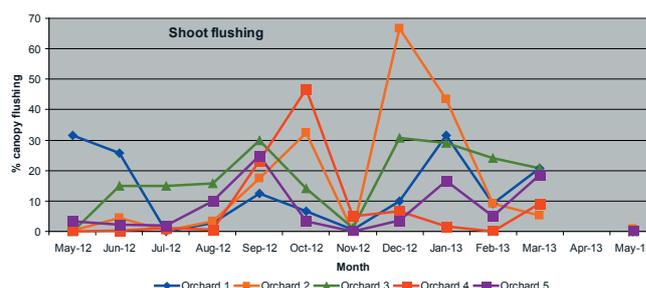


Figure 3. Monthly shoot flush rating for all orchards.

Optimising phosphonate use in Shepard avocados continued

of the project is also available in the Qualicado section. A video showing the correct procedure for injecting avocado trees with phosphonate to control PRR is located in the Phytophthora Root Rot section.

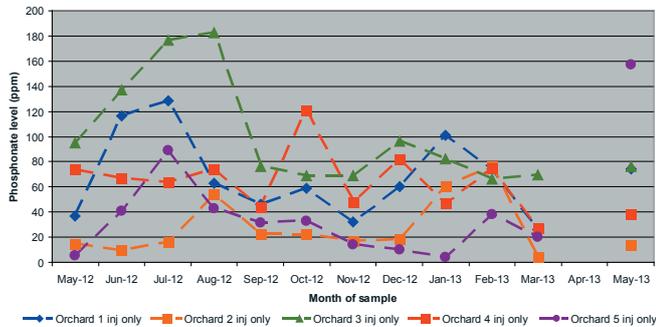


Figure 4. Root phosphonate levels for phosphonate injection treatments.

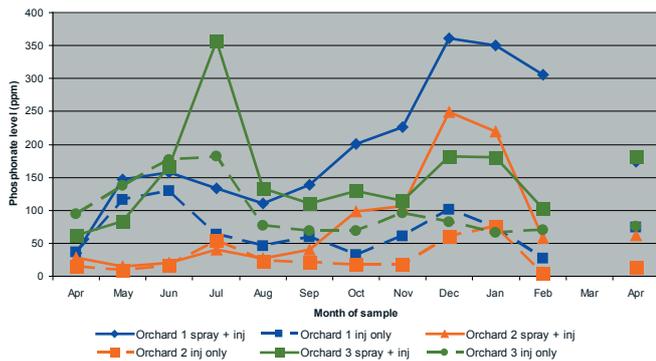


Figure 5. Comparison of root phosphonate levels in orchards treated with injection only or injection plus monthly foliar sprays.

Acknowledgments

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This project would not have been possible without the help and co-operation of the following people: Sony Koci, Giovanni Ravello, Anthony Carusi, Lawrence Masasso and Jim Kochi (collaborating avocado growers whose orchards were sampled), Geoff Dickinson and Simon Newett (DAFF Queensland), Graeme Thomas (GLT Horticultural Services) and Lucia Grimmer & Justin Luckel (formerly of Agrichem) and Agrichem for providing the phosphonate for the trial.

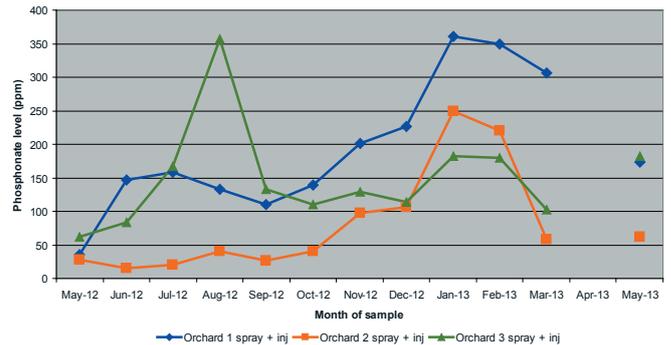


Figure 6. Root phosphonate levels in orchards treated with phosphonate injections and foliar sprays.



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Bruising by hand in softening avocado fruit

Preliminary study

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Introduction

Firmness is the most important widely accepted indicator of avocado fruit ripeness. There are various techniques of measuring fruit firmness, but hand firmness is widely considered reliable and convenient. The different stages of avocado fruit ripening based on hand firmness are listed in Table 1. Each individual person likely has a somewhat different hand grip strength and style developed over time based on their personal experience. Individuals may well apply quite different levels of force through their palm, fingers and / or thumb to gauge firmness when they grip the fruit in hand (Figure 1).

Past research shows that the susceptibility of avocado fruit to bruising increases with advancing ripening. By the time that ethylene-treated fruits reach the retail shelf, their firmness is decreasing as handling by store staff and shoppers commences. Since the firmness of each ripening avocado fruit is manually assessed by hand squeezing

and/or thumb force pressure, the flesh tissue beneath the compressed area can deform and develop into a bruise. However, the actual hand compression forces giving rise to bruising in firm ripe avocado fruit are essentially unknown. This paper outlines a preliminary experiment conducted to evaluate the effect on flesh bruising of simulated thumb forces applied to ripening avocado fruit.

Material and methods

Mature green 'Hass' avocado fruit were harvested from an orchard in the Toowoomba region and transported to the postharvest laboratory at The University of Queensland's Gatton campus. The fruit were initiated to ripen by dipping into ethephon solution followed by holding in a darkened shelf life room at 20°C and 85% RH until they reached the firm ripe stage of hand firmness (Table 1). The fruit were then carefully sorted into matched samples for each treatment. In this context, their firmness was measured non-destructively with an iQ Benchtop fruit testing instrument before compression was applied. Fruit were compressed either manually (i.e. qualitative assessment measure) by thumb pressure (Figure 2) or mechanically (i.e. quantitative assessment measure) by a strain gauge assembly (Figure 3A). The purpose-built assembly was comprised of a precision machined screw threaded rod to move the fruit forward or backward by manually turning a crank handle, a fruit holder to firmly support half of the fruit set into Plaster of Paris, an artificial silicone thumb moulded around a metal T-piece together representing the flesh and bone of a human

Table 1. Levels or stages of avocado fruit firmness (White et al. 2009).

0	Hard, no 'give' in the fruit
1	Rubbery, slight 'give' in the fruit
2	Sprung, can feel the flesh deform by 2-3 mm (1/10 inches) under extreme thumb force
3	Softening, can feel the flesh deform by 2-3 mm (1/10 inches) with moderate thumb pressure
4	Firm-ripe, 2-3 mm (1/10 inches) deformation achieved with slight thumb pressure. Whole fruit deforms with extreme hand pressure
5	Soft-ripe, whole fruit deforms with moderate hand pressure
6	Overripe, whole fruit deforms with slight hand pressure
7	Very overripe, flesh feels almost liquid



Figure 1. Avocado shopper determining fruit firmness by squeezing a fruit on retail display (source: <http://filippamalmegard.wordpress.com/2013/01/11/avocados-crowdsourcing/>).

Bruising by hand in softening avocado fruit continued

thumb, a strain gauge, and a data logger to record the force applied onto the fruit by the silicone thumb (Figure 3B).

This preliminary experiment consisted of six treatments: T1 - slight thumb pressure, T2 - moderate thumb pressure, T3 - firm thumb pressure, T4 - 1 kg force applied with the strain gauge assembly, T5 - 2 kg force applied with the strain gauge assembly, and, T6 - 3 kg force applied with the strain gauge assembly. Three individual fruit replications were maintained for all six treatments. The experiment was conducted as a completely randomized design. After 48 h from compression, the resultant bruise volumes were measured by a conventional water volume displacement in a measuring cylinder method. The data were statistically analysed using MS Excel® 2010.

Findings

Both the slight manual compression treatment and the minimal mechanical compression treatment at 1 kg caused flesh bruising in the firm ripe avocado fruit. Expectedly, the severity of bruising rose with increased manual compression (i.e. moderate and firm) and increased mechanical compression (i.e. 2 kg and 3 kg; Figure 4).

Slight manual compression caused a bruise volume of 1.7 ± 0.4 ml (Figure 5). The bruise volumes were 2.7 ± 0.3 ml for moderate and 9.3 ± 0.7 ml for firm thumb pressure. The mechanical compression treatment of 1 kg caused 0.7 ± 0.2 ml bruise volume. The bruise volumes were 3.3 ± 0.4 ml with 2 kg mechanical compression and 9.5 ± 0.3 ml with 3 kg mechanical compression. Thus, the bruise volumes for slight, moderate, and firm manual compression were correlated with those for 1 kg, 2 kg, and 3 kg mechanical

compression force.

Nonetheless, the degree of bruising was not significantly different for either the slight and moderate manual compression level treatments or for the 1 kg and 2 kg mechanical compression force treatments. However, there was a significant increase in bruising upon firm manual compression as compared with slight and moderate manual compression and also upon 3 kg mechanical compression as compared with 1 kg and 2 kg mechanical compression.

The results reported herein concur with findings of earlier research that bruising in softening avocado fruit increases with increased levels of energy absorbed by the fruit. At the lowermost level of compression either manually or



Figure 2. Manual thumb compression test on a firm ripe avocado fruit. The red arrow indicates the point of force applied to the avocado fruit.

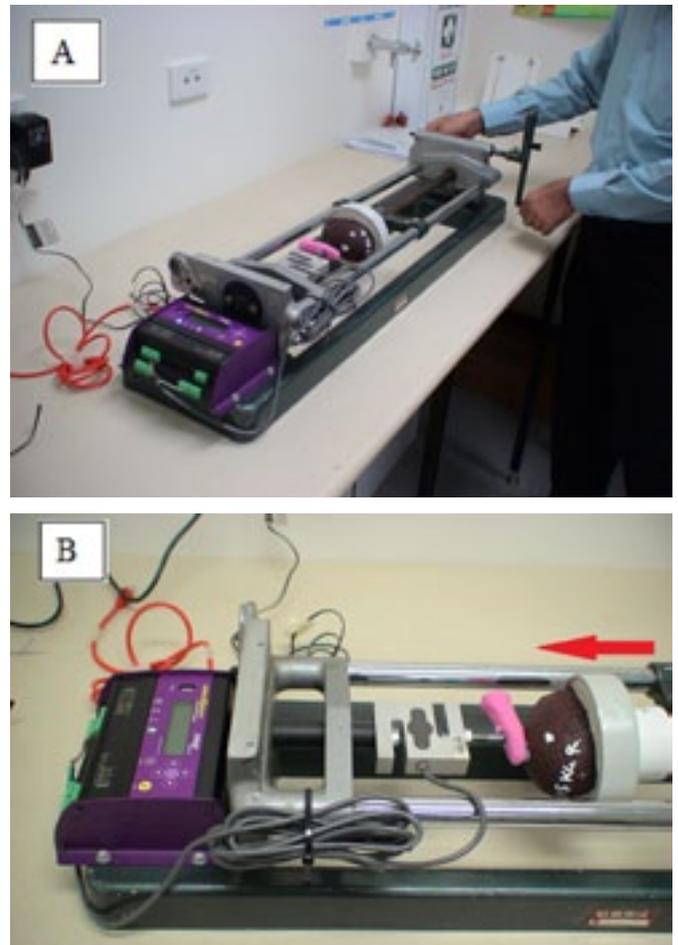


Figure 3. (A) Mechanical compression test assembly comprised of a frame, a fruit holder, a moulded silicone thumb, a strain gauge and a data logger; and, (B) A close-up of the mechanical compression applied via the moulded silicone thumb onto the firm ripe avocado fruit. The red arrow indicates that the avocado fruit in the holder is moved towards the stationary silicone thumb.

mechanically, only the flesh close to the skin was bruised. This is presumably because the compression forces are only just enough to affect the fruit tissue close to the skin. In contrast, at the firm manual and 3 kg mechanical levels, the external compression forces against the seed inside the fruit evidently led to almost all of the flesh thickness manifesting bruising.

This promising albeit limited preliminary research will be expanded in HAL projects AV12009 and AV10019 to ultimately inform best management education and decision aid tool practices for avocado supply chain

stakeholders, particularly retailers and shoppers.

Acknowledgements

This research was conducted under project 'AV12009 – Understanding and Managing Avocado Flesh Bruising' funded by Horticulture Australia Limited (HAL) using avocado industry levies and matched funds from the Australian Government. Support was also provided by the Department of Agriculture, Fisheries and Forestry (Queensland) and The University of Queensland.

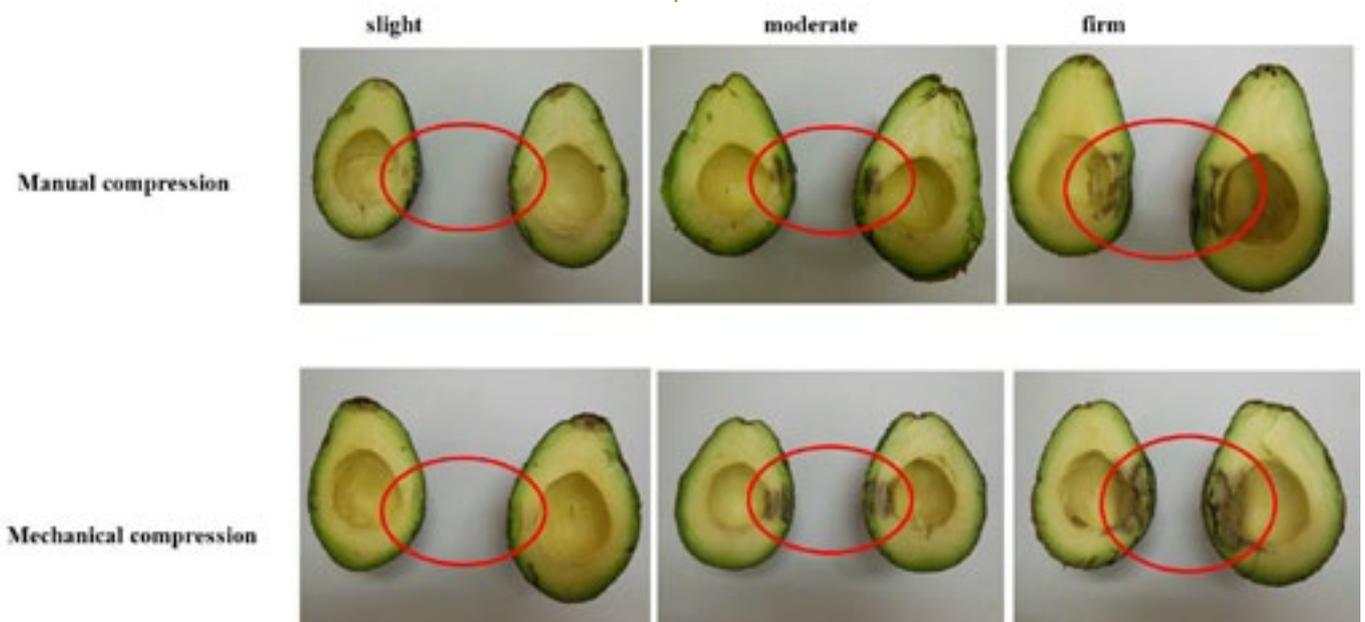


Figure 4. Bruising in firm ripe avocado fruit as caused by manual and mechanical compression. The red circles highlight by enclosure the compressed bruised flesh.

Top left: slight thumb compression.

Top centre: moderate thumb compression.

Top right: firm thumb compression.

Bottom left: 1 kg mechanical compression.

Bottom centre: 2 kg mechanical compression.

Bottom right: 3 kg mechanical compression.

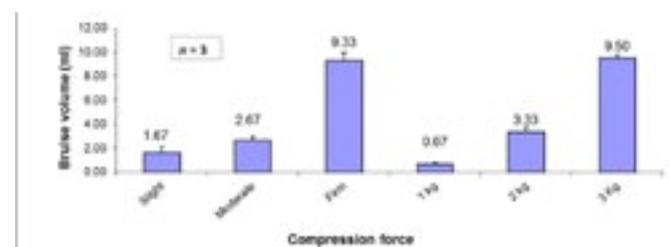


Figure 5. Average bruise volume ($n = 3$) due to manual and mechanical compression of firm ripe avocado fruit.



Member Profile

Kylie and Sam Collins

Blushing Acres, North Queensland

From time to time Avocados Australia likes to select a grower/member from our national membership to profile in our magazine and for this issue we spoke with North Queensland avocado growers Kylie and Sam Collins from Blushing Acres Pty Ltd.

Blushing Acres is situated in Dimbulah in North Queensland. Both Kylie and Sam recently took up the opportunity of taking part in Avocados Australia's Study Tour to New Zealand and attended the 5th New Zealand-Australian Avocado Growers Conference. They not only found the experience of value to their business but an excellent chance to speak with growers from other regions. Kylie and Sam have acquired around eleven years of experience in growing avocados. Before buying their farm in Dimbulah Sam worked as a heavy equipment fitter and both Sam and Kylie ran a workshop while they lived in Papua New Guinea. Sam and Kylie briefly took time out to share their experiences:

What attracted you to the idea of becoming avocado growers?

My father always loved avocados as we grew up and consumed huge quantities and when we were looking for a business we were told by the agents in Brisbane that avocados and mangoes were the future in horticulture with consumption increasing. We contacted a real estate agent and had two farms to look at the next day.

What challenges have you encountered so far with growing avocados?

They aren't easy to grow. They are very unforgiving. They are expensive and fruit spotting bug is a big problem.



Kylie and Sam Collins from Blushing Acres Dimbulah, North Qld

What avocado varieties do you grow and why?

We currently grow Shepard and Hass. We grow Shepard because that is what we inherited and Hass to extend the season.

How much of your land is dedicated to avocado farming?

We have 2250 avocado trees. We were going to plant more trees but are putting mangoes in because of the 2 year (minimum) lead time waiting for seedlings. This is also a way for us to address the concern of over-supply of fruit in the market in the coming years.

Where did you obtain your rootstock when you set out to grow avocado?

We source our rootstock from local suppliers and some from Sunshine Horticultural Services. Our preference is Velvick.

What is the most valuable lesson you have learnt about growing avocados?

They need to be grown and looked after 365 days of the year. This is an ongoing learning process. You might think that you have it all under control and then another challenge is thrown at you.



What in your opinion is the main challenge that you need to overcome in successfully running an avocado farm in your region?

The control of Fruit Spotting Bug.

What are the soil types like in your growing region?

We have sandy soils.

How big is the North Qld avocado growing community? Would you like to see it grow?

It feels like it is growing as it is hard to source trees and at the recent North Qld Qualicado Workshop we saw a lot of new faces.

How do you obtain pickers to assist you at harvest time?

We use mainly backpackers with work visas as there are a limited number of locals to go around all of the orchards. There is a constant supply of backpackers wanting the work to gain their 2nd year visa through the regional work scheme.

How long does it take to harvest your fruit and when do you do it?

We usually start mid to late February depending on the dry matters. It takes 4-6 weeks.

Which pests are of most concern to you in your orchard at the moment? Is the NQ wetter and warmer climate a hindrance or a blessing?

Fruit Spotting Bug is our main concern. The wetter and warmer climate is a hindrance to pest and disease control but I wouldn't live anywhere else. I would love to see a trap or bait made with the pheromone has been developed to be used as a control and not just a monitoring tool.

What do you think are the biggest opportunities for the avocado industry in Australia?

We should continue to improve the quality of Australia's fruit for the consumer and encourage increased consumption.

What advice would you give to farmers looking to move to avocado farming?

Choose the location carefully. Look at soil profiles, temperatures, drainage, timing of harvest for the avocados and who you might clash with, and water availability.

Have you received your copy of Avocados Australia's "Avocado Problem Solver Field Guide"? Is any of its content of value to you as an avocado grower in North Qld?

It is a fantastic resource and I love the 'strong' pages. Great photos!

Do you enjoy eating avocados yourself. If so, how do you enjoy eating them best?

Yes we love avocados. I have started to cut them up into small cubes and sprinkle them over soups, casseroles and pasta dishes. They add a lovely 'fresh' texture to the dish and you are adding good vitamins and minerals to your food.

What do you think the future holds for your business in 5 years time?

It would be good if the cyclones stay away but we can't control the weather. Also we would have to constantly address increasing costs (wages, freight, chemicals, fertilisers, water, electricity, insurances, and fuel are all increasing) so this will be a challenge. We will always be striving to work hard to ensure that the quality of our fruit continues to provide a good eating experience for the consumer. This is everything.

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Evaluation of fruit yields and tree health of Hass trees grafted to 8 rootstocks in high *Phytophthora* root rot conditions at Childers, QLD

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Introduction

Field trials assessing survival and performance of ‘Hass’ trees grafted to different rootstocks planted in orchards known to have high *Phytophthora* root rot (PRR) disease pressure, were established in late 2005 and early 2006 at commercial orchards at Duranbah, NSW, Hampton, QLD and Childers, QLD. The first results on performance of rootstocks at each site with respect to PRR tolerance have been reported (Smith et al, 2011).

This report presents more recent data collected from 2009-2013 on tree health and yield from the Childers trial, and tree survival at Duranbah.

The trial contained clonally propagated Dusa™, Latas™ and Velvick, and seedling A8, A10, Reed and Velvick. There were two sources of Velvick seed. Velvick^A maternal trees are interplanted with other varieties, thus seedlings have lower chance of containing the same genetic identity as the parent tree. Velvick^L trees are physically isolated from other varieties flowering at the same time, so potential for outcrossing (and thus genetic diversity among seedlings raised from seed) is considered to be lower than that of seedlings raised from Velvick^A trees. Ten trees of each rootstock were planted, except for Velvick (clone) which had 9 replicate trees. Trees were treated with phosphonate and metalaxyl for the establishment period. This allowed vigorous growth and favourable root:shoot ratios such that trees had the opportunity to express resistance once PRR protection measures were discontinued 12 months after planting. Trees were assessed regularly for canopy health, on a 0 to 10 scale (Darvas *et al.* 1984), and fruit yields (kg per tree) were collected in 2009-2013.

Results and discussion

Tree health

(Figure 1) Three years after planting trees (2009) every rootstock but Reed and Velvick (clone) had minimal or no evidence of decline due to PRR. However, by 2010 there were large declines in tree health, with Hass on Reed rootstock showing the greatest decline, while Dusa™,

Figure 1 Health of ‘Hass’ trees grafted to different rootstocks and planted in 2006 at Childers, QLD, with high PRR pressure.

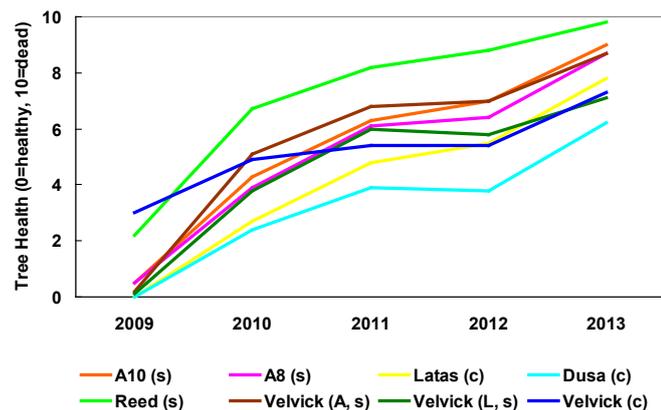
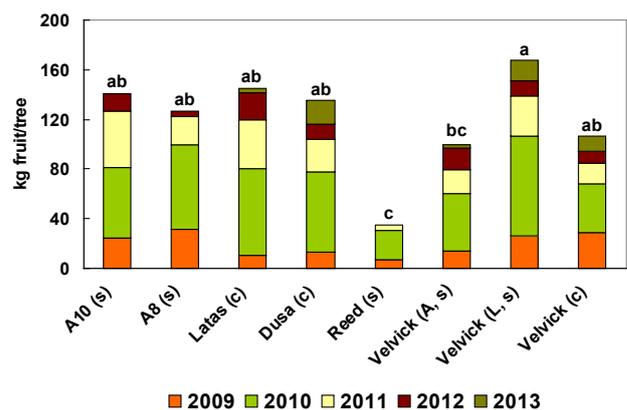


Figure 2 Average yield (kg) per ‘Hass’ tree grafted to different rootstocks and planted in 2006 at Childers, QLD, with high PRR pressure.



Latas™, A8 and Velvick^L rootstocks were the healthiest trees. In the absence of phosphonate applications and above average annual rainfall patterns, tree health continued to decline over 2010-2013. Hass on Dusa™ trees remained the healthiest over this time, and Velvick^L and Velvick (clonal) were also significantly healthier than most other rootstocks in the trial.

Plate 1 shows the difference between relatively healthy trees treated with phosphonate, compared to trees in the rootstock trial where phosphonate was not applied after establishing the young trees.

Tree survival

By April 2013, the percentage of trees still alive for each rootstock at Childers was: Dusa 100%, Velvick^L and Latas 80%, Velvick (clone) 78%, A8 and Velvick^A 60%, A10 50% and Reed 20%.

At the Duranbah site, the percentage of trees still alive after 7 years was: Dusa™, SHSR-04 and Hass ungrafted 70%, Velvick^A 50%, Thomas, Barr Duke and Latas™ 30%, Velvick (clone) 20%, Duke 7, A10 and Reed 10%.

Although Reed rootstock is quite susceptible to

Phytophthora root rot, it responds well to phosphonate application and then produces an acceptable yield of quality fruit particularly in WA and north Queensland.

Yield

(Figure 2) Three years after planting (2009) the highest yields were from A8, Velvick (clonal), Velvick^L and A10 rootstocks. The yields from these rootstocks were significantly higher than from Reed or Latas™. In 2010, highest yield per tree were from Velvick^L rootstock, which was more than 3 times higher than the lowest yielding rootstock, Reed, but also significantly higher than from Velvick^A and Velvick (clonal) rootstocks.

The very severe weather events of late 2010 and early 2011, which saw major flooding in the Brisbane region, affected crop yields in south east Queensland significantly, and caused widespread tree deaths due to waterlogging. Thus, yields in 2011 were lower than in 2010. Yields were highest for A10, with Velvick^L and Latas™ also yielding >30 kg per tree. Continued above average rainfall in 2012 and the lack of phosphonate further impacted yields in 2012 and 2013. There were no significant differences among treatments, however the highest yielding trees were on



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Evaluation of fruit yields and tree health... continued

Dusa™ and Velvick^L rootstocks. Cumulative yield per tree (total yield across all years) was highest for Velvick^L, but significantly higher only than Velvick^A and Reed.

The superior performance of Velvick^L compared with Velvick^A seedling rootstocks with respect to tree health and yield is interesting, and demonstrates the potential for out-crossing to change seedling performance. The significance of this result should be checked with molecular studies to determine the extent of genetic variance among seedling lines of the same variety from different sources. It highlights the significant commercial benefits to be gained from producing seed for nursery use in isolation from out-crossing opportunities during flowering.

Tree health affects yield and fruit size

(Table 1) Tree health had a significant effect on the proportion of trees yielding fruit, with a definite downward trend as the health of the trees decreased. Trees not suffering decline due to PRR produce significantly larger fruit. The tree with a health rating of 3 had significantly larger fruit than trees rating 4 or greater (where 0=healthy and 10=dead), in 2013.

Acknowledgements

We thank Graham Anderson and Harold Taylor (Anderson Horticulture, NSW) and Simpson Farms (QLD) for their collaboration. The avocado disease management projects, AV07000 and AV10001, and rootstock improvement project AV08000, have been funded by Horticulture Australia Ltd using the avocado industry levy and matched funds from the Australian Government.

Results snapshot

- Rootstocks most capable of tolerating high PRR conditions are Dusa™ and Velvick (cloned and closed-pollinated seed sources) and consequently had the highest yields in 2013
- Healthy trees have greater yields and larger fruit than trees declining from PRR
- Differences among source of Velvick seed highlight the need for closed-pollinated Velvick blocks for nursery seed stocks



Plate 1 Commercial trees (left) with PRR management compared with rootstock trial trees (right) with nil phosphonate treatment, Childers 2011

Table 1 Effect of tree health on Hass fruit yield and size, Childers 2013

Tree health rating ^a	Number of trees	% trees yielding fruit	Average Yield (kg)	Weight per piece of fruit (g)
3	1	100	121.2 a	217.6 a
4	4	100	81.9 a	139.6 b
5	3	100	5.76 b	127.1 b
6	8	88	4.74 c	110.7 b
7	14	43	2.01 cd	116.6 b
8	10	40	0.71 cde	102.7 b
9	12	0	0.0 de	
10	27	0	0.0 e	

^a Tree health was assessed on a scale of 0 to 10, where 0=healthy and 10=dead, as per Darvas et al (1984)

Within each column, means followed by the same letter are not significantly different ($P<0.05$)

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* STANDARD 5.5KG TRAY WITH INSERT - LOCAL AREA



Industry Profile

AvoFresh

Avocados Australia recently had the opportunity to catch up with the people behind the AvoFresh Brand. AvoFresh Director Trent De Paoli and Fruit Supply Co-ordinator Tony Caffery see a bright future for their processed avocado product. As many of you are already aware the AvoFresh product utilises locally grown avocados that do not make it to supermarkets (either the wrong size or grade) and these are specially processed and packaged into longer lasting convenient packaging formats that can be refrigerated. Since the launch of the brand in 2011 the AvoFresh product range has expanded to include seven different offerings: Soft, Firm, Chunky, Spicy Chunky, Seasoned Soft, Spicy Soft, and Seasoned Chunky. In Australia AvoFresh product can be found in Woolworths, and selected IGA stores and it is also exported overseas. Read on for an update:



AvoFresh Director Trent De Paoli with local avocado grower Lachlan Donovan

What inspired you to establish AvoFresh?

Well it all starts with the consumer. In recent years Avocados Australia have invested in consumer research which highlighted opportunities to grow avocado consumption with packed formats that better suited consumption occasions and avoided waste. We decided to start a new company and gathered skills in farming avocados, grower relations, modern packing methods, retail relationships and brand marketing. We launched AvoFresh with Woolworths nationally in early 2011 and have grown steadily ever since.

How do you see AvoFresh's place in the avocado industry supply chain?

The retail sales data clearly indicates that AvoFresh has added new volume and value to the avocado industry. So we feel there is a long term role for us and prefer to develop long term relationships with our grower suppliers. We pay growers a fair price for bulk bins of process grade fruit which might otherwise be wasted or further depress prices growers receive for first and second grade fruit during the seasonal supply peaks. We are able to store large volumes and ripen to our needs and we aim to make logistics easy for busy growers.

Does AvoFresh present opportunities for Australian avocado growers?

Yes. Avofresh continues to purchase process grade fruit so

is supporting Australian growers and the market structure.

What are you striving to achieve in the business?

As a family business our first aim is survival, but beyond that we see an excellent opportunity to use our expertise to bring to market fresh produce that lasts longer and better suits the needs of Australian families.

What does AvoFresh specialise in?

AvoFresh specialises in unique value added avocado products using High Pressure Processing Technology.

What is your unique point-of-difference compared with your competitors?

We believe AvoFresh products are unique offering avocado always ripe and ready to consume. AvoFresh products also last longer and up to five days from opening, and AvoFresh product formats make it easier and quicker to prepare typical avocado based meals. For our customers we offer year round supply at a constant price and support their sales with strong media, sampling and promotional support for AvoFresh products.

Do you see processed avocado as a competitor to fresh avocados or a convenient compliment?

Consumers see AvoFresh as a convenient compliment to fresh avocados and it's always been our focus to encourage growers to see AvoFresh as a positive enhancement to the Australian industry.

Where do you source your produce from? And what qualities does the fruit need to have in order to be suitable for processing?

We need to source from all growing areas in Australia, from Atherton QLD to Pemberton WA as we pack AvoFresh all year round. The main varieties are all suitable. The fruit needs to be sound and meet dry matter standards. We are flexible with fruit size and skin blemishes are of no concern.

What volume of avocados do you require and at what times of the year do you process the fruit?

We require significant amounts of process fruit as we have additional export market opportunities.

Does AvoFresh favour Australian produce over imports?

As Australian growers ourselves we know how important it is to support the local industry. Our strong preference is 100% Australian grown.

Some Asian countries are known for their high consumption of processed foods. Japan remains the

second largest package food market in the world after the United States. Are Asian markets on your export radar for the long-term?

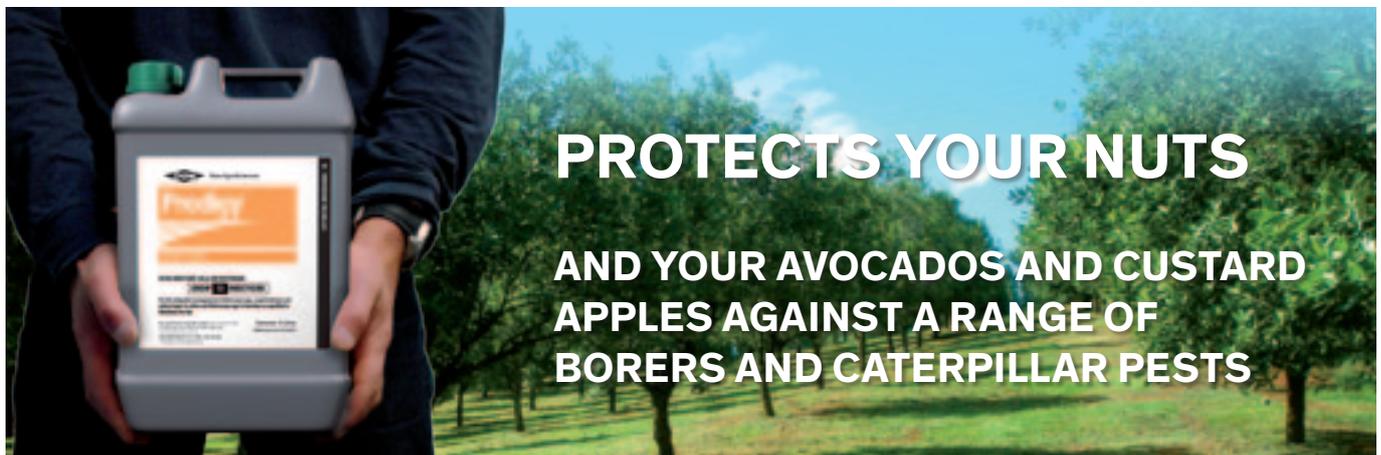
Japan is clearly the largest avocado consumer in Asia and of course they do not allow fresh Australian avocado imports. AvoFresh provides an excellent opportunity for the Australian industry to develop significant business into Asia. We've had discussions and expect further progress in the near future.

What does the future hold for AvoFresh, where would you like to see the business in 5 years time?

Long term we see excellent prospects. At some stage our volume will be constrained by supply of processed grade fruit. We don't know when, but certainly see scope for significant growth yet!

If an avocado grower was interested in supplying fruit to AvoFresh how should they go about this?

Growers can call Tony Caffery on 0428 207 151 or email tony@austchilli.com.au.



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Nutritional Values Conference, Tauranga, NZ

Australian growers share their insights



Conference venue ASB Arena Baypark NZ.

“Nutritional Values”, the 5th Joint New Zealand and Australian Avocado Growers’ Conference was held from the 9th to the 12th of September at the ASB Arena Baypark in Tauranga. The conference was very successful with over 400 people attending and there was strong representation from leading enterprises taking part in the exhibition hall.



The bustling exhibition hall visited by over 400 delegates. Photo by Mark McKeown/Musae Studios.

The theme provided the chance for delegates to increase their awareness and knowledge of the health properties of the avocado, attributes that can further drive consumer demand. The conference featured speakers from New Zealand (NZ), Australia, South Africa and the United States.

On Day 2 the conference was officially opened by the Honourable Simon Bridges and the morning opening session saw all four members of the conference organizing committee welcoming delegates. Ashby Whitehead (Chair of NZ Avocado Growers Association Inc), Jim Kochi (Chair of Avocados Australia Limited), Jen Scoular (CEO of New Zealand Avocado and John Tyas (CEO of Avocados Australia Limited) shared their perspectives on the progress of their respective industries.



From left, Ashby Whitehead Chair NZ Avocados, Jen Scoular CEO NZ Avocado, John Tyas CEO AAL, the Honourable Simon Bridges and Jim Kochi Chair AAL.

Photo by Mark McKeown/Musae Studios.

Nadia Lim - NZ Avocado Ambassador, qualified dietician and former winner of a NZ Masterchef title - demonstrated how the avocado is such a nutritious, delicious and versatile food by preparing a wonderful new avocado and raspberry smoothie recipe.



Dietician and NZ Avocado Ambassador Nadia Lim.

Photo by Mark McKeown/Musae Studios.

In the afternoon on Day 2, Avocados Australia held a networking event which provided around one hundred members of the Australian avocado industry to network and the chance for growers from different regions to meet. The networking function also provided members of the Avocados Australia Study Tour with the opportunity to compare notes on the presentations they attended and to gauge how this information can be of value and relate back to their own practices in Australia.



Jim Kochi presents Lisa Cork with a thank you gift at the Avocados Australia networking function.

Over the two days delegates had around forty presentations to choose from that were divided into three streams: Marketing Nutrition, Healthy Orchard and Strong Industry.

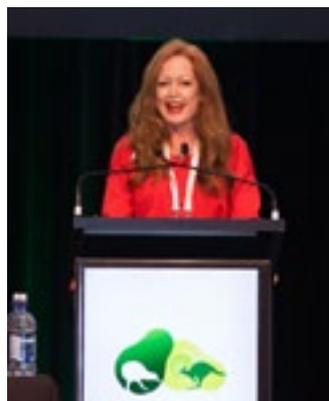


*Jim Kochi
Chair of Avocados
Australia.*

*John Tyas provided an
Australian avocado
industry update.*



*Photos here by Mark
McKeown/Musae Studios*



*Photos here by Mark
McKeown/Musae Studios*

*Jen Scoular provides her
opening speech.*

*Lisa Cork, owner and
director of Fresh Produce
Marketing Ltd spoke about
selling nutrition through
branding & packaging.*



On Day 4 delegates boarded buses and traveled to a number of locations as part of the two field trip programs. The Katikati Field Trip included a visit to Cotterell's Orchard (hosted by John and Cindy Cotterell), then a tour of Apata Limited's packing shed and this was followed by a visit to Grove Avocado Oil's warehouse for an overview of how cold-pressed avocado oil is made and exported.



*Field visits to local orchards gave growers a chance to
compare approaches.*

Nutritional Values Conference, Tauranga, NZ continued



Fruit sorting at Apata Packing shed.



Daryl Boardman, AAL director for South Queensland samples the Avocado Grove Oil gourmet range.



Each of the ten Avocados Australia study tour participants produced an article summarising what they observed and learnt from the visit. These articles appear here. If any readers are interested in obtaining a copy of the presentations that are referred to in some of these articles please email co@avocado.org.au.

Orchard practices - Cotterell Orchard, Katikati, NZ:

A summary by Barry Trousdell, South Queensland grower



The Cotterell orchard with trees over 20 years old.

The Cotterell Orchard is situated on an elevated sloping property in the Bay of Plenty growing region in the North island of New Zealand. It comprises 8.5 hectares, 4.6

hectares of this is dedicated to avocado trees. The orchard has been in operation for 15 years and most of the trees are over 20 years old. The area was previously planted with trees that were thirty years or older spaced at 24m spacings however the growers here deemed them too high to pick (with a 10m hydraulic) so decided to start again with new rootstock.

The 0.25 hectares of new plantings are Hass on Dusa rootstock. Dusa was chosen as they felt it performs better in a replant scenario.

The orchard has an annual phytophthora control program which is done with stem shot. John Cotterell does all of the avocado spraying himself. Their annual fertilization program is prepared by a local consultant.

The annual rain fall ranges from 1259mm to 2319mm the average being 1745mm. They have been irrigating since 2005 whereby irrigation frequency is determined using tensiometers. The amount of irrigated water ranges from 152mm to 640mm on average it is around 439mm.

Over the last five years the average production at the Cotterell orchards produced 6,949 5.5Kg trays. The average yield in tones per hectare was 8,493.

The growers here value the process of pollination as much as we do and these growers are involved in a program with Plant and Food Research. They are taking part in the bumble bee trial which is a program looking to encourage pollination by bumble bees in the orchard. This process is assisted by the creation of man-made structures that provide a suitable location for queen bees to establish their hive at the right time of year. These structures are strategically placed around the orchard.

At the Cotterell Orchard young trees are protected by green gardening mesh until such time as they have matured. In contrast, I have found on my own orchard based in Southern Queensland that we have experienced good results with using Hessian.

Perhaps the most significant feature in the orchard is the presence of extremely high well maintained natural wind breaks. The wind breaks at the Cotterell Orchard are, in some places, as high as 10m. The strong winds that occur in the Bay of Plenty region are the concern with growers (not only of avocado but kiwi fruit as well) aiming to protect fruit from being damaged and falling to the ground ("fruit drop"). Fortunately this is something that growers in my own region do not need to contend with however it shows, that like the Cotterell's, we are also just as dedicated in our pursuit of maintaining fruit quality for the benefit of consumers.



10m high wind breaks address the Bay of Plenty's strong winds.



John Cotterell discusses the canopy management at Cotterell's Orchard. Photo by Mark McKeown/Musae Studios.



Cotterell orchard staff discuss their canopy management practices.

Avocado Nutrition research findings:

By Michelle Trousdell, South Queensland grower

New research findings on the positive benefits of consuming avocados was presented at the conference by Dr Mark Dreher, the Chief Science Officer with the Hass Avocado Board (HAB) based in the United States (US). These findings were based on a HAB supported clinical study conducted by researchers at Loma Linda University and aimed to investigate the effects of incorporating fresh Hass avocado into a lunch meal – either by replacing other foods or by simply adding it to the meal – on satiety, blood sugar and insulin response, and subsequent food intake.

According to Dr Dreher their research showed that inclusion or the addition of fresh Hass avocado to a meal may help to reduce hunger and the desire to eat in overweight adults. Results also showed that by including or adding avocado to a meal resulted in smaller post-meal rises in insulin compared to eating a meal without avocado. These findings provide positive implications for people needing to improve their everyday healthy eating habits. Better still it provides evidence for why consumers should include fresh Hass avocados in their diets to increase their fruit intake given that it is a food that is cholesterol-free and a whole food source of naturally good fats. The HAB recently launched a science-based food and wellness education program to educate consumers about these beneficial points.

The HAB believe that more studies are needed however this research provides good evidence that avocados may have a positive role to play in weight management and diabetes.

The HAB was established in 2002 to promote the consumption of Hass avocados in the US. A twelve-member board representing US producers and importers of Hass avocados directs HAB's research and information programs under the guidance of the US Department of Agriculture. To read more about this research free educational resources and recipes have been made available by the HAB website: loveonetoday.com.

Reducing flesh bruising and skin spotting in Hass avocados

Summary by Kym Forsyth, Production Manager – Packing, Tri State

As a Production Manager for packing at AgriExchange Pty Ltd (Renmark, SA) I was interested to hear from Muhammad Sohail Mazhar on his presentation "Bruising in Queensland 'Hass' avocado supply chains from the Ripener to the Consumer". Sohail asserted that bruising is the most common, frequent and important internal quality problem facing the Australian avocado industry. His research aimed to determine at what stage in fruit maturity and the supply chain avocado bruising was occurring with the aim to assist industry in minimising its occurrence.

This issue has implications not only for the grower but also the packer, transporter, ripener, retailer and ultimately the consumer. I was surprised to hear that the most bruising seems to occur at the retail level. Being from a packing background our line has to be built with the least drop heights to reduce the potential incidence of bruising. Blame is usually put back to the packing shed for any out turn problems but now it seems a lot of the bruising issues occur after the ripener has handled fruit.

Sohail went on to say that prior to this research being undertaken it was unknown at what stage of the supply chain bruising was occurring. Hass avocados on the retail shelf which have defects in the flesh affect consumer repeat purchases. A research program was put in place which included laboratory tests and the assessment of the supply chain on bruising of avocados. It was found that bruise volume increased at room temperature over time and impacted at hand firmness stage.

Firm ripe fruit was dropped from 25cm and 50cm and bruising occurred within 48hours. Bruising in trays dropped from 50cm height was greater than 25cm at a 30 degree angle.

The results show that the research needs to be directed at the retail and consumer level. At the firm ripe stage, thumb pressure has an adverse affect or pressure bruising. A pressure of less than 1Kg had less result in bruising than 3Kg of pressure at 20 degrees Celsius. The revelation from the bruising assessment throughout the supply chain is that, the greatest bruising occurs at retail store level and particularly at the point of display.

The research also found that less bruising occurred the lower the post harvest temperature. At 58°C bruising was

higher at 20°C and lower at 2°C.

Overall Sohail highlighted that the highest risk of bruising is at store level. Other factors such as fruit handling and fruit temperature also impact on bruising. Training support is therefore needed at retail level on post harvest handling and consumer education on handling of avocados after purchase.

I would like to see more work done on retail and consumer education on handling of avocados. Another area that should be addressed is transport in the supply chain with particular emphasis on handling avocados with care and transport temperature. Perhaps pack houses should be evaluated and a code of practice put into place?

The news from this presentation confirms that current practice needs to change. I discussed this with our packing and marketing teams and agreed that it is important to convince and train our retailers on the key issues raised in this report.



Kym Forsyth, an Avocados Australia study tour participant visits Apata Limited's packshed.

Recommendations to the Australian industry:

Industry needs to be focused and agree on best management practice throughout the supply chain from grower, packer, transporter, ripener, retail and the consumer. The Qualicado program and the Best Practice resource online, provides recommendations for addressing the findings of research such as the project I have discussed in this communication. These initiatives should be supported and serve as our constant guide to avocado handling in future.

Main takeaway messages:

Fruit maturity, temperature, drop height, compression pressure all contribute to bruising of avocados.

Training/education of retailers and consumers is important.

The more education provided along the supply chain will lead to more repeat sales of avocados, work that is already currently underway.

The threat of not educating consumers and retailers could see the decline in consumer confidence and thus affect repeat sales in future.

Irregular Bearing in Australia

By Laurie McCloskey, Farm Manager, Peirson Memorial Trust, Central Queensland.



Central Qld grower, Laurie McCloskey.

A topic of interest to me is Alternate versus Irregular Bearing so I was interested to hear about the investigations being done by Simon Newett, the principal extension horticulturalist at the Queensland Department of Agriculture, Fisheries and Forestry (QDAFF) and Grant Thorn, senior scientist from New Zealand. The difference between Alternate Bearing and Irregular Bearing is that Alternate Bearing is coupled with poor flowering, while Irregular Bearing generally have an adequate to good flowering every year.

Irregular Bearing it seems impacts on growers both here in Australia and in New Zealand and as a grower based in the Childers region this issue is of particular interest to me.

Alternate Bearing is initiated by a "one-off" climatic or management event leading to an "on"/"off" cropping cycle that becomes entrenched through endogenous (internal) tree factors that affect the intensity of annual flowering. While Irregular Bearing is driven by the events that impact negatively on fruit-set/crop load regardless of flowering intensity. Events are usually climatic (e.g. cold

Nutritional Values Conference, Tauranga, NZ continued

at flowering) and sometimes management (e.g. pesticide burn at flowering). There is no cyclic pattern to "on"/"off" years as with Alternate Bearing.

One of the points that I found interesting in Simon's presentation was that if a crop with approximately 25tonnes per hectare does not get adequate nutrition then the following crop yields will significantly decrease. Another good point made was that for a successful fruit set on Hass you need three consecutive nights above 10°C. So the main factors contributing to Irregular Bearing in Australia are cold nights and extended wet conditions at flowering and hot, dry, desiccating conditions at flowering and during the two main fruit shedding events.

An issue Grant Thorn spoke about that is experienced in New Zealand is related to flower quality. Low temperature during the winter and spring seasons disrupt flower development, flower opening and embryo development and pollination. Where as dry and windy conditions during spring create "drought" stress which reduces fruit set.

Simon Newett's presentation was valuable and provided information that can help guide my future orchard management decisions.

Fruit Spotting Bug Update

Summary by Kylie Collins – grower, Blushing Acres Pty Ltd, North Queensland.

Dr Ruth Huwer, an entomologist with New South Wales Department of Primary Industries based at Wollongbar, presented a report on "a multi targeted approach to Fruit Spotting Bug management". Fruit Spotting Bug (FSB) is a major pest in tropical and sub-tropical Australia affecting Mareeba, Wakamin, Dimbulah, Bundaberg, Childers, Wollongbar and Alstonville areas. FSB affects twenty odd different crops including avocados, mangoes, macadamia, lychee, papaya, passionfruit, citrus and custard apples. New Zealand growers do not have this pest however in the above regions in Australia this pest is costing growers dearly.

Dr Huwer and her team have been working on the FSB project for three years and the project has another two years to run.

There are seven aspects to the project. Different departments throughout Australia are doing different aspects of this research, and are covering the following:

1. Collation of past research and current practices.
2. Chemical Control options – looking at new chemicals that may be effective. Three new chemicals look promising but have short residual time. These are

most likely to be the first new tool available to growers.

3. Development of monitoring and trap cropping by the use of trap crops and pheromones:
 - a. Trap hedges included *Macadamia ternifolia*, *Murraya paniculata*, Keith Paxton (Ribbonwood berries). Results from the trap hedges show that they are a good monitoring tool and that *Macadamia paniculata* and *Macadamia ternifolia* were more successful at attracting FSB.
 - b. Queensland Department of Agriculture, Fisheries and Forestry (QDAFF) have been successful in developing a pheromone for *Amblyopelta lutescens* however trap designs need to be improved to make them not just a monitoring tool but a form of control, potentially.
4. Biological control options such as the Anastatus wasp. Richard Llewellyn from BioResources has developed a mass rearing facility and the wasp is being evaluated over time for the effectiveness on commercial farms.
5. Integrated Pest Management (IPM) case studies
6. Area wide management
7. Industry adoption

In summary we still do not have any 'silver bullets' for the control of FSB only as a monitoring tool however in preparing this article I found out that this project recently underwent an independent mid-term review. They are still working through the details of what the revised project will look like however a commitment has been made to continue with the pheromone work. Clearly the discovery of the lure for *lutescens* has been a massive breakthrough. Work on developing a pheromone trap for use by growers definitely remains one of the aims of the project. Development of a trap that is not just a monitoring tool but a control tool requires a lot more work. Also, it should be noted that at the moment, the lure is only developed for one species. In southern regions, there are 2 species (*nitida* and *lutescens*), so there is a lot of work to do to develop the lure for the other species too.

It looks like this pest will continue to cost growers money in the form of loss of production due to fruit drop and rejects at the shed and will cost money in chemical control out in the paddock. Hopefully, in the next two years of the project we will see some solid control measures developed.

I am keen to see a trap developed with the pheromones that attract FSB and last up to 5 to 6 weeks as the traps

are only lasting 2 weeks. If growers could get traps into their orchards like the fruit fly traps then this would be a massive step towards control and avoid the need for extensive spraying just to control one pest.

Tree decline in South Africa

Summary by Sam Collins – grower, Blushing Acres Pty Ltd, North Queensland

This very logical and practical talk was presented by Dr Jan van Niekerk of Westfalia Technological Services. I found the title "Tree Decline in South Africa" misleading in that the presentation was more about how to prevent tree decline in young trees rather than mass tree decline of mature trees. I think that this presentation provided some information that could also be of use in the Australian avocado industry and is a good reference to remind us of good cultural practices when planting new trees.

This presentation identified four main causes of tree decline, these were:

1. Pre-planting mistakes as a result of bad soil preparation. The need to create a well-drained soil environment.
2. Mistakes when planting. The need to have sturdy trees with healthy roots that have been well looked after before planting.
3. Mistakes that occur after planting. Poor care of young trees which can include:
 - a. Incorrect planting depth. If they are too shallow then you can get sunburn on the collar and or roots. If they are too deep then you can get collar rot.
 - b. No sunburn protection. Sunburn can kill trees so paint it white or use a sun protecting bag.
4. Root diseases such as phytophthora and armillaria root rot
 - a. Dr Jan van Niekerk suggested that Phytophthora root rot (PRR) can be avoided by having good soil preparation with well drained soil, planting mounds or ridges, use of good organic mulch, using disease free nursery trees and using PRR tolerant rootstocks such as Dusa®. Use of chemical soil drenches and foliar sprays was also recommended when the trees are young. The first foliar spray with AgriFos® 400 or Aliette 80% WG is done on the first new flush when it has matured, at label recommendations rates. This is repeated after 6 weeks. Soil drenches are done with Aliette 80% WG at recommended label rates and enough is to be used to cover the root zone. It was also recommended that in severe cases to combine this with foliar sprays. When the trees are older and the trunks are greater than 7cm in diameter carry out trunk injections with a

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Nutritional Values Conference, Tauranga, NZ continued

phosphorus acid fungicide. Apparently you should not inject when the trees have young flush.

- b. Armillaria root rot (ARR) was said to be problematic when using land in which old pine or eucalyptus trees have been cleared. According to Dr Jan van Niekerk the soil needs to be properly prepared by removing old tree stumps and root material which contain the pathogen propagules which can re-infect young avocado trees. Then plant with a cover crop prior to re-planting avocado trees.

Rootstock and Plant types

Summary by Henk van Niekerk – grower/manager, DBC Farming Pty Ltd, North Queensland

My interest in rootstock and plant types led me to attend two presentations in this area. Dr Elizabeth Dann from the University of Queensland presented her talk on “Effect of Rootstock on avocado tree health under high Phytophthora pressure” and then Dr Alvaro Vidiella from NZ Avocado presented a talk about their new cultivar program.

I was particularly interested to find out more about rootstocks and plant types that are more tolerant to certain diseases such as Phytophthora root rot (PRR). It was good to hear that there are a lot of varieties available that might suit certain climates better than others, and varieties that show better resistance to disease.

The rootstock varieties Dusa (Iatas, AIC1, AIC3), Bounty and Velvic were said to have their own plus points to help fight diseases. There were also a couple of new varieties of avocado that were said to produce better crops and assist with Irregular Bearing such as Carmen, Maluma, and Hass 3446. These varieties are all in trial and are being closely monitored to see the results.

There were two key points made. The first point is that we should study our climate, soils and markets to pin point our problems and then try to overcome these problems by selecting the correct rootstock and cultivar for our conditions. The second point was that we should monitor our trees more regularly to more accurately identify what their needs are, and prevent any disease or nutritional deficiencies because prevention is better than a cure.

There are a number of trials taking place both in Australia and in New Zealand and so far the findings are looking very positive. Among the statistics provided there was one rootstock that stood out for me in terms of performance and this was Velvick (L,s) with the potential of producing 170Kg of fruit per tree. However each variety seems to have its pros and cons. From what I heard from the two

speakers each variety has their own unique way to fight different diseases and this knowledge will influence how I will make decisions for future plantings.

If we start using all of the information on the farm and in our day-to-day farming practices we can make a difference in the avocado sector and become smart farmers. If we start doing our market research and see where the market gap or demand is we can supply the market more evenly and better manage supply.

I would like to see more work done in the development of rootstock and cultivar types, in the end this is where it all starts. The tree and rootstock you plant is what is going to determine whether you are successful or not. More rootstock and cultivar options will lead to better avocado farming and better products on the shelf. I think enough is being done but like one researcher said you cannot do too much. It is good for researchers to work closely with farmers.

As a result of what I learned from both speakers I will definitely look at changing some of my current practices.

Best management practices and internet based information delivery

Summary by Paul Lankester – Managing Director Avocado Estates, North Queensland



Paul Lankester values online information sources.

Simon Newett, the principal extension horticulturalist at QDAFF covered the work currently underway to provide Australian avocado growers with up-to-date practical growing information to assist them to produce high yields of good quality fruit.

Simon talked about producing information delivery systems for the convenience of avocado producers. There are currently three outputs providing Australian avocado growers with useful information: the “Avocado problem solver field guide” (printed hard copy), the “Growing” section of the Avocados Australia “Best Practice Resource” website, and the self-assessment orchard management checklists that will be administered in person during Avocados Australia’s “Qualicado” workshops, events running as part of the national

Qualicado fruit quality improvement program.

Useful information about ways to improve fruit quality is currently available in formats that growers can access wherever they are located in Australia. Simon's project and the information it is imparting is having a direct impact on avocado producers and consequently the whole industry. By providing valuable information to the grower it also assists their business and provides ways to improve their efficiency and better manage crops and maximize yields.

I believe the initiatives that Simon outlined are a very good way for growers to keep their fingers on the pulse in terms of crop management year after year and give growers a self-motivational tool to improve on our skills.

As technology improves and more and more growers access the internet they will discover the valuable information about best practice approaches to avocado production. The timely nature of the information and the ability to up-date this information in real-time also makes it reliable and dynamic. I particularly like the use of YouTube clips to demonstrate best practice procedures on such things as how to inject avocado trees to control root rot. The online resource will particularly help my business keep up with new advancements and techniques.

Progress in understanding Avocado pollination in New Zealand

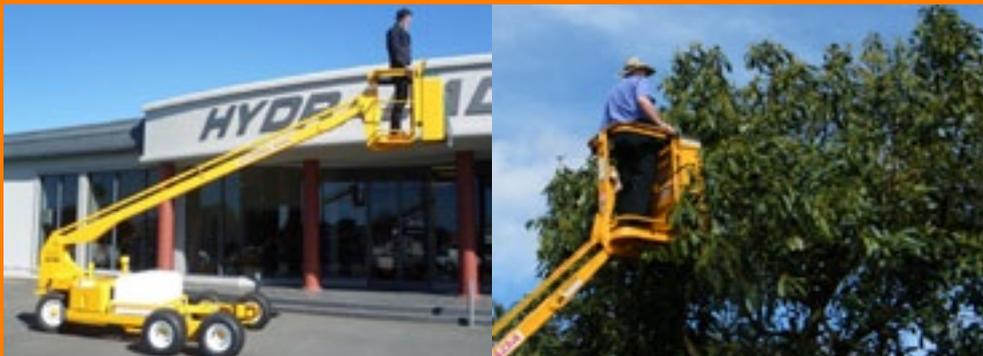
Summary by Eric Battistin – grower, Battistin Orchards, North Queensland

David Pattemore from Plant and Food Research in New Zealand talked about a subject that impacts on all avocado growers, whether they are in New Zealand or Australia and that is the importance of pollination.

Pollinators are immensely important for better crop set in avocados, whether they are honey bees, bumble bees (New Zealand) or other insects and it is beneficial to encourage them to stay in the orchard during flowering.

Mr Pattemore explained how temperatures affect the flowering cycle and how he is investigating the potential increased use of bumble bees as a major pollinator in New Zealand avocados as opposed to the use of honeybees. He said that honey bees are not a very efficient pollinator and that the bumble bee would aid in pollinating the avocado flowers more efficiently in New Zealand orchards. According to Mr Pattemore one bumble bee can carry the

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Nutritional Values Conference, Tauranga, NZ continued

same amount of pollen that 50 honey bee workers can carry.

Mr Pattemore explained how they encourage the bumble bees to stay in the orchard by positioning several artificial hives around the orchard made out of cement lined with mulch and topped with a 'lid' (plastic bowl) to encourage the female bumble bees to start a nest. The result was increased bumble bee activity in the New Zealand trial orchard thereby increasing the chance of fruit to flower ratio.

Because we do not have bumble bees in Australia this is not beneficial to us but this does bring up the idea that we should be encouraging other beneficial insects into the orchard that we do find in Australia to assist with avocado pollination.

The main point made by Mr Pattemore is that we can not control temperatures and weather conditions but hopefully what we can influence is the pollination of avocados by encouraging pollinators into the orchard. I believe we should not rely solely on bees and would be inclined to encourage native bees, flies and wasps into Australian avocado orchards.

Comvita case study: Competitive successful marketing and export of health positioned products

Summary by Tracey Battistin – grower, Battistin Orchards, North Queensland

Brett Hewlett, CEO of Comvita, talked about how Comvita has gained success from making and selling bee products (specifically manuka honey) on a global scale. Founders Alan Bougen and Claude Stratford originally set out to improve people's health and wellbeing using the power of nature and much of this success can be attributed (according to Mr Hewlette) to their dedication to sound research, marketing and also value adding to their business.

This presentation did serve as a promotion for their business however it was interesting to gain insight into how the company achieved success from such meager beginnings going from a backyard shed to a global scale operation. Comvita successfully grew demand for their product through "value adding". Value adding is not necessarily a new perspective for the avocado industry as avocados are used in many different ways apart from consuming the fresh fruit, for example: cooking oils, purees/spreads, cosmetics and nutraceuticals.

Mr Hewlett stated some reasons for Manuka Honey's success these are:

- Know your product
- Invest in science, research and development
- They have their own retail outlets which include online shopping to access the global market
- Keep up with technology and product development
- Be close to your market to see what is happening
- They use their product for medical applications – it may be an expensive food but an affordable medicine.

In my view, I found that Mr Hewlett's presentation revealing and beneficial because he stressed how it is important not to be dependent upon a single type of customer, and to have other choices for how to market your product.

Other photographs from the conference:



Eric and Tracey Battistin two North Queensland Study Tour participants.



Above, avocado cheese cakes, each course served at the Conference Gala Dinner had avocado as its star ingredient.



*Duncan Sinclair, Avocados Marketing Services Manager.
Photo by Mark McKeown/Musae Studios.*



NZ Avocado and Avocados Australia staff came together to assist delegates over the three days.



An excellent opportunity for networking and doing business. Photo by Mark McKeown/Musae Studios.



*At the NZ-Australia Avocado Growers' Conference Julie Petty, AAL's supply chain program manager, answered many questions about the Qualicardo program.
Photo by Mark McKeown/Musae Studios.*



Australian growers networked with growers from other regions.

Marketing Update

Australian Avocados Breakfast Campaign

From September to December Australian Avocados marketing activity is focussed on **breakfast** as an opportunity to grow avocado usage. By targeting avocado Lovers and Enthusiasts, our most loyal consumers, we aim to increase awareness and usage of avocados as a great **weekday** breakfast alternative. This tactical advertising campaign with a single minded breakfast message will be integrated across magazines and digital sites supported by social media content and a breakfast work place activation of sampling avocados with colleagues.

The breakfast opportunity

The opportunity for breakfast was revealed in the Project Accelerator consumer research that identified only 26% of Avocado Lovers nominated breakfast as one of their top two usage occasions, significantly behind lunch and dinner. Research also tells us that consumers are already enjoying avocados with breakfast on the weekend but the opportunity is to encourage our strongest consumers to consider avocados for breakfast more often. Through positioning avocados as a convenient weekday alternative we aim to increase breakfast consideration and usage overall.



Why wait when there's breakfast?

The creative idea behind this tactical campaign is “why wait when there’s breakfast”. This call to action is designed to tap into the consumers love and anticipation for avocados and challenges consumers who wait until lunchtime to have their avocados. By positioning avocados as an ideal breakfast partner to toast with simple great tasting options like tomato, vegemite or on its own we are presenting an easy, delicious and convenient breakfast option.

Magazine advertising is an excellent way to set up this breakfast proposition with great photography in a full page advertised message. Food magazines such as delicious, Donna Hay, Sunday Life and Taste magazine will feature breakfast advertising over the period and will be complemented with full page editorial support to reinforce the message.

To bring immediacy to the campaign digital on-line advertising will be time targeted to digital sites most viewed at breakfast time. Typically news related these sites will feature display banner rotations as well as website page takeovers to build a campaign impact. We have also taken advantage of the launch of Taste magazine (formally Australian Good Taste AGT) by extending the campaign through the taste.com website with a featured breakfast partner recipe collection.





Avocados were also sent to 100 "taste testers" who will post their reviews of their favourite breakfast recipes to encourage trial of other visitors.



Social media will extend the conversation of what consumers are doing day to day. Breakfast content is the focus of our Facebook posts aimed to generate further engagement about avocados and breakfast. Targeted Like ads will extend the campaign message to a broader audience. The Australian Avocados website will feature breakfast in the monthly Electronic Direct Marketing (EDM) and supported with blog content from Dietician Lisa Yates presenting a nutrition breakfast angle to website audience.



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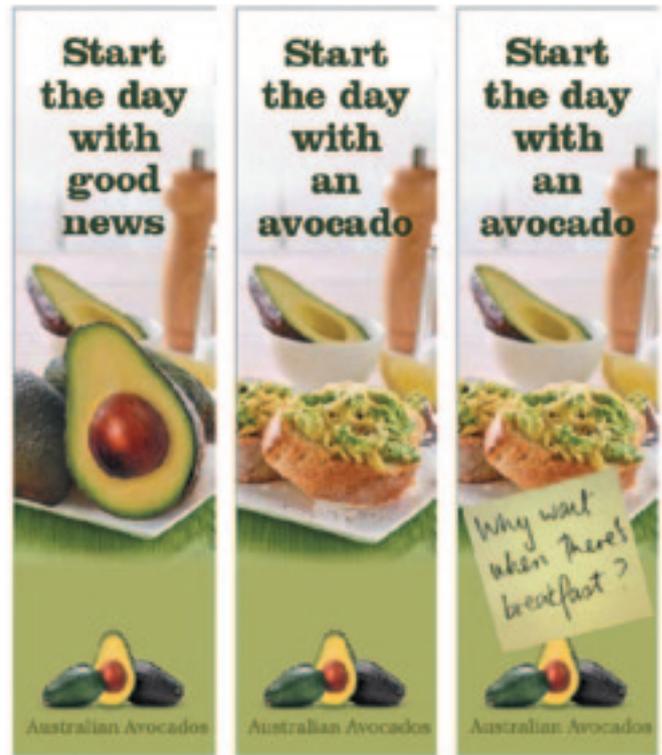
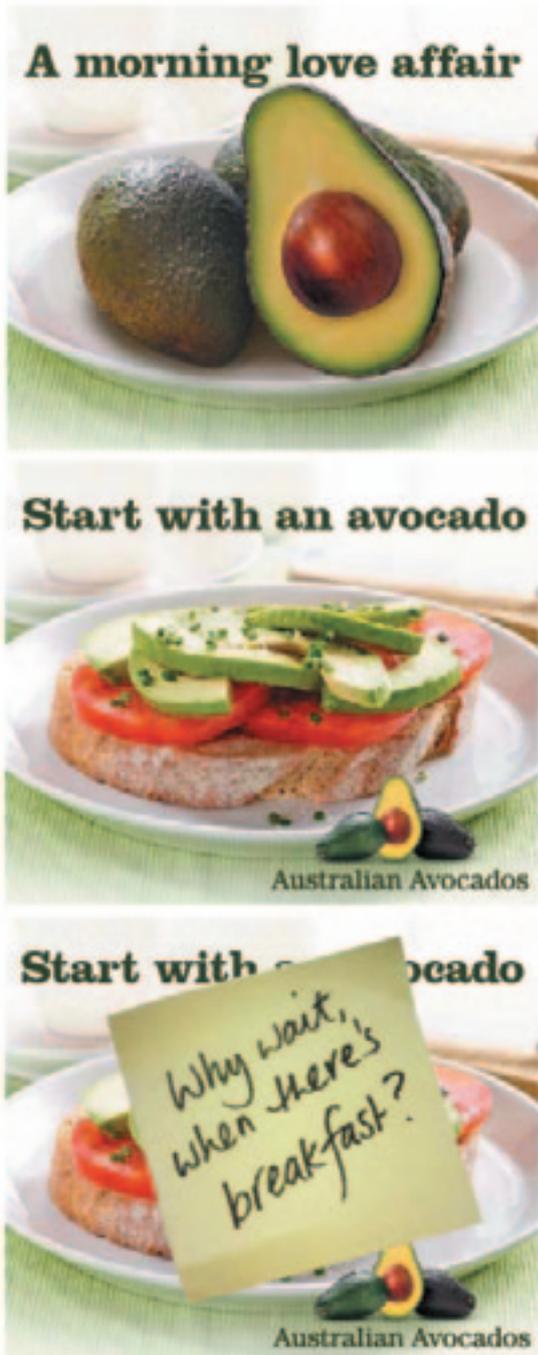
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Marketing Update continued



The creative in the breakfast campaign highlights quick and easy uses for avocado.

Extending the conversation about breakfast

Another effective way we are extending the breakfast conversation online is to enlist the help of two commercial bloggers who have their own large audiences and followers. By commissioning these bloggers to include avocados and breakfast in their audience conversations we are amplifying the message via effective third party endorsement. One confirmed blogger example is Fig & Cherry a Sydney-based food blog written and published by Christie Connelly since 2007. The site features original

recipes, high quality food styling and photography, travel stories and food news and has over 50,000 visitors and 1,400 facebook fans.

Activating breakfast usage with target consumers

An exciting boost to the social media element is a new work place activation strategy where brand advocates will host avocado breakfasts with their colleagues in their workplaces. 640 brand advocates will be screened and recruited nationally online to each receive an avocado breakfast pack to host a breakfast. Armed with information and avocado facts these advocates are Lovers who can prepare a fun and tasty breakfast and share the avocado breakfast message with their colleagues. This activity will be conducted by a specialist research based activation agency that has done effective campaigns for other major well known brands.

Overall this tactical campaign evolves the brand into an occasion based strategy rather than just offering versatility solutions. It encourages behaviour amongst the strongest target market and will start to deliver against the strategic marketing plan objectives to grow the proportion of avocado Lovers.

AUSTRALIAN AVOCADOS BREAKFAST ACTIVITY SUMMARY: SPRING 2013

MEDIA	CHANNEL	ACTIVITY	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
MAGAZINES	Delicious	ADVERTISING FP				
		EDITORIAL				
	Donna Hay	ADVERTISING FP				
		EDITORIAL				
	Taste	ADVERTISING FP				
		EDITORIAL				
DIGITAL BANNER	TARGETED SITES	ROTATING BANNER				
SOCIAL MEDIA	FACEBOOK	ADVERTISED POSTS				
TASTE TESTERS	Taste.com	ACTIVATION				
	Taste.com	PARTNER COLLECTION				
SOUP SOCIAL	SOCIAL MEDIA	ACTIVATION				
WEBSITE	Australian Avocados	EDM'S, BLOG, FEATURE				
BLOGGERS	SOCIAL MEDIA	ENDORSEMENT				

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News from Around the World

Lower Mexican supply makes room for NZ avocados in Asia

New Zealand Avocado Exporters & Growers (AVOCO) has experienced a “buoyant” start to the export season in Asia, highlighting significantly improved prices in Japan where there has been less Mexican supply.

The first fruit arrived in Japan at the end of September and have been ripened by sellers for sale. AVOCO expects to sell in the East Asian country until May.

An industry release said while strong prices – which were also “at their best” in Australia – have been partially offset by an unfavourable exchange rate, they still bring better orchard gate returns (OGR) to growers.

AVOCO’s international export brand channel Avanza has also proven strong in developing markets such as Singapore, Thailand and Malaysia, while the group has seen “encouraging signs” that sales will resume in Hong Kong after a two-year absence.

However, AVOCO director Alistair Young gave a word of

caution to excited growers, emphasizing the importance of structuring harvests to keep targeted supply.

“We are aware of strong grower pressure to pick more fruit in this early phase of the season, but all the market forecasts show values strengthening strongly in December, January and February,” Young said.

“To get ahead of ourselves now will potentially place the strong values we are working towards at risk.

“On the upside, the opening prices in Australia are the best we have seen and the returns will build a good foundation for the grower pool going forward. Careful planning of harvesting will get the most from our growers’ crops and allow us to return the best possible result for AVOCO.”

Primor Produce export manager Ted Thomas said Avanza had made a significant change in its distribution arrangements in Japan this season with new focus on distributor Fresh System.

“Working with Fresh Systems brings together a long-term plan that Avanza have been working on with its business partner Mission Produce based in California,” Thomas said.



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"We expect Fresh Systems will handle about 80-90% of Avanza's Japanese supply in year one, with big growth plans beyond this season.

"Fresh Systems shares our focus and has the infrastructure capability to supply high-quality ripe fruit to customers, a key strategy in continuing to grow the avocado category in this important market."

Source: www.freshfruitportal.com

Avocado campaign expands to Spanish-language market

The Hass Avocado Board has launched what it describes as the online information hub for Spanish-speaking health professionals and consumers interested in the fruit.

The campaign, Saborea Uno Hoy, features nutritional information and recipes to promote avocado in the Hispanic market. The Spanish-language website and mark carry the tagline "naturalmente grasas buenas + sin colesterol," derived from Love One Today's "naturally good fats + cholesterol free."

Nutritionist and spokeswoman Malena Perdomo has developed original recipes for the site to encourage users to integrate avocados into a variety of dishes.

"The recipes I developed truly celebrate the richness of, and the culture behind, the avocado," Perdomo said.

"For many Latinos - myself included - this rich ingredient reminds us of home, so it seemed only natural to create recipes that reflect our traditional foods."

Source: www.freshfruitportal.com

29th International Horticultural Congress in Brisbane 2014

Organisers of the 29th International Horticultural Congress (IHC2014) are targeting horticultural science calendars internationally. Horticultural industry and association representatives and anyone involved with the production, processing and distribution of crops and services are invited to attend the congress when it takes place in Brisbane from the 17th to the 22nd of August 2014. The Congress is being jointly hosted by the Australian Society of Horticultural Science, the New Zealand Institute of Agricultural and Horticultural Science, and the Secretariat of the Pacific Community, under the auspices of the International Society for Horticultural Science.

The theme of the 2014 Congress is 'Horticulture -

Grower Member Application Form

Avocados Australia Limited

ACN 105 853 807

For Associate and Affiliate membership application forms please go to www.avocado.org.au or call 07 3846 6566

Member Details

Business name and/or trading name:

ABN:

Key contacts:

Preferred address (postal):

Address of property (if different):

Contact Details

Business phone:

Home phone:

Fax:

Mobile:

Email:

Corporate Structure

How would you describe the nature of your operations (please tick)?

- Individual
 Partnership
 Company
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 Other (please specify) _____

Please indicate the area of property that you crop for avocados (please tick)

- 0.5 - 5 ha
 6-19 ha
 20-49 ha
 50-99 ha
 100-149 ha
 150-199 ha
 200-499 ha
 500 ha+

Special Interests

Please tick your main areas of interest from any of the following:

- | | |
|-------------------------------------------------------------------|-------------------------------------------------------|
| <input type="checkbox"/> Consumer information | <input type="checkbox"/> Production management |
| <input type="checkbox"/> Environmental management/ sustainability | <input type="checkbox"/> Quality Assurance |
| <input type="checkbox"/> Organic farming systems | <input type="checkbox"/> Technology/innovations |
| <input type="checkbox"/> Water management | <input type="checkbox"/> Marketing |
| <input type="checkbox"/> Field days | <input type="checkbox"/> Supply chain management |
| <input type="checkbox"/> Pest management | <input type="checkbox"/> Key political issues |
| <input type="checkbox"/> Food safety | <input type="checkbox"/> Other (please specify) _____ |

Grower Member Application continued

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News from Around the World continued

sustaining lives, livelihoods and landscapes' and has been chosen to highlight the unique potential of horticulture to address the key issues of our modern global society – health enhancement, poverty alleviation, increased food production and environmental sustainability. Horticulture and horticultural science matters to us all, whether we are involved in research, extension, education, or servicing of horticulture in a production, amenity, or servicing capacity.

The scientific program can be found online at http://www.ihc2014.org/scientific_program.html. The program outlines an extensive range of horticultural crops and environmental horticulture products and services where you can learn from, and contribute to, the world of horticulture.

The event organisers are keen to reinforce that the Congress is not just for researchers as the material presented will include applied results and new technology that Growers and others can consider for their businesses. Members of the Australian avocado industry interested in innovations can look at the symposia related to such topics as Mechanisation, Precision Horticulture and Robotics, Molecular Biology in Horticulture (including GMOs), Physiology of Perennial Fruit Crops and Production Systems in a Changing Global Environment (including canopy management), Human Health Effects of Fruit and Vegetable Symposium, Biosecurity, Quarantine, Pest and Market Access.

IHC2014 delegates will gain benefits from close and informal interaction with international experts at grower field days, seminars and meetings where they can focus on industry issues. The Congress will also provide an opportunity for community engagement and promotion of your product at a two-day "Taste of the Tropics" exhibition at which horticultural products will be featured, and a "Farmers Breakfast" with keynote speakers. The Congress will also feature "A Compendium of Horticultural Images – Fusion of Art, Science and Commerce".

To register your interest and receive regular information updates about the congress visit the IHC2014 website: www.ihc2014.org.

Peruvian avocado production to grow in 2014

Peruvian avocado volume is set to grow 15.6% year-on-year to reach 336,100 metric tons (MT) in 2014, according to a forecast by Lima-based consultancy Maximixe.

The group attributed the expected growth to increased

plantings in zones such as Virú and Chao in the La Libertad department, which lies on the country's north-central coast.

The growth percentage for export values is set to be even higher at 30.1%, with expectations Peru will ship 120,000MT of the fruit at a value of US\$204 million.

The consultancy highlighted strong demand for the product in China, Japan and Chile. In 2013, production has increased 17.2% along with a 15.5% rise in exports.

Source: www.freshfruitportal.com

Peru and Mexico to discuss joint avocado marketing efforts

Peruvian Agriculture Minister Milton von Hesse plans to meet with Mexican authorities in the coming weeks to discuss joint avocado marketing efforts in Asia and North America.

Speaking at a specialized agricultural information symposium at the Universidad Nacional Agraria La Molina, von Hesse said the two countries had a "common cause" with the crop.

"We are evaluating the possibility, in the specific case of Hass avocados, of conquering the markets of North America and Asia together," he said.

"Peru has production windows that complement the Mexican exportable supply."

Peruvian Hass Avocado Producers Association (ProHass) figures show the Andean country currently grows the variety across 12,000ha, with Europe as the top market followed by the U.S. The group expects Peru will export 20% more avocados this year, reaching US\$147 million in sales.

In terms of Chilean trade tensions, the minister also confirmed that a "verbal commitment" had been received from the southern neighbour to comply with reciprocity principles.

During his talk, von Hesse added that Peru would soon have a specialized coffee centre operating as an experimental station under the Institute of Agricultural Research (INIA), with the goal of raising product quality and gaining new markets.

Source: www.freshfruitportal.com

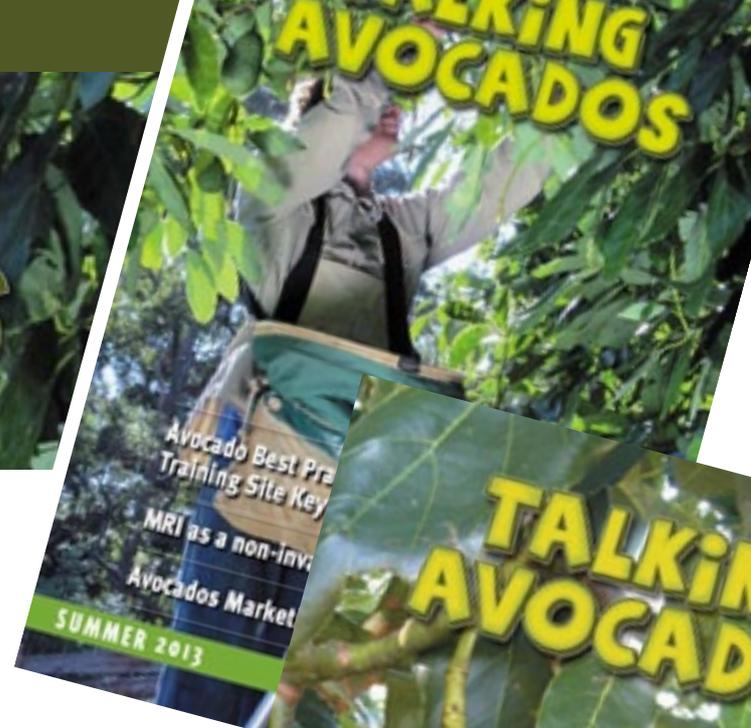
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Produced by Avocados Australia Limited, *Talking Avocados* speaks directly to all avocado growers, other members of the industry and supply chain through industry-specific content such as:

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