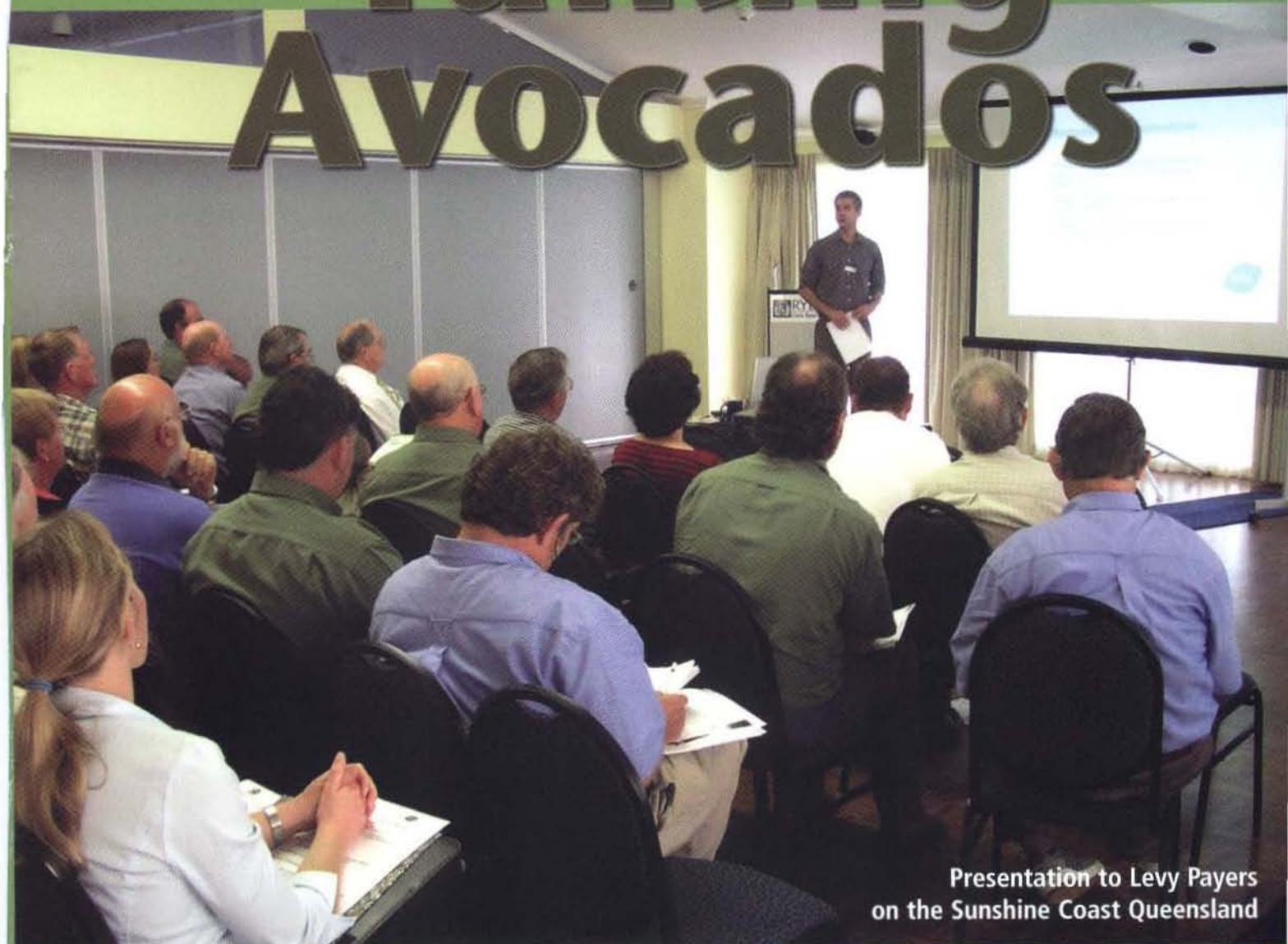


# Talking Avocados



Presentation to Levy Payers  
on the Sunshine Coast Queensland

- **New version of AvolInfo**

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- **Hass - now and the future**

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- **Silicon and disease management**

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**Spring 2004**

Print Post Approved - 44307/0006

**Volume 15 No 3**

# Avocados Australia Limited

Talking Avocados is published using avocado grower levies which are matched by the Federal Government through Horticulture Australia.

## AVOCADOS AUSTRALIA LIMITED

ABN 87 105 853 807

Level 1, 123 Logan Road  
Woolloongabba, Qld 4102 Australia

PO Box 663 Stones Corner Qld 4120 Australia

Phone: 07 3391 2344  
Fax: 07 3391 2388  
Email: [admin@avocado.org.au](mailto:admin@avocado.org.au)  
Web: [www.avocado.org.au](http://www.avocado.org.au)

**Antony Allen** [a.allen@avocado.org.au](mailto:a.allen@avocado.org.au)  
CEO and IDM

## Avocados Australia Directors

**Rod Dalton** Chairman 07 5466 1316  
South Queensland [r.dalton@avocado.org.au](mailto:r.dalton@avocado.org.au)

**Chris Nelson** 02 6569 0881  
Central NSW [c.nelson@avocado.org.au](mailto:c.nelson@avocado.org.au)

**Jim Kochi** 07 4054 2188  
North Queensland [j.kochi@avocado.org.au](mailto:j.kochi@avocado.org.au)

**Wayne Franceschi** 08 9776 1332  
Western Australia [w.franceschi@avocado.org.au](mailto:w.franceschi@avocado.org.au)

**Lachlan Donovan** 07 4159 7670  
Central Queensland [l.donovan@avocado.org.au](mailto:l.donovan@avocado.org.au)

**Henry Kwaczynski** 07 5442 1767  
Sunshine Coast [h.kwaczynski@avocado.org.au](mailto:h.kwaczynski@avocado.org.au)

**Peter Molenaar** 02 6684 2676  
North NSW [p.molenaar@avocado.org.au](mailto:p.molenaar@avocado.org.au)

**Ron Simpson** 07 4126 8200  
Central Queensland [r.simpson@avocado.org.au](mailto:r.simpson@avocado.org.au)

**Colin Fechner** 08 8541 2819  
Tri State [c.fechner@avocado.org.au](mailto:c.fechner@avocado.org.au)

## Talking Avocados

Talking Avocados is published by Avocados Australia Limited.

**Published:** Quarterly - Autumn, Winter, Spring and Summer

**Editor:** Antony Allen, PO Box 663 Stones Corner Qld 4120

Phone: 07 3391 2344, Fax: 07 3391 2388

Email: [TalkingAvocados@avocado.org.au](mailto:TalkingAvocados@avocado.org.au)

**Circulation:** 1,400 Copies

**Printed by:** Snap Printing, 101 Edwards Street Brisbane 4000

Phone: 07 3221 5850, Fax: 07 3221 3208

Email: [brisedward@snapprinting.com.au](mailto:brisedward@snapprinting.com.au)

**Subscriptions:** Four issues per year: Australia: AUS\$50.00  
New Zealand: AUS\$55.00  
Rest of the World: AUS\$60.00

**Advertising:** Avocados Australia Limited,

PO Box 663 Stones Corner Qld 4120 - Phone: 07 3391 2344,

Fax: 07 3391 2388 Email: [TalkingAvocados@avocado.org.au](mailto:TalkingAvocados@avocado.org.au)

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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.

## Contents

|   |    |
|---|----|
| • Chairman's Perspective                          | 3  |
| • Industry Matters                                | 4  |
| • We have Moved                                   | 7  |
| • Australian Roundup                              | 8  |
| • Warning   | 10 |
| • Germany still leading organics boom             | 10 |
| • Letter to the Editor                            | 11 |
| • What's on...                                    | 11 |
| • CHEP Launches Australian Footprint Foldable Bin | 12 |
| • Australian Olivado Avocado Oil Plant Opens      | 13 |
| • AVOINFO   | 14 |
| • 'Hass' and its Family - Now and the Future      | 16 |
| • Australian first - plant expertise goes online  | 18 |
| • Anthracnose Control in Avocado                  | 19 |
| • Pnoxius   | 21 |
| • Silicon and disease management in avocados      | 23 |
| • Grower Member Application Form                  | 25 |
| • Are we losing the art of cooking?               | 26 |

# Chairman's Perspective

## The Market

The domestic avocado market has continued to strengthen, particularly following the completion of harvest in the Bundaberg region. The expected shortage of Australian fruit in October will see NZ fruit appearing on supermarket shelves much earlier than normal, in mid-October. As NZ and WA expect similar crop volumes to last season, when returns were excellent, the next 5 months will be a very interesting and challenging period for our industry and the supermarkets. Retail prices can normally be a very effective tool to manage demand with \$2 per fruit historically seen as the critical price point. In late September I am already seeing retail prices at \$2.48 per fruit so there is a risk of upsetting the supply/demand balance if the flow of fruit onto the market and the demand is not carefully monitored and managed. I know the supermarket managers are well aware of the situation and are keen to maintain stability in avocado sales, given that avocados are now a very important category in their fruit and vegetable section.

## Horticulture Business Code

The horticultural industry is currently lobbying the major political parties to support the introduction of a Horticulture Business Code (HBC). AAL has had an active involvement in this campaign. The HBC would deliver fairness in trading in the horticultural sector and does not have to involve reams of paperwork as claimed by some. The HBC between growers and wholesalers would lead to the introduction of a

greater level of accountability and fairness within the horticulture industry and offer significant beneficial outcomes for us all.

I don't believe the majority of the wholesalers who are honest partners in our industry should see the introduction of the code as a threat. I encourage all growers to use any opportunity they may have to support the industry position on this issue prior to the election. Following the election it will also be important to maintain the pressure on the elected government to ensure the issue is not forgotten.

I recently met the Liberal and Labor candidates for my electorate and was able to discuss a range of issues with them including the HBC and Biosecurity issues, including the lack of progress of our application to export avocados to USA. Both indicated support for the HBC although the current government position does not support a mandatory code. For more information on the HBC please go to [www.borticulturebusinesscode.com](http://www.borticulturebusinesscode.com)

## Conference

The next joint conference with the NZ industry has been booked for September 2005. More details can be found elsewhere in this edition. Given the success of the Bundaberg conference in 2001 and the level of interest already expressed from domestic and international contacts for this conference I strongly encourage you to put the dates in your diary and start planning the trip. As registrations will be limited by the capacity of the venue, early booking will be essential. I know as growers we often like to leave such commitments to the last moment. In this instance you may miss out if you adopt that philosophy.

## AGM

The inaugural AGM of AAL was held recently on the Sunshine Coast and I thank those members who were able to attend for their efforts and contribution. Following the formal reporting sections of the meeting a range of issues were discussed so I am sure all left the meeting better informed and more aware of the issues being addressed by AAL on behalf of the industry.

The Board also accepted with regret the resignation of George Green from the position of Chairman and member of the R&D committee. George has provided exceptional service to the industry since 1994. George served as an AAGF Director from 1994 to 2000 and continued to serve on the R&D committee which he chaired for a number of years until his "retirement". I would like to take this opportunity to personally thank George for his wise council and support and on behalf of the industry thank him for his contribution and leadership.

*Rod Dalton*

Rod Dalton

AAL Chairman and  
Director for the  
South Queensland Growing Area.



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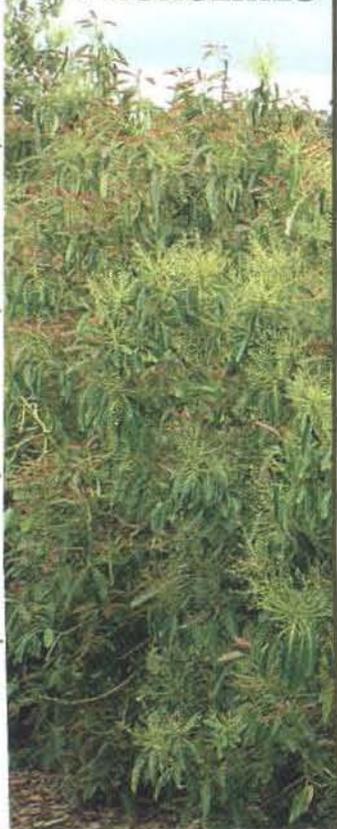
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25 Reynolds St  
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# Industry Matters

By Antony Allen

Antony is CEO and IDM of Avocados Australia

## New Canopy Work Commences Across the Country

A new approach to one of the Industry's most difficult issues began in July. John Leonardi was appointed as the project officer for the new avocado project "AV04008 - The development of canopy management strategies suited to the different growing environments across Australia for increased profitability". The new project is the result of the previous four years of work in canopy management and the review conducted in late 2003 of canopy management methods around the world. John's focus will be to determine those growers that are successfully managing avocado canopies whilst remaining profitable. He will develop a number of tools for use by growers and assist growers manage their own on farm research. John's new contact details are:

John Leonardi  
Avocados Australia  
Phone/Fax: 07 5438 0257  
PO Box 532 Caloundra QLD 4551  
Email: j.leonardi@avocado.org.au

## Integrated Farm Assurance Conference

Tasmanian Quality Assured Inc (TQA) is hosting the Integrated Farm Assurance Conference. The conference runs for a week and is a combination of workshops and formal conference proceedings. Workshop topics include EUREPGAP®, bioterrorism, recycled water and many more. The Conference dates are 22-26 November 2004 and will be held in Hobart. To register, please contact: Jane Lovell, PO Box 46d, Don, Tasmania, 7310 Phone: 03 6424 6612 Fax: 03 6424 6609 Email: jane.lovell@tqainc.com.au Website: [www.tqainc.com.au](http://www.tqainc.com.au) for program and on-line registration

## George Green Retires from the R&D Committee

After ten years of service to the Australian Avocado Industry, George Green has stepped down from his position on the R&D Committee within Avocados Australia. George first became involved in the Industry as a Director of AAGF in 1994, he was the grower delegate from Bundaberg to the Board. George then became the Chair of the newly appointed R&D Committee in 1995. George stepped down from the Board in 1999 but has continued to serve as member on the R&D Committee, most of that time as its Chairman. George's skills in managing a Committee meeting will be missed - he has been one of the few people able to end a meeting on time! His avocado and horticultural knowledge and scientific understanding will also be missed. Thank you George on behalf of the Board, the R&D Committee and the Australian Avocado Industry for the time and effort you have freely given to the Industry.

## Horticultural Business Code

Horticulture Australia Council (HAC) has been working on a Horticultural Business Code to cover issues such as terms of trade in the lead up to the Federal Election. The Code is about providing a clear trading arrangement between growers and the wholesalers. Further information can be found on the website [www.horticulturebusinesscode.com](http://www.horticulturebusinesscode.com)

## Regional Meetings on Horticulture Australia Export Efficiency Powers.

Horticulture Australia Limited (HAL) is currently undertaking a three-year review of its Export Efficiency Powers as required by the Australian Government. The three-year review is in the form of a Regulatory Impact Statement (RIS) and is to be prepared under National Competition Policy guidelines. HAL wishes to obtain submissions from any parties, whether they currently use the HAL export efficiency powers or not. Public meetings will also be held. The following dates have been set aside for EEP Consultation Meetings.

- Brisbane, Wednesday 6 October 2004, 2.00-4.00 pm Growcom, Level 1, 385 St Paul's Terrace, Fortitude Valley
- Mildura, Thursday- 28 October 2004, 8.30am-10.30am - Murray Valley Citrus Marketing Board
- Berri, Friday 29 October 2004, 4.00-6.00 pm - Berri Resort Hotel (Cocos Room)

## Freshcare Update

Freshcare is Australia's fastest growing and largest on-farm food safety program. From 1 July 2004, four Certification Bodies are approved to provide initial assessment / annual audit services to Freshcare Members. The approved Certification Bodies are Aus-Qual Pty Ltd, SAI Global Pty Ltd, Sci-Qual Pty Ltd and SGS Australia Pty Ltd.

For more information contact Freshcare: Phone: 02 9764 3244 Fax: 02 9764 2776

Website: [www.freshcare.com.au](http://www.freshcare.com.au)

## Avocados New Members of Plant Health Australia

The Australian Avocado Industry has joined Plant Health Australia (PHA). Membership of PHA will enable the Industry to get involved in and have input to a range of large scale, nationally coordinated projects that could not be funded or pursued by the Industry acting alone. Avocados Australia will now be able to access PHA initiatives such as Industry Biosecurity Planning, PLANTPLAN, and the Emergency Plant Pest Response Deed which will improve the Industry's preparedness and ensure rapid and effective response in the event of a pest emergency. PHA's role is to be the key adviser on plant health issues for industries and governments, promote international and domestic confidence in Australia's plant health status, and develop effective, consultative, transparent and auditable plant health management systems. PHA also commissions, coordinates and manages agreed plant health programs. For more information on PHA please see their website, [www.planthealthaustralia.com.au](http://www.planthealthaustralia.com.au)

## Industry Matters continued

### Horticulture for Tomorrow Project

The project established by HAL and HAC under the DAFF Pathways to EMS funding initiative is now well underway. This important new project aims to help horticultural producers link production targets to their care for the environment. To be known as Horticulture for Tomorrow, the project will work with growers across Australia to provide information about the 'whys' and 'hows' of managing natural resources and demonstrating their efforts as an integral part of their business.

The project is being driven by Australia's horticultural industries and Natural Heritage Trust is providing funding worth \$926,000 through the Australian Government's Pathways to Industry EMS Program. Managed by Horticulture Australia Limited (HAL) in partnership with Industry, it will involve working with growers, technical advisers and Industry groups to share information and develop useful resources for growers. More information will be available shortly. The website is populated with EMS reference material and also linked to Industry websites, [www.horticulturefortomorrow.com.au](http://www.horticulturefortomorrow.com.au)

### Woolworths Packaging Issue Continues

Avocados Australia has taken a lead role in moving the Woolworths packing changes forward so that growers will not be disadvantaged. AAL Members received a media statement on 15 September outlining the preferred option. A summary of this is below:

While our Industry would prefer to continue using the single layer tray, eight trays per pallet layer (PS4) carton that has serviced the Industry and consumers well for many years, we recognise the need for change to provide benefits to the supply chain.

When considering the options that have been put forward by Woolworths, we see the following as extremely important in selecting the Industry's preferred carton:

- The quality of avocados to the consumer must remain at least as good as the current carton
- In the change to a new carton growers should not be forced to absorb any increase in carton cost without a corresponding increase in the farm gate value
- Woolworths will work closely with suppliers to ensure a smooth and effective transition benefiting all sectors on the supply chain
- Work place safety issues in packing sheds are considered

Having considered all of the above, Avocados Australia has determined that within the parameters currently set by Woolworths, the single layer tray in the pallet pattern option of 12 per pallet layer remains the only carton option which could ensure high quality avocados to the consumers. Sheds will be able to more easily convert their operations to the 12 by single layer tray.

Further it is our position not to use tray liners in the new trays. The new trays are palletised as a block. This necessitates the trays to have ventilation holes in the base of the trays. Tray liners would prevent the flow of air for cooling and ripening.

### Handbook on EUREPGAP®

A new handbook that will help Australian horticultural producers respond to the demands of European retailers has been released by the Department of Agriculture, Fisheries and Forestry. The handbook, "Guidelines for implementing EUREPGAP® for Australian fresh fruit and vegetable producers", is a consolidated reference to help suppliers understand the impact of the EUREPGAP® standard for those supplying individual European retailers.

The guidelines include a background to the development of EUREPGAP®, practical information for Australian producers to interpret the standards and links to sources of advice and information.

Copies are available by contacting the Australian Government Department of Agriculture, Fisheries and Forestry on (02) 6272 3317. The handbook is also available on, [www.daff.gov.au](http://www.daff.gov.au)

### R&D Researchers Workshop

The annual R&D Researchers Workshop was held in Brisbane on 25 August. Presentations of all current projects were given by the project researchers. The R&D Committee and fellow researchers had the opportunity to see the progress in avocado research over the past year. This was a great opportunity for ideas to be bounced around and solutions to problems developed.

### Better Homes and Gardens TV Show

On Saturday 2 October the Better Homes and Gardens TV show featured avocados. The feature was developed in conjunction with AAL and was filmed over two days in Ken and Muriel Webb's orchard on the Sunshine Coast, Queensland. This is a great achievement for the Avocado Industry. Free, focused stories like this one on Better Homes and Gardens are the best method of promoting our product. Many thanks on behalf of the Industry to Ken and Muriel for their time and effort to make the programme segment a great success.

### Levies on Avocados for Processing

The issue of levies on avocados for processing has become more prominent over the last six months with the establishment of the two new oil plants. When avocado levies were introduced in 1992 processing was not envisaged as an issue in the Industry. This being the case the Federal legislation states that: "Levy is payable on avocados produced in Australia, which are either sold by the producer or used by the producer in the production of other goods." For this to be changed the Industry would have to go through the process for a levy change and the prescribed consultation involved in that process. AAL is reviewing the levies and will make decisions on adjustment in March 2005.

Industry Matters  
continued

### Strategic Plan Development Ongoing

The Strategic Plan for 2005-2010 is underway. We would like to have issues and areas that you would like to see in the next plan. We need to have your input so that we can build the best direction for the Industry. The following strategic areas are

#### Revenue Growth

Focus: Building strong demand at profitable prices in domestic and overseas markets by:

- Delivering the benefits sought by consumers.
- Beating competitors who offer similar consumer benefits.

#### Intended outcome:

- Remunerative markets for an increasing level of production.

#### Production and Marketing Systems

Focus: Continuously improving the quality and consistency of fruit delivery through Australian avocado supply chains by:

- Eliminating problem areas and inefficiencies in existing systems.
- Discovering new and better approaches to the production and marketing of consistently good avocados.

#### Intended outcomes:

- An increase in consumer confidence that translates into increased consumption.
- Confidence in planning Industry strategy and investment in implementation action.

### Board Meeting, Avocados Australia AGM and Annual Levy Payers Meeting

The first Annual General Meeting of Avocados Australia took place on 16 September 2004 at Rydges Oasis, Caloundra, Sunshine Coast Queensland. The meeting was a success and attracted a number of growers from the local region. The Levy Payers Meeting preceded the AGM. Gerard McEvilly from HAL Professional Services presented an outline of the R&D and Marketing program for 2003-2004 and the plan for the 2004-2005 year. The AAL Board met on 15-17 September to plan and work through current Industry issues.

#### Industry Management

Focus: Excellence in Industry leadership and the coordination of Industry action by:

- Ensuring provision of the resources, coordination and drive needed for achieving the Industry's priorities.
- Delivering the benefits sought by Avocado Industry participants.

#### Intended outcomes:

- Understanding and ownership of Industry priorities and strategies by all participants in avocado supply chains.
- Achievement of intended outcomes from Industry strategies.
- More rapid uptake by growers of the results of Industry R&D.

If you have any comments or input please contact Antony Allen:  
Email: a.allen@avocado.org.au Fax: 1300 303 972.

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## **Avocados Australia have moved to New Offices**

After over 30 years of being based at the Brisbane Market, we have moved to new offices at Woolloogabba in Brisbane.

Our new contact details are:

*Phone:* 07 3391 2344

*Fax:* 07 3391 2388

*Office Address:*

Level 1, 123 Logan Road  
Woolloongabba 4102 QLD

*Postal Address:*

PO Box 663  
Stones Corner 4120 QLD

*Email:* [admin@avocado.org.au](mailto:admin@avocado.org.au)

*Website:* [www.avocado.org.au](http://www.avocado.org.au)

If you are passing by or need to discuss an issue please drop in to the office while you are in Brisbane.

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# Australian Roundup

## North Queensland Report

By Jim Kochi, AAL Director for the North Queensland Growing Area.

In my first report I would like to express my appreciation to Col Cummings who held this seat for the past three years and saw AAGF move into AAL. The North Queensland avocado crop is positioned in the Mareeba-Atherton-Ravenshoe area at altitude ranging from 300-500-700 metres above sea level respectively. This means we are still prone to a cold winter. Frosts are common at Ravenshoe, less so at Atherton and even rarer at Mareeba. This year we have had a long cold winter (at least three cold nights in a row) and this is very unwelcome news to our Shepard trees. We have had a good flowering but the cold nights have upset the set and we now rely on late flowers to set in September. The warm spell in July has given some growers in Mareeba an early set that will come off in February and the rest of us will have to wait a little longer. The Hass crop is as usual and the set at this stage is good.

I appeal to all avocado growers in North Queensland to consider taking up membership in AAL, since our district is showing only 25 members out of the 45 growers that receive Talking Avocados. If any potential members would like to discuss the benefits of AAL membership please feel free to contact me. I also extend a welcome to all avocado growers to approach me to discuss industry matters.

The 2004 season saw a crop of almost 1 million trays from this region and 2005 should produce a similar volume. The Shepard crop on individual farms may be lower but the combined crop of older orchards and the new orchards could produce about 600,000 trays. The other 400,000 trays will mainly come from Hass. Significant plantings of Shepard continue in the Mareeba- Dimbulah area as farmers try to diversify after the withdrawal of the tobacco industry. This will increase the volume steadily over the next few years.

## Tri-State Report

By Colin Febner

AAL Director for the Tri-State Growing Area.

We have just finished with our major promotion of avocados at the Royal Adelaide Show. The Royal Adelaide Show runs from 3 - 11 September and this year over 600,000 people came through the gates. The weather was fine and sunny for the first three days and then it turned cold and showery.

Adelaide Fresh Promotions held cooking demonstrations each day featuring various fruit. The segment used two recipes out of the avocado recipe leaflet. During the avocado segment a grower talked about avocados and answered questions.

On our stand we sold Avocado Boats, half avocados filled with home made sweet chilli or guacamole dip and two corn chips as sails. We used 300 trays of avocados.

Our stand was part of the Yellow Brick Road, which is a show bag with a map leading to 15 sites around the showground where participants collect what ever that site is promoting (loaf of bread, apple, orange,

carrot and in our case an avocado). We gave away over 23,000 avocados this year.

Olivado was part of our stand promoting avocado oil. It was well received and there were a lot of good comments, particularly about the taste.

Our season for Hass is just starting with no great change in growers' estimates.

## Sunshine Coast Report

By Henry Kwaczynski,

AAL Director for the Sunshine Coast Growing Area.

As with many areas of Australia, the season on the Sunshine Coast is coming to an end. It has been a variable season in relation to returns to the grower, weather conditions and crop volume. Many growers did not achieve the desired quantity of fruit, particularly with the Hass variety. The prices were a roller coaster ride through the season, and as expected with lower volumes of fruit, prices have at the end of the season, started increasing substantially. From all accounts, these high prices should be sustained for some time.

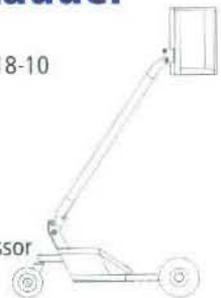
We are still in the grips of possibly the driest season on record, and again there is considerable concern about the impact of the lack of rain on flowering and crop set for next year. I guess with all primary production there is such a strong element of subjectivity to the weather, that we have not much choice but to grin and bear it.

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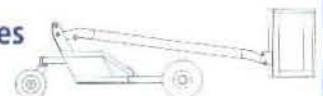
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## Australian Roundup continued

In the last quarter, the Sunshine Coast Avocado Growers' Association (SCAGA) has again hosted a very successful stand at the Brisbane Exhibition (Ekka). Numbers of people visiting the stand were significant and there was a steady stream of questions and comments. Many people want to know how to grow an avo tree in the back yard, what is the best variety - and perhaps most troubling of all, why is the fruit quality so very bad when I buy from the supermarket? This is of particular concern for all of us, especially since many dollars are spent on research and development regarding fruit quality, handling and cool chain elements. The good news from the Ekka is that there is a steady stream of people saying "I just love avocados"! Of course the stand does not just happen, and I would like to pay tribute to all the people who made it happen - especially members of SCAGA and avocado growers from the Mount Tambourine area.

### Western Australia Report

By Wayne Franceschi

*AAI Director for the Western Australia Growing Area.*

The avocado season is well underway in West Australia. Growers in the Perth area have been picking Hass since early / mid August with most having reasonable crops, although fruit size is small. Harvest will soon begin in the Bunbury / Capel area with Manjimup / Pemberton beginning in November where yields appear to be up from last year. Early prices have been strong so hopefully it will be a bumper year.

Promotions in WA have also begun. A schools promotion and retail cards have already been funded by West Australian levies. An avocado festival in Carabooda, with free tastings and chef demonstrations, to start the Hass season was well attended. On the horizon is a joint promotion through the Action chain and chef training. In store promotions are going to be considered if supply is heavy, but at this stage this appears unlikely.

WA now has a website for avocado growers. The address is [www.avocadoswa.com](http://www.avocadoswa.com). It is in its early days, but hopefully will be a useful extension and promotions tool.

### Central New South Wales Report

By Chris Nelson,

*AAI Director for the Central New South Wales Growing Area.*

Picking of this year's crop is almost finished for many areas, with yields generally down 30 - 40 %. This has been mainly due to the extremely dry season and the exceptionally hot days in February.

September figures show that 100% of the state remains in drought or marginal. This may mean many growers will be in survival mode for yet another season. The unusually warm conditions in late September are also putting the trees under further stress during flowering.

Growers should contact their consultants to identify the best strategy to manage these circumstances. One option may be to take the opportunity to reduce canopy height or volume. Growers may also be eligible for financial assistance through their local Rural Councillor network.

On a brighter note the orchards with a good supply of irrigation water are experiencing ideal flowering and many growers are hopeful for a better season in 2005.

I should also remind all growers that since last September 2003, by law in NSW they have been obliged to have in place comprehensive Farm Safety Plans. Our grower group is organising a 1 day visit by an officer of Farm Safe Australia to conduct an informal work shop on Farm Safety Plans on Saturday, 16 October. This is an ideal opportunity for you to bring along your plan for appraisal and discussion.

Anyone interested in attending can contact Alison on 02 6569 0827.

### Central Queensland Report

By Lachlan Donovan,

*AAI Director for the Central Queensland Growing Area.*

CQ's 2004 season has finally finished and now we look forward to 2005. The season was, overall, highly satisfactory with good prices, high demand and fruit moving quite quickly through the system. In terms of production, the figures show the Shepard crop was slightly down and the Hass crop was much the same, if not up on the previous year's crop.

At this early stage, the coming season is looking like a big year: the trees have flowered and are setting well and with lots of young trees coming on, it looks like we won't have a problem with supply.

As an industry, one of our major issues is production forecasts: what fruit is out there and when will it be hitting the market? This is critical for our marketing campaigns, as well as for budgeting R&D programs. In essence, we must have fruit moving through the system quickly, thus not allowing old fruit to clog up warehouses and gradually slow consumer demand. For the growers in the CQ region, you may by now have received a survey form requesting tree numbers, production, projected plantings etc. Please when you get a chance fill it in and return it quickly. We need accurate figures for this region to successfully manage the crop through the system. Over the next few years with the huge plantings coming on stream this will be of much greater importance.

Recently, the Olivado's avocado oil processing plant opened in Brisbane. This state of the art complex, which includes a cooking school, is designed to take thousands of tons of 2nd grade avocados off the market. There are several other similar avocado oil plants and processing facilities around the country, and they need not only our support but all the 2nd grade avocados we can supply. The sums are simple - the more 2nd grade fruit we get off the market, the higher the

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consumer confidence, the greater the demand, the better the price. If this is done, there should come a time when no consumer vows never to purchase another avocado after having bought a substandard piece of fruit.

### South Queensland Report

By Rod Dalton, AAL Director for the South Queensland Growing Area.

Mother Nature continues to challenge growers in this region. We are still firmly in the grip of drought with most water supplies at critically low levels. Severe frosts have again affected a number of orchards in the area. Many growers started harvesting earlier than normal as fruit matured early, prices were satisfactory and the level of stress the trees were under was a concern. The impact of the weather on next season's crop is yet to be determined, so we can only hope for a warm wet spring with no hail storms.

A well attended meeting of growers was held at Highfields (near Toowoomba) in August which provided an opportunity to discuss a range of issues such as packaging, marketing programs, R&D issues and the Horticultural Business Code with the growers. The opportunity was also taken to establish a communication network with AAL members in the area using email.

I also attended a meeting of the Tambourine Local Producers Association, which also provided an opportunity to discuss industry issues and encourage growers to become members of AAL.

## Germany still leading organics boom

When it comes to organic food consumption in Europe, Germany remains the front-runner, according to a survey conducted by Mintel.

In 2003, German consumers purchased E3.2bn-worth of organic food products, some 40 per cent of total European sales.

"Today, an ever-increasing number of Germans are looking to avoid additives and are taking an interest in "natural" products with traceable ingredients," said Michelle Strutton, senior consumer analyst with Mintel.

Despite the fact Germany is already the largest consumer, it is also the country forecast to witness the strongest growth, with sales expected to double to a massive E6.7bn by 2007.

With an average per capita spend of E28 per year, UK consumers are Europe's second largest organic buyers, followed by the French and the Italians, who each spend E25. In Spain, the average per capita outlay is just E5. But the Spanish market has grown by an impressive 564 percent since 1998, albeit from a low base.

Although organic food sales in Europe have doubled over the past five years, only a minority of consumers feel it is worth paying more for organic food. "Across Europe but particularly in Britain, the real value of organic foods needs to be addressed," said Ms Strutton.

Ref: Eurofruit, May 04/No 363, Page 9



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If you are using a "Heart Tick" logo from anyone other than the label companies "Label Press" or "Compass Labels" you are acting illegally. No other label printers are able to legally print the "Heart Tick" for use on avocados.

Avocados Australia is undertaking a clean up of the "Heart Tick" printing. We will lose access to the "Heart Tick" logo if it is used illegally.



Avocados Australia, AUF and the Heart Foundation will enforce their Registered Trademark rights to the fullest extent.

If you have non-genuine labels do not use them. If you know of label companies offering to print non-genuine "Heart Tick" labels for you please let us know on 1300 303 971.

All growers could lose access to the "Heart Tick" logo if you don't act now.

## Letter to the Editor

### Re: The necessity for good crop reporting and flow of Avocados onto the domestic market.

I am writing to express my concerns on the way in which it seems that some Australian Avocado growers do not want to either help the industry, their neighbours or themselves. I run a packhouse in the Ravensbourne area of Queensland where I pack a number of grower's fruit, marketing under different brands. Since getting into the industry in 1999 I have been trying to understand some of the major issues that we all face. The major one is that we have somewhere to sell our product and secondly that we get a return high enough to remain viable.

I have also seen that through biannual bearing and natural disasters that we don't always get a good crop each season. What I have seen in this industry and it has been very apparent this season, is the need or greed for growers to stuff up a good market return through starving the market then flooding it. This has happened twice so far during our picking season, firstly at the end of June early July and again now.

In my shed we were starved of fruit to pack causing problems with staff and consistent supply into our markets. Sure this happened due to the flood of fruit at the end of June due to an increase in price, which was still ok for that time of the season and areas such as ours being able to start earlier due to having high dry matter from the dry conditions.

It has had a similar effect to last season's frost events causing a backlog in the market cool stores, luckily this season most fruit didn't deteriorate as badly as last season which caused buyer confidence to drop because of the bad experience when buying a frosted avocado.

If this had of been managed properly I believe that the drop in price through July, august could have been minimised.

Sure the market may not have reached \$30.00 sale/tray large fruit but it may have sat at \$24/\$26 not a bad price to average I would think.

We all know that the price gets high at the end of the season when supply runs out, just as the market thought was happening in the last few weeks. Didn't everyone prove them wrong?

I guess my message is that unless good communication, reporting and a no rubbish approach to agents, packhouse, etc this will keep on happening.

Lets all get real and start treating your fellow avocado grower as an ally and not an enemy and we will grow and industry that we will all receive good returns and not just a few.

Daryl Boardman

Sunnyspot Packhouse Pty Ltd.

24/9/04What's on in 2004 and 2005

## What's on...

### 2005 OCTOBER

6 - 8: Food Factory 2004, the Second International Conference on the Food Factory of the Future. Laval, FRANCE.  
[www.foodfactory2004.com](http://www.foodfactory2004.com)

15 - 19: PMA Fresh Summit International Convention & Exposition.  
Anaheim, California USA [www.pma.com](http://www.pma.com)

17 - 21: SIAL Paris 2004. Paris-Nord, Villepinte FRANCE  
[www.sial.fr/en/home.htm](http://www.sial.fr/en/home.htm)

### NOVEMBER

10-12: Postharvest Unlimited Conference 2004. North Ryde, Sydney, Australia. [www.airah.org.au/postharvest2004](http://www.airah.org.au/postharvest2004)

30: Avocado Strategic Plan Workshop. Brisbane, AUSTRALIA.

### DECEMBER

1-2: Joint New Zealand (NZAGA) - Australia (AAL) Board Meeting. Toowoomba, AUSTRALIA.

### 2005 FEBRUARY

10 - 12: FRUIT LOGISTICA. Berlin, GERMANY  
[www.fruitlogistica.com](http://www.fruitlogistica.com)

### MAY

10 - 13: HOFEX 2005. Wanchai, HONG KONG. [www.hofex.com](http://www.hofex.com)

### JULY

10: Foodpro 2005. Sydney, AUSTRALIA.  
[www.foodproexh.com/index.htm](http://www.foodproexh.com/index.htm)

### SEPTEMBER

20 - 22: Australia/New Zealand Joint Avocado Conference. Tauranga, NEW ZEALAND.

If you have any local grower meetings, field days or events that you would like to include in "What's on", please contact us with the details.

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## CHEP Launches Australian Footprint FoldableBin - FB2

CHEP, the world leader in pallet and container pooling services has announced the introduction of a new Australian footprint FoldableBin, the FB2. The FoldableBin (FB2) has been designed to incorporate many of the superior features of the industry leading PlasticBin (PB7), with the added advantage of folding down when empty. The FB2 will provide substantial savings in the return transport costs and storage space required for bulk distribution.

Building on the success of CHEP's plastic bin range, with its improved product storage, cold chain and handling properties, the FB2 represents a major step forward for Australian food producers, processors and retailers.

Designed and developed for Australian standards, the FoldableBin (FB2) will be available in September 2004. The FB2 is specifically targeted at reducing the costs associated with traditional bulk produce distribution.

The FB2 is easily assembled for product loading, and when empty folds down to reduce space for storage and transportation. Its 3 to 1 fold down ratio provides significant savings in freight relocation costs as only a third of the inbound trucks are required to return the bins to suppliers or CHEP service centres. The FB2 is manufactured from food grade plastic, making it ideal for all food contact environments. Being impervious to moisture it will also maintain its strength when stacked in cold storage or freezer facilities.

Commenting on the new FB2, Dan Reeves, National Sales Manager RPCs, said: "Plastic bins have long been recognised as the way forward for producers and processors wanting better quality, constant cool chain management, and improved HACCP compliance. The FB2 now offers all that, plus reduced costs for bulk distribution... The simple fact is three times as many bins can now be transported or stored in the same space"

The FoldableBin B2 has a rugged design to ensure smooth hassle free assembly and folding time after time. The design integrates many of the features of the already proven ShuttleBin (SB1) with the added advantage gained from being the standard Australian size. This allows the bin to fit seamlessly into existing pallet racking and bin handling systems.

Another innovative feature of the FB2 is the fold down sides or drop doors. These features make loading and unloading easier, avoiding the OH&S risks associated with bending into the bottom of a fixed wall bin. "Our Customers love the features of the US footprint ShuttleBin but wanted an Australian standard size to deliver greater savings in freight and handling efficiencies. Through the introduction of the FB2 our customers can now maximise those savings across their entire supply chain" said Dan Reeves.

Designed in Canada, tested in the U.S. and manufactured in Australia, the FoldableBin - FB2 is just one more innovative solution from CHEP.

More information is available at [www.chep.com](http://www.chep.com).



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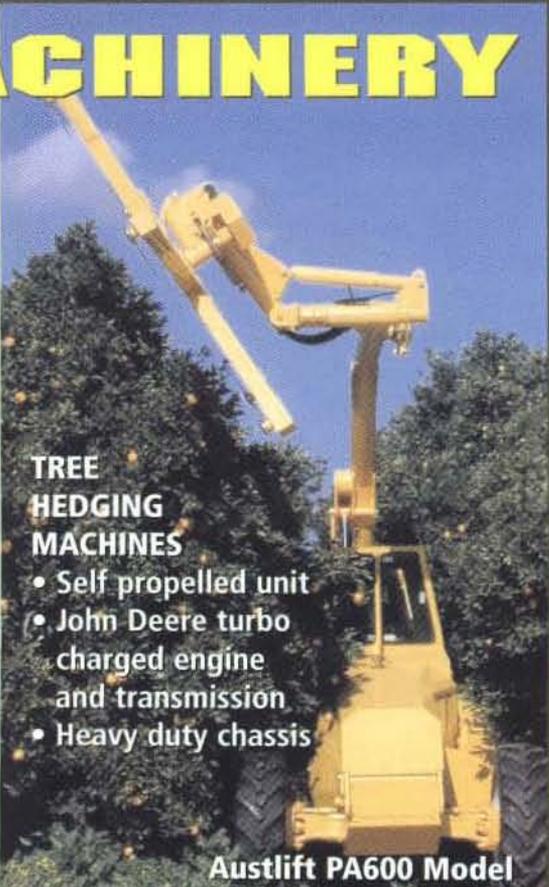


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## Australian Olivado Avocado Oil Plant Opens

Food lovers around the world will soon be enjoying premium avocado oil made in Australia.

The first of the precious, gourmet oil from a new hi-tech plant established near Brisbane by food innovator Olivado, has already begun flowing and will earn exports worth millions of dollars each year, in addition to local sales.

Within a few weeks, the Australian-made oil will be selling in top food stores and supermarkets in the UK, continental Europe, US, Korea and Japan - with a high profile endorsement from celebrity chef Jamie Oliver.

It will also provide an unexpected bonus for Australian avocado growers, who will receive income for fruit that would have been discarded in previous years.

The establishment of the new production facility at Cleveland, the first of its kind in Australia, provides another boost to the local economy, according to State Minister Tony McGrady (dept of State and Innovation) who officially opened the plant on Friday (August 20).

"It adds value to a product we already grow here, earning valuable export dollars and is just the sort of innovation we like to encourage," says Mr McGrady.

Olivado is a pioneer of the avocado oil industry, establishing its first extra virgin, cold-pressed processing plant in New Zealand in 2000. The



Ray Kensington, Production Manager at Olivado, watches the first Australian avocado oil produced by the new process.

company has gone on to win top food awards for its products, both in New Zealand and Australia, as well as plaudits for the way it has successfully marketed its brand and products. The latest marketing coup was teaming up with British chef Jamie Oliver to promote Olivado worldwide.

The new Australian plant is part of a major expansion plan by Olivado, which will see the size of the company grow by more than five times over the next two years.

Managing Director Chris Nathan says the investment in Australia is a crucial step in building Olivado into a world player in the food oil market.

"Australia is a large producer of quality avocado and the crop is growing each year, which means there is a big pool of fruit not suitable for retail that we can turn into oil," says Mr Nathan.

"We already have significant markets established to sell that oil and our aim is to build those even further in the future."

The Cleveland plant, which took more than a year to plan and build, houses a state-of-the-art, Italian-made oil processor designed in conjunction with Olivado technical experts. It is capable of processing several tonnes of avocado per hour to produce an oil Jamie Oliver has praised for its "clean and fresh palate". The 2780 square metre factory also has a unique quality system developed by Olivado that stabilises the oil, improving the taste and enabling it to have a two-year shelf-life - much longer than even the highest quality olive oils from Europe.

Mr Nathan says Olivado is dedicated to producing the finest quality cold-pressed food oils that will stand out from any competition.

In addition to its award-winning premium Extra Virgin Avocado Oil, Olivado produces four flavour-infused Avocado Oils, including a Chili & Bellpepper variety that won an Australian Fiery Foods Award in 2003. And recently the company introduced another entirely new food oil called Omega Plus, a combination of Avocado Oil, Olive Oil and Flaxseed Oil that delivers the correct balance of nutritious Omegas 3, 6 and 9. All Olivado oils carry the Australian Heart Foundation healthy tick mark.

Food lovers will have an opportunity to learn how to use the special Olivado oils in the kitchen, because they will feature in a cooking school that is being established in a wing of the Olivado building by Brisbane food expert Marilyn Horneman. Daily classes run by Marilyn and her team will cover a variety of epicurian topics for enthusiasts and corporate clients alike.



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# AVOINFO

## New version of AVOINFO now available!

By Shane Mulo and Simon Newett, Shane is a Senior Analyst/Programmer and Simon is a Senior Extension Horticulturist for Queensland Dept of Primary Industries & Fisheries.

The AVOMAN team is proud to announce that version 2 of the AVOINFO avocado reference database is now complete and ready for distribution.

### Content

This second version of the AVOINFO program includes nearly 1600 new references from major avocado events and publications since 1998 bringing the total to over 5,700. Over half of all references contain either abstracts or whole articles and in some case, figures or full colour images.

The main sources of material for the new references are:

- World Avocado Congresses: Mexico 1999 and Spain 2003 (abstracts)
- South African Avocado Growers' Yearbooks 1998-2003 (abstracts)
- California Avocado Society Yearbooks 1996-2001 (full articles)
- Australia-NZ Avocado Conference, Bundaberg 2001 (full articles)
- New Zealand Annual Research Reports 2001-2003 (full articles)
- Talking Avocados magazine 1998-2004 (full articles)
- Horticulture Australia Ltd project final reports 1993-2004 (technical summaries)
- California Brainstorming 1999 (full articles)

- References from A. Whaley's "The Avocado: Botany, Production & Uses" (bibliographic details)
- Results of literature searches via the World Wide Web (abstracts included where copyright release granted)

### New features

AVOINFO has been updated to make the program even easier to use.

New features include:

- Ability to view a page of references at a time
- Ability to search for specific words or phrases within a reference
- New keyword list with over 550 words to select from
- Ability to save reports electronically (eg. for e-mailing)
- New system for tagging references
- Ability to sort search results by reference number, title, author & year
- ISBN and/or ISSN numbers included where available to simplify the process of sourcing original publications where required.

### Powerful search facility

The new version retains the powerful search facility that allows you to quickly locate and identify material using a combination of keyword(s), author(s), title(s), source(s), and/or word(s) in the abstract. Also retained from the previous version of AVOINFO is the ability to go to specific references by entering their reference number. References can also be printed, with or without abstracts.

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AVOINFO  
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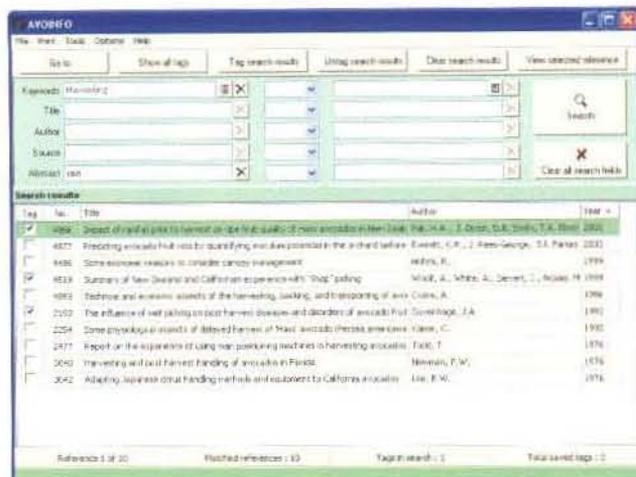


Figure 1. Main screen of AVOINFO after conducting a search. Note the range of criteria that can be used for searching, the presentation of the results and how references can be tagged. In this example the user was searching for information on the potential impact of rain at harvest.

**New manual and help system**

This version contains a comprehensive new manual (electronic copy which can be printed) and an integrated help system which can be accessed using the F1 key or via a contents page or index.

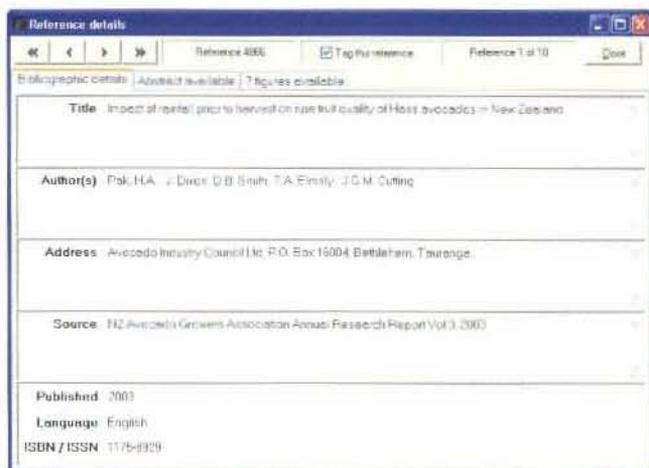


Figure 2. Example of the bibliographic details of a single reference. Note the addition of the ISBN or ISSN number to assist in sourcing an original copy.

**Free for existing owners**

The updating process has been part of a project called "Advancing AVOMAN" which is funded jointly by the Department of Primary Industries & Fisheries Queensland, Avocados Australia Ltd and Horticulture Australia Ltd. The costs associated with the latest update have been met by this project, so it is free for all existing users within Australia. For new owners in Australia the cost is only \$49.50 (GST inclusive).

**How to get a copy of AVOINFO**

Please contact the AVOMAN team via email, fax or post (see below). We will need your latest address and contact details to ensure that the CD or order form is sent to the correct address.

Email: avoman@dpi.qld.gov.au  
 Fax: AVOMAN team, 07 5441 2235  
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Figure 3. The abstract for the reference in Figure 2. The new 'Find text' feature is illustrated, the word being searched for has been located and highlighted in the abstract.

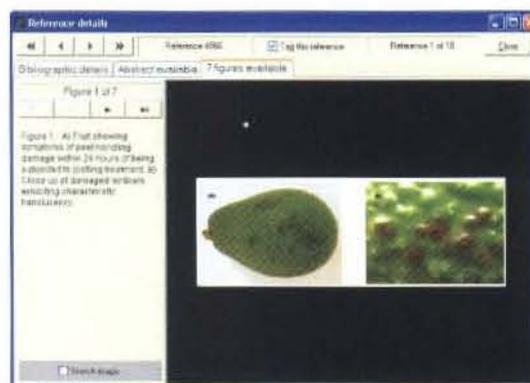


Figure 4. A figure associated with the reference. Note the 'Stretch image' option bottom left, which will stretch the picture to fill the space available.



Figure 5. An example of a print preview. Note the 'Find text' feature (top left) that has been used to find where the word 'rot' appears in the text.

# 'Hass' and its Family - Now and the Future

By Tony Whiley, Tony is a researcher and consultant for Sunshine Horticultural Services Pty Ltd, Nambour, Queensland and is a member of the AAL Varieties Committee.

**This article is the first in a series which briefly looks at 'Hass' and what the future might hold in relation to new 'Hass'-like varieties in Australia which are either already available or will become available once clearing plant quarantine.**

During the last 20 years 'Hass' has become the most dominant variety in those countries with sub-tropical/Mediterranean avocado industries. This is largely due to its superior production and fruit quality when compared with other varieties of the same era along with its storage ability which allows it to enter into international trade. Indeed, even in Mexico where the avocado evolved, the expansion in 'Hass' production is currently threatening the existence of indigenous varieties (Mary Lu Arpaia, Parlier 2004, pers. com.) which have been grown for local consumption since before European colonisation.

## 'Hass'

The history of the original 'Hass' tree was published in the California Avocado Society Yearbook, 1973-74. An extract from this article reads as follows:

The original tree was really a mistake - a lucky chance seedling. In the late 1920's Mr Rudolph Hass, who was a postman, purchased seedling trees from A.R. Rideout of Whittier, for the purpose of developing two acres of budded trees of the 'Lyon' variety. It was Rideout's custom to plant very small seedlings at orchard spacing (12' x 12') at the grove site. The seedlings were to grow in place for a year, or until well established, and be later budded in the field.



Fig. 1  
Hass fruit nearing maturity.

Hass' children first brought the tree to his attention. They preferred the fruit. Since the quality was high and the tree bore well, Hass patented it in 1935. The same year he ordered 300 trees propagated to this variety by H.H. Brokaw of Whittier. Hass never planted the ordered trees; however, he entered into an agreement that Brokaw grow and promote the variety in consideration of splitting gross tree income 25% for Hass and 75% for Brokaw".

In 1991 the World Avocado Congress II was held in California and the Congress organisers presented a cloned tree from the original 'Hass' to each participating country. The tree given to Australian is included in the germplasm block on Maroochy Research Station, Nambour where budwood is available to ANVAS nurseries. Unfortunately despite heritage protection the original 'Hass' tree in California has since died.

The production of 'Hass' in Australia typifies the environmental adaptation shown by this variety, which in part contributes to its international success as fruit is commercially produced at latitudes ranging from 17(S (Atherton Tablelands, Qld) to 34(S (Pemberton, WA). Its "type A" flowering mechanism is robust allowing successful self-pollination across all production regions although it is reported that polliniser varieties are beneficial for 'Hass' production in California, Chile and Israel.

The fruit is described as elliptic in shape with a pebbly textured skin that develops purple-black colour when ripe (Fig. 1). Fruit size typically falls within the 230-330 g range with 65-70% flesh recovery. Despite the varieties wide acceptance for commercial production there are negative aspects with respect to the trees performance. For example, fruit size continues to be an issue with 'Hass' as with tree age fruit tend to get smaller. Warmer growing conditions also negatively impact on fruit size. In both cases it is likely that the high night respiration rate of 'Hass' (x2 that of 'Fuerte') reduces energy resources available for growth (Blanke and Whiley, 1995). Older trees have a greater wood:fruit ratio, the wood also competes for energy resources while higher ambient temperatures further increase respiration losses.



Fig. 2  
Anthracnose developing on 'Hass' fruit (photo courtesy of K. Pegg).

Due to its dark, pebbly skin 'Hass' is very good a disguising postharvest anthracnose (Fig. 2). While this feature often benefits the retail sector as diseased fruit may be sold to consumers it negatively impacts on customer satisfaction and may reduce demand for fruit.

At the World Avocado Congress V in Spain 2003 there was a lively discussion on varieties and what the future might hold. Broadly speaking the meeting was polarised into two sides. One group advocated there was room for more than one variety as seen in other fruit industries, e.g. apple, stone fruit, and breeding programs should not be focused on producing 'Hass' types. The other group proposed that 'Hass' had served the industry well and we should continue only with 'Hass' or close 'Hass' types due to high international market acceptance of this variety. The latter is largely the current international position with the remnants of the Bergh breeding program in California producing new 'Hass'-like varieties while the selection of 'Hass' sports from existing orchards or look-a-likes of seedling origin is occurring in most avocado-producing countries.

## 'Lamb Hass'

'Lamb Hass' is perhaps the most successful variety to date from the UCR breeding program with the variety in California rapidly approaching the position of second in area planted after 'Hass' (Witney and Arpaia, 2004). This is largely due to the variety out-yielding 'Hass' and maturing later under California conditions. 'Lamb Hass' originated from an open-pollinated seed of 'Gwen' which in turn was a seedling of 'Hass'.

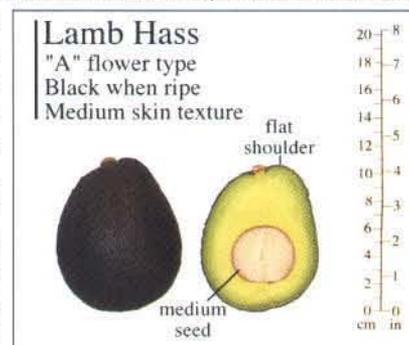


Fig. 3  
'Lamb Hass' (photograph courtesy of UCR).

'Lamb Hass' is precocious and often produces a significant crop in the second year after planting. Tree architecture is upright forming a

natural central leader which allows higher planting densities than can be achieved with 'Hass'. A high density (1973 trees/ha) 'Lamb Hass' orchard (Fig. 4) in California planted on clonal 'Duke 7' and 'Thomas' rootstocks in 1999 has had the following cropping profile: 2001 = 2.2 t/ha; 2002 = 8 t/ha; 2003 = 16.5 t/ha; and 2004 = 9.5 t/ha (R. Hofshi, Fallbrook 2004, pers. com.). The 2004 crop was lower than expected and excessive late fruit drop or theft are given as reasons for this result as there was a heavy crop set.

Cropping experience to date in subtropical Australia has shown that as trees age the variety becomes markedly biennial carrying very heavy crops in "on" years with little or no fruit at all in "off" years. In California 'Lamb Hass' matures 6-8 weeks later than 'Hass' and tree retention of fruit is good although some fruit splitting has been reported, particularly after rain and on young trees. Generally as varieties are moved to warmer climates the difference in their maturity time decreases thus reducing marketing advantages. Mean fruit size is larger than 'Hass' (about 20% larger in subtropical Australia) and the skin is significantly thicker making it more difficult to determine when fruit is ripe.

There can be a number of problems with fruit from young 'Lamb Hass' trees in California. These include premature skin-darkening prior to fruit reaching maturity, fruit too large for market specifications, fruit can be slightly fibrous when ripe and the skin can become inelastic and brittle when mature (Witney and Arpaia, 2004). These are mainly symptoms of juvenility and mostly disappear as trees mature.

Results from a 6-year evaluation program in South Africa confirmed the biennial cropping pattern of 'Lamb Hass' which was still able to out-yield 'Hass' over the period of the study (Kremer-Köhne and Köhne, 2001). However, there was a strong recommendation that 'Lamb Hass' should not be confused with 'Hass' when entering the supply chain as it has different postharvest storage requirements. Kremer-Köhne and Köhne (2001) further comment that they see 'Lamb Hass' as a supplement but not a replacement for 'Hass' in South Africa.

### Will 'Lamb Hass' succeed in Australia?

The development of a new variety is not without some pain as generally a critical mass of fruit is required before the market identifies and recognises what benefits the newcomer offers. The California experience has been that 'Lamb Hass' has been significantly discounted in the market during its development/recognition period. However, there are now signs that the pricing is becoming more equitable with 'Hass'. Of course in California, due to shorter "black-skin" season, the later maturity of 'Lamb Hass' enables this variety to be marketed at the end of the season when little or no locally-produced 'Hass' fruit are left (Californian-grown fruit generally carries a premium over imported fruit).

Apart from the obvious production advantages for growers it is difficult

to see what 'Lamb Hass' can contribute to the Australian market place. Due to the geographic diversity of avocado production in Australia we are the only country that can offer domestically-grown, quality 'Hass' fruit for 10 months of the year. The remaining two months are covered with 'Shepard' grown at Bundaberg/Childers and the Atherton Tablelands. While it may be possible to produce 'Lamb Hass' from our latest maturing regions for the March/April market there is currently insufficient evidence on fruit quality and long-term tree performance when stretching the variety to its limit.

There is little doubt that 'Lamb Hass' is worthy of continuing evaluation as for individuals it offers a useful tool to extend their harvest season. However, fruit consignments should be separate to 'Hass' and clearly marked accordingly. While the temptation may be to mix small volumes of 'Lamb Hass' with 'Hass' there is risk that the market and industry will be damaged by such actions. Be prepared to accept lower prices for 'Lamb Hass', particularly if you are a smaller grower without significant marketing power. To some extent lower prices are offset by higher production. As to

its eventual acceptance in Australia - only time can judge.

In Australia ANFIC holds an exclusive licence to propagate 'Lamb Hass'. Trees are available from Birdwood Nursery, Nambour

### References

- Blanke, M.M., & Whiley, A.W. (1995) Water relations and respiration of developing avocado fruit. *Journal of Plant Physiology* 145, 87-92.
- Kremer-Köhne, S. and Köhne, J.S. (2001) Lamb Hass evaluation at Westfalia Estate - final report. *South African Avocado Grower Association Yearbook* 24, 67-68.
- Witney, G. and Arpaia, M.L. (2004) Lamb Hass - some considerations. [www.brokaunursery.com/lambcac.html](http://www.brokaunursery.com/lambcac.html)

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Fig. 4 A high density planting of 'Lamb Hass' in California. Trees are 2.5 years old and spaced at 2.25 x 2.25 m (photograph courtesy of M.L. Arpaia).

## Australian first - plant expertise goes online

By Garth Donovan,  
Garth is the Communications Manager  
at Plant Health Australia.

Next time there is a major exotic pest threatening Australia's plant industries, authorities will be able to find and deploy relevant plant health expertise at a click of their computer mouse, following today's launch of a new national Plant Health Expertise Register.

In a first for Australia, the unique web based database of plant health expertise has been developed by Plant Health Australia (PHA) in conjunction with representatives from state/territory and Australian Government agriculture/primary industries departments and other relevant experts.

The PHA Plant Health Expertise Register was launched today at the 6th Australasian Plant Virology Workshop by Ms Kathryn Adams, a Director of PHA and Senior Research Fellow with the Australian Centre for Intellectual Property in Agriculture at Griffith University.

"This unique, comprehensive and documented register will help authorities and industry rapidly identify the relevant expertise available in Australia to assist either in an emergency response situation or with other technical or plant health management issues", said Ms Adams.

"This will enable resources to be rapidly deployed, improve the effectiveness of existing networks and significantly enhance Australia's ability to respond rapidly and effectively to serious plant pest incursions."

Until now, agriculture departments and plant industries have used informal networks to identify required plant health expertise, but such networks can suffer due to the retirement or movement of staff. This will no longer be an issue with the introduction of an easily accessible and single documented source of plant health expertise in Australia.

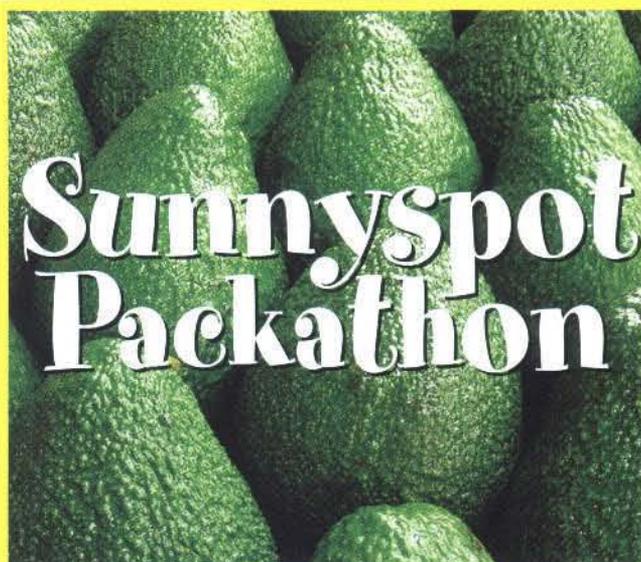
Some 250 plant health experts in the areas of diagnostics, emergency response and pest surveillance have already registered their details on the database. The PHA Plant Health Expertise register is available at [www.planthealthaustralia.com.au/expertiseregister](http://www.planthealthaustralia.com.au/expertiseregister)

The register primarily includes details of Australian experts, but in future PHA may more actively seek to encourage input of further international expertise details. The current focus is to encourage further Australian experts to register their details. PHA is also progressing a plant diagnostic accreditation scheme. Once an accreditation scheme is established, the PHA Plant Health Expertise Register will allow users to

search for accredited experts.

PHA works with its 31 industry and government members to assist development of policies and manage programs that enhance the ability of the Australian agricultural sector to effectively respond to and manage the risks of plant pests, diseases and weeds.

This project has received funding from the Australian Government through the Department of Agriculture, Fisheries and Forestry.



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# Opportunities for Anthracnose Control in Avocado through Rootstock Selection

**By Tony Whiley,**

*Tony is a researcher and consultant for Sunshine Horticultural Services Pty Ltd, Nambour, Queensland.*

Anthracnose (*Colletotrichum gloeosporioides*) continues to be one of the most important factors effecting consumer confidence and may potentially impact on growth in domestic consumption which is needed to absorb the expected increase in production due to the significant expansion in tree numbers. While fruit is infected in the field the disease does not develop until ripening begins. The two main varieties grown in Australia today are 'Hass' and 'Shepard' and both are more tolerant to anthracnose than past varieties, e.g. 'Fuerte' and 'Rincon'. However, postharvest spoilage of 'Hass' and 'Shepard' still occurs and can have a significant impact on market price and consumer demand.

There are a number of factors known to increase the risk of fruit developing anthracnose; some are outside our control while other can be managed. For example, due to climatic conditions fruit grown on the east coast of Australia are more susceptible to anthracnose than those produced in the southern and western regions of the country. This is largely due to summer rainfall along the east coast where moisture and high temperatures provide an ideal opportunity for fruit infection. In contrast, the summer-dry regions of Sunraysia and Western Australia generally produce fruit with less risk in developing postharvest anthracnose. Fruit maturity at harvest at both ends of the spectrum can negatively impact on anthracnose development but this can be effectively managed by ensuring the crop is picked at optimum eating quality. Fungicidal protection, particularly the use of those products with systemic activity (Amistar( and Sportak( provides some insurance against spoilage of fruit during ripening.

Perhaps the most significant issue impacting on postharvest fruit disease development is the time taken from harvest until the fruit reaches the consumer. There is no doubt that the efficiency of the supply chain has improved over the last 20 years however, oversupply of markets generally results in fruit being stored for prolonged periods in cold rooms. The ensuing stress of fruit results in accelerated development of anthracnose which negatively impacts on consumer satisfaction thereby reducing market demand. Thus a cycle of over-

supply and reduced demand can develop and until the supply chain is "emptied" consumption and prices remain depressed due to poor fruit quality.

It has been known for some time that the avocado has a powerful anti-fungal compound known as diene which is found dispersed throughout the tree. It is also known that the levels of diene vary between varieties and is lower in those susceptible to the progression of anthracnose while fruit are still on trees (e.g. 'Fuerte', 'Rincon') compared with varieties that are able to block advancement of the disease in fruit on trees (e.g. 'Hass') (Prusky et al. 1988). During ripening diene is metabolised and concentrations fall rapidly thus allowing latent infections of anthracnose to advance. However, the higher the initial fruit diene concentration the more likely the fruit will ripen without spoilage by disease.

Recent experiments carried out in the Rootstock Improvement project exposed vegetatively propagated cuttings of 18 potential rootstock lines to a temperature regime of 20/30(C (day/night) with 80-100% Relative Humidity (RH). There were from 4-11 plants of each of the rootstock lines. Within two weeks anthracnose lesions appeared on the mature leaves of some lines. A further 10-14 days under these conditions resulted in the complete defoliation of some lines due to the severity of the disease (Fig. 1). At the end of this time severity ratings of anthracnose on leaves were made on a 0-5 scale where 0 = nil lesions and 5 = complete defoliation. The results are listed in Table 1.



Figure 1. Highly susceptible 'Duke 7' defoliated by anthracnose (LHS). 'Velrick' demonstrating a high level of resistance (RHS).

Table 1. Variance in anthracnose (*Colletotrichum gloeosporioides*) susceptibility in a population of avocado rootstocks. Susceptibility is defined by leaf lesion ratings on a scale of 0-5 where 0 = 0 lesions and 5 = severe leaf lesions with defoliation.

| Rootstock   | Race* | Leaf rating | Rootstock | Race    | Leaf rating |
|-------------|-------|-------------|-----------|---------|-------------|
| Barr Duke   | M     | 5           | Hass      | G x M   | 2           |
| Duke 7      | M     | 5           | SHS 2     | G x M   | 2           |
| Parida      | M     | 5           | A8        | G       | 1           |
| SHS 1       | M     | 5           | SHS 3     | G       | 0           |
| Thomas      | M     | 5           | Nabal     | G       | 0           |
| Toro Canyon | M     | 5           | Reed      | G       | 1           |
| Zutano      | M x G | 4           | Plowman   | G x WI? | 0           |
| A10         | G x M | 2           | SHS 4     | WI x M? | 1           |
| Edranol     | G x M | 3           | Velwick   | WI      | 0           |

\* M = Mexican; G = Guatemalan; WI = West Indian

## Opportunities for Anthracnose Control in Avocado through Rootstock Selection Continued

It is evident from the data (Table 1) that a pattern of susceptibility based on racial origin of rootstock lines is present. For example, those lines of Mexican race origin were the most susceptible to anthracnose with plants being completely defoliated by the end of the treatment period; those of Guatemalan race origin had a higher level of resistance with only the odd lesion developing on leaves while those of West Indian race origin also had high resistance to disease.

It is likely that there is an eco-evolutionary reason for the divergence in race response to anthracnose based on the disease pressure present during the evolution of the species. For example, the Mexican race population developed under relatively cool temperatures and low rainfall (ca. 16.0(C/786 mm) compared with the Guatemalan race (ca. 19.6(C/1394 mm) while the West Indian race was exposed to conditions of highest disease pressure (ca. 28.0(C/1137 mm) (Wolstenholme, 2002). Based on the data of Prusky et al. (1988) it is likely that disease resistance in leaves is related to the diene concentration in trees with the Mexican race having the lowest and the West Indian race the highest levels. However, this requires confirmation through the analysis of leaves from the experimental population of rootstocks.

### Commercial significance of this result

At this point in time it is not clear if and how much effect diene levels in rootstocks might have on the postharvest control of anthracnose in fruit of the scion variety. Past research has determined there are a number of factors involved growing fruit with low disease risk. These include maintaining consistent high yields on trees; producing fruit with

high flesh calcium concentrations or lower N:Ca ratios; and harvesting fruit at the optimum eating quality. In addition, Willingham et al. (2001) found that rootstocks also influence disease susceptibility of the scion variety fruit. In studies with 'Hass' grown on 'Velvick' (West Indian race) and 'Hass' grown on 'Duke 6' (Mexican race) rootstocks there was significantly less postharvest anthracnose in ripened fruit from the 'Hass'/Velvick' trees. The 'Hass'/Velvick' trees also had significantly higher levels of leaf diene than the 'Hass'/Duke 6' trees suggesting that diene is implicated in lower disease levels of fruit from 'Hass'/Velvick' trees. However, fruit nutrient profiles were also different between fruit from the different rootstocks so the results may not be solely attributable to diene levels.

The results reported in this article and by Willingham et al. (2001) are complementary and suggest that with current knowledge Mexican race rootstocks and their hybrids should generally be avoided when planting new orchards in summer-wet districts of eastern Australia. However, field testing is still required to substantiate the arguments presented above and obviously it will be some time before conclusive data is available.

### Acknowledgements

The research reported above receives funding support using avocado grower levies which are matched by the Federal Government through Horticulture Australia.

### References

- Prusky, D., Kobiler, I. and Jacoby, S. (1988) Involvement of epicatechin in cultivar susceptibility of avocado fruits to *Colletotrichum gloeosporioides* after harvest. *Journal of Phytopathology* 123, 140-146.
- Willingham, S.L. (2001) Rootstock influences postharvest anthracnose development in 'Hass' avocado. *Australian Journal of Agricultural Research* 52, 1017-1022.
- Wolstenholme, B.N. (2002) Ecology: Climate and the Edaphic Environment. In: Whiley, A.W., Schaffer, B. and Wolstenholme, B.N. (eds) *The Avocado - Botany, Production and Uses* CAB International, Wallingford, UK. pp 71-99.

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# Pnoxius

By Geoff Pegg,

Fiona Giblin and Ken Pegg, from Horticulture and Forestry Science, Queensland Department of Primary Industries and Fisheries.

Email: [Fiona.Giblin@dpi.qld.gov.au](mailto:Fiona.Giblin@dpi.qld.gov.au)

Important root diseases can be caused by several species of endemic wood decay fungi in disturbed rainforests as well as in planted native and exotic trees, including avocado.

When Dr John Menge, an authority on wood decay fungi from the University of California, came to Australia to attend the Bundaberg National Avocado Conference, he visited the Atherton Tablelands and drew our attention to an unidentified wood decay fungus which was severely affecting avocado trees. This fungus was infecting trees and moving down orchard rows from root to root. The fungus was subsequently identified as the Basidiomycete, *Phellinus noxius*, an indigenous wood decay fungus found in rainforests from southeast to north Queensland.



## Brown root rot caused by *Phellinus noxius* can lead to losses in avocado orchards



*Phellinus noxius* can cause serious root disease of native and introduced trees planted on soils that previously supported rainforest. The pathogen causes significant losses in hoop pine forest plantations in both north and southeast Queensland. *P. noxius* is also associated with tree deaths in recreational parks, gardens and residential areas particularly in the Cairns, Brisbane and Gold Coast areas. Mortality from *P. noxius* sometimes occurs in natural rainforest following disturbance (eg. Mary Cairncross Reserve 2002/3).

External symptoms of the disease vary between tree species but, in general, the pathogen, *P. noxius*, is distinctive and easily identified. When the disease is advanced, the crown foliage becomes pale, wilts

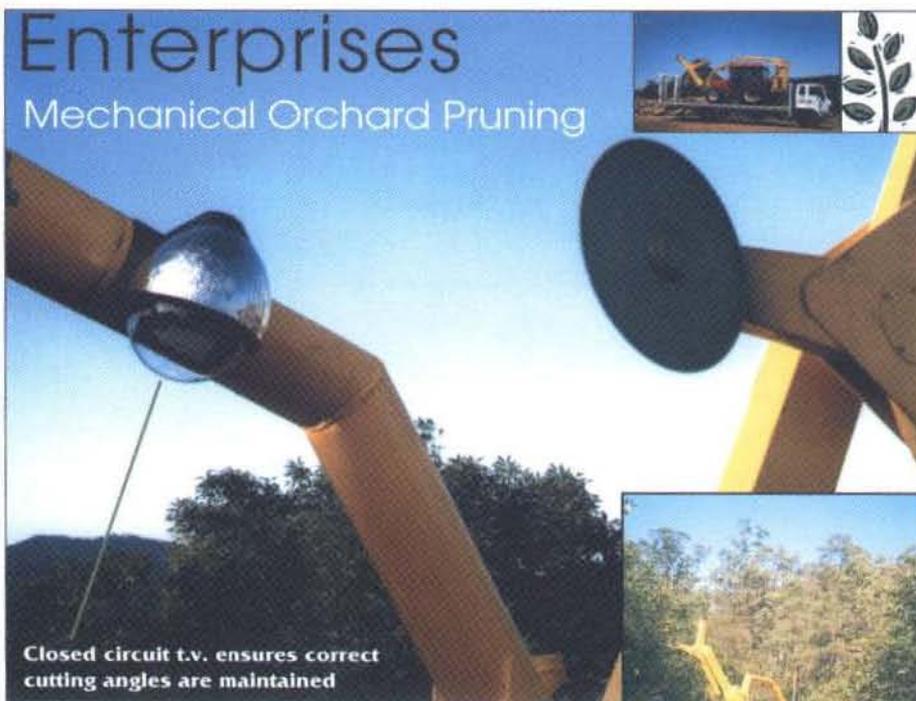
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*Pnioxius Brown root rot caused by Phellinus noxius can lead to losses in avocado orchards*  
Continued



and dies. The root rot obstructs the uptake and transport of water and minerals from the soil. On affected trees, an external, cinnamon-coloured fungal sheath is often present girdling the trunk at the base of the tree. This "stocking" may move more than 60cm up the trunk. These sheaths or mats exude a sticky fluid which, in combination with mycelial growth, characteristically causes soil to adhere to the affected roots. Sap also exudes from some infected trees. When the fungus is actively growing, a broad, white margin forms at the advancing front of the brown sheath. When old and inactive, this sheath becomes melanised.

On infected hosts, a thin, white layer of mycelium can be found between the wood and the bark underneath the external fungal matting. This mycelium invades the living tissue of the stem within 5-10cm of the advancing edge of the external mycelium or fungal sheath. In a case where an above-ground sheath is absent, the bark, under which the mycelium is actively growing, may become raised and fractured with gum or resin exudation occurring.

Fruiting bodies occur more commonly in wet weather and are black, leathery to woody, and hard. However, a resupinate or flat fruiting structure (charcoal grey in colour) has been observed on fallen logs, producing spores following periods of rainfall.

Fungi such as *P. noxius* are saprophytes (fungi that feed on dead matter) and colonise cut stumps or dead wood. From there they can invade nearby living avocado roots or trunks. They usually spread readily by roots coming in contact with an infection source, such as tree roots or the stump of a previously killed or felled tree.

**Control**

Control of *P. noxius* is rather difficult. When establishing a new orchard, remove all the stumps, roots and debris and leave fallow for at least 6 to 12 months. If an orchard is to be thinned, stump removal is essential.

If the disease is present and moving along rows, dig isolation trenches or install root barriers around infected trees. This may involve the sacrifice of healthy trees to prevent spread from diseased trees to healthy trees. Current research in hoop pine plantations includes treating stumps with the decay fungus *Tyromyces* sp. in clearfell sites or *Trametes versicolor* in thinning operations. These fungi are effective in accelerating stump decay and are also direct antagonists to *P. noxius*.

We are also investigating the possibility of chemical control using a Propiconazole (Alamo®) and plant activators. Initial results have been promising in that they appear to be reducing the impact of the fungus on the host.

**Acknowledgement**

Many thanks to Leif Forsberg for photo of avocado trees.

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# Silicon and disease management in avocados

**By Jay Anderson, Ken Pegg,  
Lindy Coates, Liz Dann, Tony Cooke,  
Luke Smith and Jan Dean,**

*who are all part of the Fruit Pathology Team,  
Horticulture and Forestry Science, Department of  
Primary Industries and Fisheries, Queensland*

*Email: Jay.Anderson@dpi.qld.gov.au*

Anthraxnose caused by the fungus *Colletotrichum gloeosporioides* (Penz.) Penz and Sacc. is the most serious postharvest disease of avocado and is a major factor contributing to quality loss. Postharvest disease symptoms arise from quiescent field infections that do not become apparent until after the fruit is harvested and begins to ripen.

Completely satisfactory control measures do not exist for anthracnose. However, integrated control strategies have been devised that reduce its impact. Removing dead limbs, branches and leaves to reduce inoculum levels, canopy management, preharvest and postharvest fungicide treatments, controlled ripening and postharvest temperature management all help to combat the disease. We have also shown that rootstock influences anthracnose development. Anthracnose incidence and severity were significantly lower and the percentage of marketable fruit was significantly higher when 'Hass' was grafted on seedlings of the West Indian rootstock 'Velvick' rather than seedlings of the Mexican rootstock 'Duke 6'. These differences were correlated significantly with higher leaf diene levels and a lower nitrogen to calcium ratio (Willingham et al., 2001).

The fruit pathology group at Indooroopilly is attempting to develop new strategies to control plant diseases by using activators (these are chemicals but not fungicides) that stimulate the expression of the natural defence reactions in plants. One of us (Dr Elizabeth Dann) has shown that potassium silicate when incorporated in a growing medium significantly increased the activity of plant resistance proteins (chitinase, fl-1, 3-glucanase) in peas and reduced disease caused by the foliar pathogen *Mycosphaerella pinoides* (Dann and Muir, 2002).

Silicon (Si) is an important constituent of plants, comprising 0.1-10% of plant dry weight (Epstein, 1994). Some plants such as rice, sugarcane and cucurbits are regarded as 'high' silicon accumulators as they contain 10mg/g of silicon in dry tissue. Beneficial effects on growth from silicon fertiliser have been reported for rice, sugarcane, wheat, barely and cucumber. Like most dicots, avocado would be regarded as a 'low' silicon accumulator (i.e. less than 5mg/g silicon dry weight) as we have found a level of 1.5mg/g dry weight of silicon in avocado leaves.

Silicon is absorbed by plants in the form of silicic acid ( $\text{Si}(\text{OH})_4$ ) and moves upwards in the transpiration stream to sites of strong evapotranspiration where it is transformed into insoluble polymers in the extracellular spaces and in walls of epidermal cells. Once polymerised, silicic acid is no longer available as a subsequent source of silicon for any other part of the plant. This deposition of silicon may provide physical impediment to fungi. However recent research indicates that the production and accumulation of antifungal phenolic compounds (including lignin) and activation of defence related enzymes (chitinase and fl-1, 3-glucanase) may also be involved.

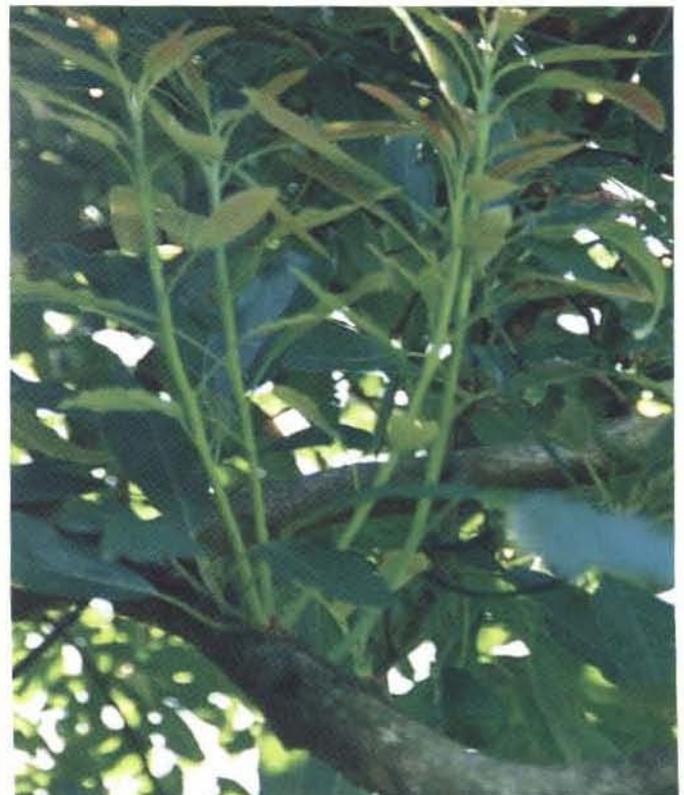
In a preliminary experiment we injected potassium silicate (200ppm) into avocado trees severely affected by *Phytophthora* root rot; these

trees had an average rating of 5.5 on the 0 (healthy) to 10 (dead) scale used in *Phytophthora* research (Darvas et al., 1984). This stimulated the rapid growth of dormant epicormic buds with an eventual significant increase in canopy density (Table 1.) We do not know whether this was due to the suppression of fungal endophytes in the dormant buds or the mitigation of toxic elements (e.g. manganese, chloride) in the tree. We do not believe that the initial response was solely due to the control of the *Phytophthora*.

| Treatment                    | Mean tree health improvement (%) |
|------------------------------|----------------------------------|
| Control                      | -3.6                             |
| Potassium silicate injection | 31.1                             |

*Table 1. Effect of injection with potassium silicate on the mean tree health improvement. Trees were injected on 21 January 2004. Tree health improvement was measured on 7 April 2004.*

The results encouraged us to investigate whether silicon injections would control postharvest anthracnose in fruit. We therefore injected four year-old 'Hass' trees on cloned 'Velvick' rootstocks on 12 May 2004 using potassium silicate at 1000ppm. Fruit from injected and control trees were harvested on 27 May, 8 July and 9 August 2004. Harvested fruit were placed at 23°C (65%RH) to ripen and encourage maximum anthracnose development. The number of days each fruit took to ripen was recorded as a measure of shelf life. Anthracnose severity was estimated as the percentage of fruit surface area affected by the disease; and incidence calculated as the percentage of fruit affected by the disease (Table 2).



*Plate 1. Rapid epicormic growth on a silicon injected tree*

*Silicon and disease management in avocados*  
Continued

Table 2. The effect of trunk injections (12 May) with potassium silicate on fruit shelf life (days), anthracnose severity (% surface area affected) and anthracnose incidence (% fruit affected) of 'Hass' avocado fruit.

| Treatment               | Shelf life (days) | Anthracnose Severity (% surface area) | Anthracnose Incidence (% fruit affected) | Dry Matter (%) |
|-------------------------|-------------------|---------------------------------------|--|----------------|
| <b>27 May Harvest</b>   |                   |                                       |  |                |
| Control                 | 13.7 a            | 8.3 a                                 | 29.2 a                                   | 23             |
| Silicon                 | 13.7 a            | 13.3 a                                | 31.7 a                                   |                |
| <b>8 July Harvest</b>   |                   |                                       |  |                |
| Control                 | 13.3 a            | 17.7 a                                | 52.5 a                                   | 25             |
| Silicon                 | 15.2 b            | 3.7 b                                 | 24.2 b                                   |                |
| <b>9 August Harvest</b> |                   |                                       |  |                |
| Control                 | 8.9 a             | 53.2 a                                | 92.3 a                                   | 29             |
| Silicon                 | 9.1 a             | 29.2 b                                | 69.9 b                                   |                |

Mean values within columns followed by the same letter are not significantly different.

The fruit harvested on 8 July from silicon injected trees took two days longer to ripen and had significantly less severe and lower incidence of anthracnose compared with fruit from non-injected trees. There was a similar effect on disease in the fruit harvested on 9 August, but shelf life was not increased in fruit obtained from injected trees, possibly due to

their greater maturity. The potassium silicate injection did not affect disease incidence or shelf life when fruit were harvested two weeks (27 May) after injection.

Since it is known that plant nutrition can influence disease development we analysed the flesh of the fruit harvested on 8 July (Table 3.)

Table 3. The effect of trunk injection with potassium silicate on 'Hass' avocado fruit flesh nitrogen, calcium, boron, potassium and manganese levels.

| Treatment | N (% DW) | Ca (mg/kg DW) | K (% DW) | Mn (mg/kg DW) | B (mg/kg DW) |
|-----------|----------|---------------|----------|---------------|--------------|
| Control   | 0.88 a   | 0.03 a        | 1.92 a   | 11.33 a       | 115.7 a      |
| Silicon   | 0.90 a   | 0.03 a        | 1.73 a   | 13.67 b       | 116.7 a      |

Mean values within columns followed by the same letter are not significantly different.



Plate 2.

Tree recovery 3 months after treatment. The tree on the left received a potassium silicate injection, whilst the tree on the right was untreated. Both trees initially rated an eight on the 1-10 scale.

There was a significantly higher concentration of manganese in the flesh of the fruit from silicon injected trees. This may have contributed to less disease as manganese is an important cofactor in the synthesis of phenols and lignin which are necessary for plant defence. Manganese also inhibits the activity of pectolytic enzymes produced by fungi. Silicon does not affect the absorption and translocation of manganese but redistributes manganese in plants and prevents localised accumulation. A higher concentration of manganese was previously found in the flesh of 'Hass' fruit on 'Velvick' rootstocks compared with fruit on 'Duke 6' rootstocks and was thought to have contributed to its greater disease resistance (Willingham et. al., 2001).

Silicon injections did not increase the levels of potassium, calcium or boron in the flesh or reduce the nitrogen levels. Increased supplies of potassium and calcium have been associated in some species with decreased disease severity, and increased elemental nitrogen with an increased disease susceptibility. High calcium levels (Hofmann et. al., 2002) and higher boron levels (Smith et. al., 1997) have been shown to increase shelf life of avocado. In this study a silicon injection has had a beneficial effect on shelf life.

Although these results are encouraging, the successful adoption of silicon for disease control in avocado will require further study. We require more detailed knowledge of the following:

1. Is silicon being deposited in the epidermal cell walls of avocado fruit and acting as a physical barrier to the anthracnose fungus? Or does it also have an active role by being able to stimulate the natural defence mechanisms (phenolics, plant resistance proteins) in avocado?
2. Information on how best to apply it - fertigation, injection or spraying? If silicon is playing an active role in inducing resistance a continuous feeding of the element in the soluble and mobile state (i.e. monosilicic acid) may be necessary. We do not know how well the avocado tree absorbs silicon through the roots. Injections may well be providing a slow and continuous release of the soluble state of silicon into the xylem.
3. When to apply silicon and at what rate. In this study we applied silicon in May when fruit were 8 months old, earlier applications

## Silicon and disease management in avocados Continued

during the first six weeks after fruit set (the period of maximum cell division) may be more beneficial.

4. How effective is potassium silicate in controlling *Phytophthora cinnamomi* root rot? If silicon is added to phosphorous acid does it have the potential to give enhanced root rot control?

Once we have acquired this knowledge there is the possibility that silicon could be added to the integrated disease management programme for avocado to further reduce fungicide use and enhance host plant resistance.

### Acknowledgements

We thank Avocados Australia Ltd and Horticulture Australia Ltd for funding this project. We particularly thank Graham Anderson and Harold Taylor of Duranbah and Charlie Eden of Mt Tamborine for their continued encouragement and support and use of their trees. We thank John Marsden of PQ Australia Pty Ltd for the supply of the potassium silicate.

### References

- Dann E.K., Muir S. (2002) "Peas grown in media with elevated plant-available silicon levels have higher activities of chitinase and  $\beta$ -1,3-glucanase, are less susceptible to a fungal leaf spot pathogen and accumulate more foliar silicon". *Australasian Plant Pathology* 31, 9-13.
- Darvas J.M., Toerien J.C., Milne D.V. (1984) "Control of avocado root rot by trunk injection with phosetyl-Al". *Plant Disease* 68, 691-693.
- Epstein E. (1994) "The anomaly of silicon in plant biology". *Proceedings of the National Academy of Science USA* 91, 11-17.
- Hofman P., Whitley T., Marques R. (1999) "Fruit quality and nutrition - the role of rootstocks". *Talking Avocados* 10, 26-27.
- Smith T.E., Hofman P.J., Stephenson R.A., Asher C.J., Hetherington S.E. (1997) "Improving Boron nutrition improves 'Hass' avocado fruit size and quality". In: *Proceedings of Conference 1997; Searching for Quality* (Australian Avocado Growers Federation and New Zealand Avocado Growers Association Conference) pp. 131-137.
- Willingham S.L., Pegg K.G., Cooke A.W., Coates L.M., Langdon P.W.B., Dean J.R. (2001) "Rootstock influences postharvest anthracnose development in 'Hass' avocado". *Australian Journal of Agricultural Research* 52, 1017-1022.



# 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](http://www.avocado.org.au) or call 1300 303 971

### Member Details

Business name and/or trading name: \_\_\_\_\_

\_\_\_\_\_

ABN: \_\_\_\_\_

Key contacts: \_\_\_\_\_

Preferred address (postal): \_\_\_\_\_

\_\_\_\_\_

Address of property (if different): \_\_\_\_\_

\_\_\_\_\_

### Contact Details

Business phone no: \_\_\_\_\_

Home phone no: \_\_\_\_\_

Fax no: \_\_\_\_\_

Mobile no: \_\_\_\_\_

Email: \_\_\_\_\_

### Corporate Structure

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

|            |             |                        |       |
|------------|-------------|------------------------|-------|
| Individual | Partnership | Company                | Trust |
| Lessee     | Cooperative | Other (please specify) |       |

Please indicate the area of property that you crop for avocado production (please circle)

|            |            |            |          |
|------------|------------|------------|----------|
| 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:

- |  |  |
|--|--|
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| <input type="checkbox"/> Environmental management/sustainability | <input type="checkbox"/> Quality Assurance       |
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| <input type="checkbox"/> Food safety                             | <input type="checkbox"/> Other (please specify)  |

**Payment Options**

Grower Membership of Avocados Australia is \$110 pa (including GST). You can pay your membership by cheque or credit card. To pay your membership fee, please choose one of the following options:

Cheque

Please find enclosed a cheque for \$110.00 made payable to Avocados Australia Ltd.

Please charge \$110.00 to my credit card. Details are listed below.

Credit card (please circle):

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Credit card number:

---

Name on credit card:

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**Are we losing the art of cooking?**

Is Australia turning into a nation which relies on 'prepared meals' and convenience foods? Is the common refrain that people in today's busy society do not have the time to cook anymore, influencing our shopping practices?

The 2003 AC Nielsen Grocery Report has put these questions, and others, to the test to determine whether such factors have changed our buying habits and whether people are buying more for convenience purposes.

AC Nielsen studied the demographic who are the nation's main convenience meal buyers. It was determined that the main purchasers of convenience food are most likely to be families, with the primary shopper aged under 54, on a relatively high income (in part because the primary shopper has a job) and with internet access.

It is often claimed that younger people no longer have the skills, inclination or the time to cook a meal - but it seems this group is actually the least likely group to want convenience foods. Young consumers (those between 14 - 24) claim to like cooking, even though they have less time for it than older consumers.

It can be said, though, that this demographic are also less likely to be in a position where they have to cook!

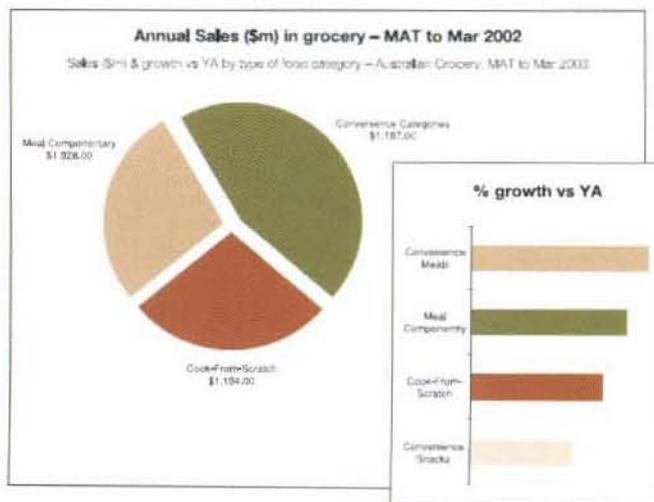
Regardless, this makes for good news for the manufacturers of meal components and ingredients, as it illustrates young people want more than just ready prepared meals.

The numbers of people who genuinely enjoy cooking is also reflected in the strong interest in cooking related books and programs.

Cooking programs have become part of our culture (for example the Naked Chef, Jamie Oliver and Consuming Passions), and sales of cookbooks and food and drink magazines have also rocketed. Book sales increased nine per cent in 2002 alone, compared with 2001.

These figures back up the claim that Australians have not given up on cooking - in fact far from it.

To further answer the question whether people are turning to



## Are we losing the art of cooking?

Continued

convenience foods AC Nielsen analysed the 'hot meal preparation' sector by classifying product categories into these four groups.

1. Convenience meals - prepared meals requiring minimal preparation, before heating and eating.
2. Convenience snacks - prepared snacks which only require heating and eating.
3. Meal components for ready-assembly - prepared ingredients which require cooking, but no further treatment, before consuming.
4. Cook-from-scratch categories - any raw ingredient product.

AC Nielsen found that most meals are still prepared - either by combining components (45%) or cooking from scratch (28%). Convenience categories made up only 28%.

They also determined that while annual sales of convenience meals showed good growth, meal components and cook-from-scratch categories were not far behind.

A study by Meat and Livestock Australia in January 2002 looking at 'Meal time habits in Australian households', indicated a similar trends towards preparing dinners, as opposed to buying for convenience.

Almost eight people in ten (78%) said that they had a freshly prepared meal five or more times per week, while six in ten respondents indicated that they never used pre-cooked/frozen meals.

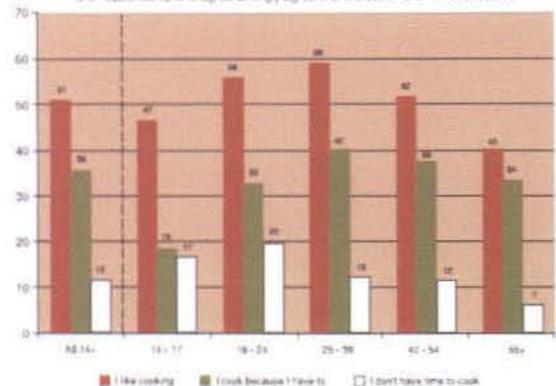
Six in ten (60%) respondents though, did say that their busy lifestyle prevented family meals from occurring more frequently. On average, dinner is typically prepared for the family 4.5 times a week, with families eating dinner together 4.3 times a week.

These trends suggest that people in Australia have not lost the art of cooking. They are, in fact, taking more of an interest, as proven by increased cook book sales. Freshly prepared meals and eating with the family still feature as an important part in the weekly routine, and the use of convenience meals are just that, as opposed to a daily requirement in people's busy lives.

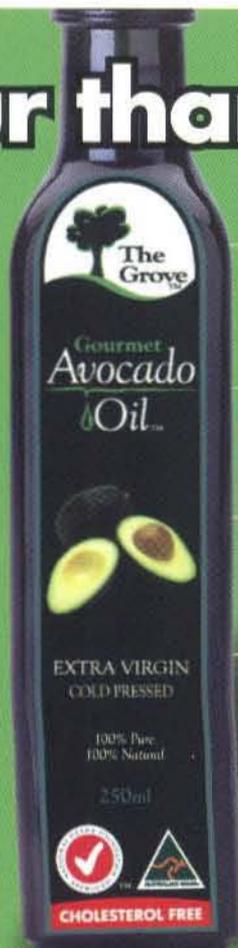
Ref: Foodbiz.net.au Volume 2, Issue 2, August 2004 Pages 10-11

Good News: young consumers still like cooking (when they have the time)

% of respondents who agree/strongly agree with the statement - Australia 2002



# Our thanks to all Growers



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### Atherton Tableland

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Merrilyn Land, President 07 4093 2206

Secretary 07 4086 6056

Fax: 07 4086 6057

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Geoff Chivers, President 07 4153 3007

Fax: 07 4153 1322

### Sunshine Coast Avocado Growers Association

Henry Kwaczynski, President 07 5442 1767

Fax: 07 5442 1767

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Bev Buckley, Secretary 07 5545 2617

### New South Wales

#### Avocado Growers Association Inc.

Chris Nelson, President 02 6569 0924

Alison Tolson, Secretary/Treasurer 02 6569 0872

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### South Australia

#### Avocado Growers' Association

Colin Fechner, President 08 8541 2819

Greg Liebig, Secretary 08 8541 2174

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#### Avocado Growers' Association of Western Australia

Alan Blight, President 0417 179 127

Eleanor Press, Secretary 08 9776 1332

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## Directory of Government Contacts

### Australian Government Departments & Agencies

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