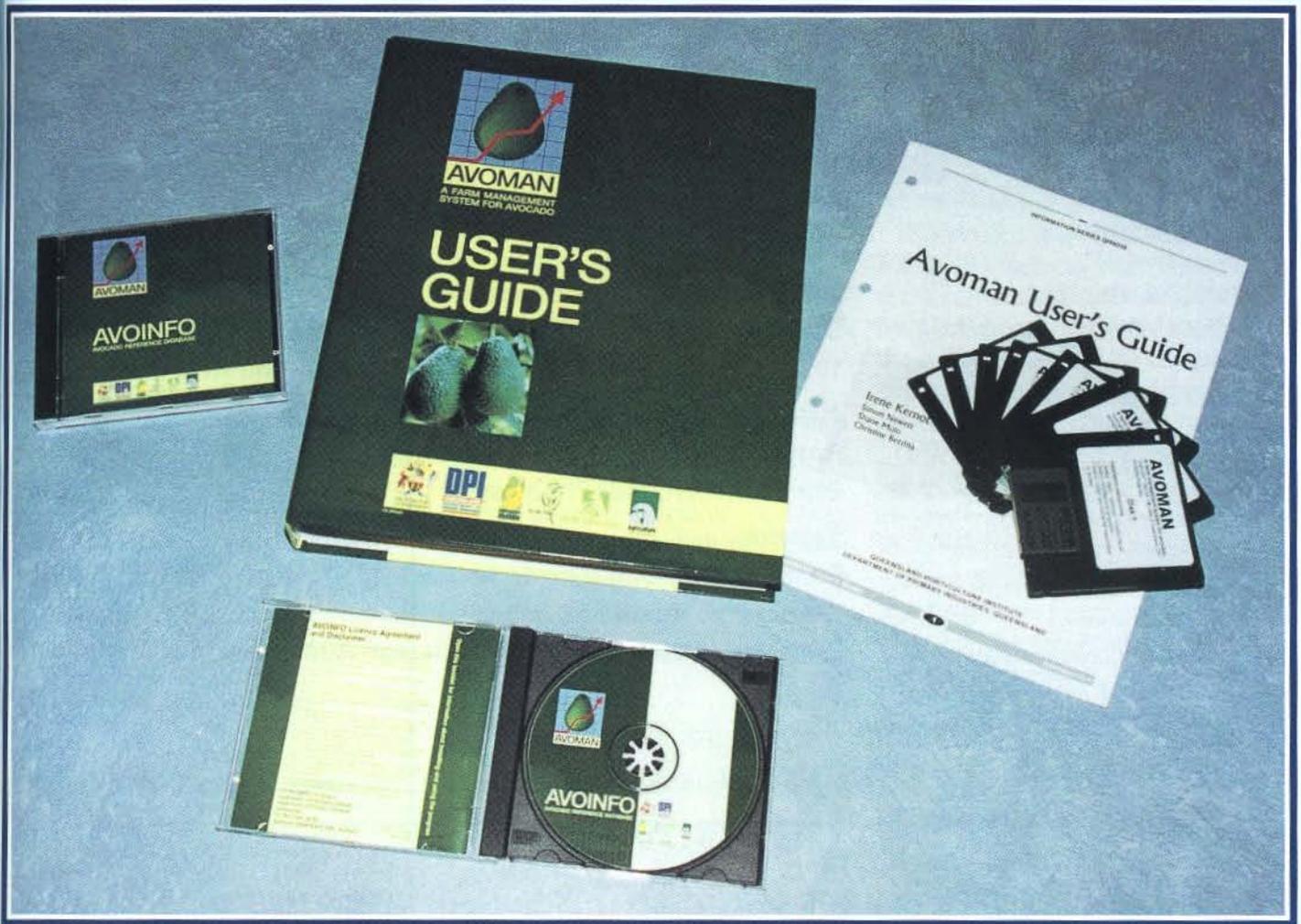


# Talking Avocados



## The end result of the AVOMAN Project

- The Electronic Age
- Outcome of the Endosulfan Review
- Progress on Fruit Spotting Bug Research
- Irrigation of Avocados

# AUSTRALIAN AVOCADO GROWERS' FEDERATION

# Table of Contents

## PRESIDENT

Rod Dalton 07 5466 1316

## VICE-PRESIDENT

Mary Ravello 07 4093 2126

## EXECUTIVE OFFICER & SECRETARY/TREASURER

Astrid Kennedy, P.O. Box 19 07 3213 2477  
Brisbane Markets 4106 Fax 07 3213 2480

## FEDERATION DIRECTORS

### QUEENSLAND

Mary Ravello, Mareeba 07 4093 2126  
Rod Dalton, Grantham 07 5466 1316  
George Green, South Kolan 07 4157 7127  
Henry Kwaczynski, Nambour 07 5442 1767  
Charlie Eden, Mt Tamborine 07 5543 6678

### NEW SOUTH WALES

Frank Moore, Kyogle 02 6633 1332  
Barry Daley, Alstonville 02 6628 5532  
Geoff Betts, Halfway Creek 02 6649 4404

### SOUTH AUSTRALIA

Ross Richards, Renmark 08 8595 3178

### WESTERN AUSTRALIA

Wayne Franceschi, Wangara 08 9776 1332

## STATE ORGANISATIONS

### ATHERTON TABLELAND AVOCADO GROWERS' ASSOCIATION

President Ron Knowlton 07 4092 1018  
Secretary Tracy Battistin P.O. Box 517 07 4092 1018  
Mareeba QLD 4880 Fax 07 4092 3614

### BUNDABERG & DISTRICT ORCHARDISTS ASSOCIATION

President Gunther Rehberger 07 4152 4559  
Secretariat Dianne Fullelove, PO Box 45 07 4153 3007  
Bundaberg QLD 4670 Fax 07 4153 1322

### SUNSHINE COAST AVOCADO GROWERS' ASSOCIATION

President Ralph Hoskin 07 5445 0428  
Secretary Barry Baek, P.O. Box 235 07 5478 9135  
Palmwoods QLD 4555

### WEST MORTON AVOCADO GROWERS' GROUP

Convener Rod Dalton, Sandy Creek Road 07 5466 1316  
Grantham QLD 4347 Fax 07 5466 1497

### TAMBORINE MOUNTAIN LOCAL PRODUCERS ASSOCIATION

President David Rankine 07 5545 1046  
Secretary Harvey Ruglen, 82 Geissmann Dr 07 5545 3934  
Tamborine Mt. QLD 4272

### NSW AVOCADO ASSOCIATION INC.

President Geoff Betts 02 6649 4404  
Secretary Phil Connor "Erin Glen" 02 6677 1455  
Upper Burrumbidgee NSW 2483 Fax 02 6677 1455

### SOUTH AUSTRALIA AVOCADO GROWERS' ASSOCIATION

President Ross Richards 08 8595 3178  
Secretary Colin Fechner, Box 346 08 8541 2819  
Ramco SA 5322 Fax 08 8541 2819

### AVOCADO GROWERS' ASSOCIATION OF WESTERN AUSTRALIA

President Wayne Franceschi 08 9776 1332  
Secretary Paul Callcott P.O. Box 96 08 9776 1332  
Pemberton WA 6260 Fax 08 9776 1332

Support for a Peak Industry Forum for Horticulture . . . . . 3

From your Federation . . . . . 4

Endosulfan Review Outcome . . . . . 5

Letters to the Editor . . . . . 6-7

The Electronic Age . . . . . 8

'Fresh Chain' - Australian Horticulture's Intranet . . . . . 8

Market to Evolve in Electronic Age . . . . . 9

Information Technology And The Internet . . . . . 9-10

New Telecommunications Network for Rural Australia . . . . . 11

Packing Shed Software . . . . . 11

## AHC

Industry Manager's say . . . . . 12-13

Nutrition Recommendations for People with Diabetes Mellitus 13

Australian Round-up . . . . . 14-15

## AVOMAN

The Launch of AVOMAN and AVOINFO . . . . . 17

Setting Your Own Nutrient Rates a New Feature in AVOMAN . . 18

1998 AVOMAN Software Training Schedule And RPG Details . . 19

## Marketing

Progress Drives World Produce Expansion . . . . . 20-21

Cruise the Avocado Highway . . . . . 21

## Research

Fruit Spotting Bug Research . . . . . 22-23

We need your help! . . . . . 23

Irrigation - Determining Water, Design And Frequency . . . . 24-26

For Sale . . . . . 25

## Grower Profile

Hard Decisions on Avocados . . . . . 27

### Editor and Publisher

Orf Bartrop

### Advertising Manager

Astrid Kennedy

### AAGF Coordinator

Frank Moore

### Imagesetting

MacBureau, Currumbin

### Printing

H.W. Inprint Pty Ltd, Devonport

ISSN 1039-2394

This publication is distributed free to all Australian avocado growers and is available to non-growers for a 1996 subscription of: Australia - \$15; NZ - \$21; and other Overseas Countries \$25, Australian currency only. Subscription and editorial inquiries should be addressed to Talking Avocados, 28 Nicholls Street, Devonport Tasmania 7310, Australia.

Telephone 03 6423 3230, if no answer try Mobile 0417 501714, Fax 03 6423 3917 or E-mail orf@southcom.com.au.

Advertising inquiries should be addressed to Ms Astrid Kennedy, Executive Officer, Australian Avocado Growers Federation, P.O. Box 19, Brisbane Markets QLD 4106. Telephone 07 3213 2477 Fax 07 3213 2438.

Talking Avocados is the official magazine of the Australian Avocado Growers' Federation and in conjunction with the Australian Horticultural Corporation is published four times a year (March, June, September and December).

This publication is distributed upon the understanding that the publisher is not engaged in legal, cultural or other professional advice. The Editor, Directors and Executive Officers of the Australian Avocado Growers' Federation Inc (ACN Number IA 5122) do not accept any liability for and/or necessary enclose and/or concern and/or support any of the claims and/or statements made and/or views and/or opinions expressed anywhere in any edition of "Talking Avocados".

## Calendar of Events 1998

### September

- 26 to 3 Oct - **Perth Royal Show.**  
There will be an avocado stand at the show.

### October

- 5 **AAGF Annual General Meeting** will be held in the Sunset Room, Big Pineapple, Nambour on the Sunshine Coast. A light lunch will be served between 12.30 and 1.15 p.m. with the AGM starting at 1.30.
- 7 **Sunshine Coast Avocado Growers' Association** - Canopy Management and Tree Health Workshop commencing 8.30 a.m. at the Conference Room, Nambour Connection Road, NAMBOUR. Lunch will be at the Big Pineapple. In the afternoon growers will go to private orchards for practical sessions (see page 14). Contact SCAGA Secretary 07 5478 9135.
- 21 **Bundaberg & District Orchardists Association** - meeting Fruit & Vegetable Growers' Office, Barolin St. Bundaberg commencing 7.30 p.m.

### November

- 3 **Avocado Growers' Association of WA** - meeting Conference Room, Market City commencing 5.30 p.m.
- 18 **Bundaberg & District Orchardists Association** - meeting Fruit & Vegetable Growers' Office, Barolin St. Bundaberg commencing 7.30 p.m.

#### Front Cover:

The final result of the AVOMAN project.

#### Back Cover

Most readers know that Tony Whiley is Australia's guru of avocados. Here he is expounding the virtues of AVOMAN.

## Support For A Peak Industry Forum For Horticulture

Senator Judith Troeth, Parliamentary Secretary to the Minister for Primary Industries and Energy, has reaffirmed the Horticulture 2000 Group's commitment to further develop the close working relationship between the horticulture industry and the Government.

At a recent meeting of the Horticulture 2000 Group in Melbourne, members agreed to proceed towards establishing a peak industry forum to coordinate and progress national horticultural issues across all sectors of the industry.

"I'm pleased with the support among horticulture industries for a peak industry forum to carry on the Horticulture 2000 Group's work beyond 30 June 1999," Senator Troeth said.

The meeting agreed to embark on a consultation process with a broad mix of organisations representing interests in the horticulture industry with a view to pursuing the formation of a peak industry forum.

Senator Troeth said: "The Horticulture 2000 Group enables Australia's horticulture industries and

Government to jointly consider the broader issues affecting the industry.

"This initiative is separate from and should not be confused with the work of the Horticultural Industry Alliance Steering Committee.

"The Committee has been established to investigate the feasibility of forming a new single entity to deliver services to the horticultural industry that are currently produced by the Australian Horticultural Corporation (AHC) and the Horticultural Research and Development Corporation (HRDC).

"Formation of an independent peak industry forum to deal with issues across all industry sectors, as well as a single entity to provide services to the industry, should be complementary and provide a strong foundation for the industry's future direction."

Other issues addressed at the meeting include the Action Plan for Agriculture recently launched by the Minister for Primary Industries and Energy, developments in the Supermarket to Asia program and the benefits of the new tax package to primary industries.

## ATTENTION AVOCADO GROWERS

For the best results and a personalised service  
consign your fruit to

## W ARKELL & SONS

12 Brisbane

Established since 1892

Proudly serving Australian growers for more than 100 years.

Contact Les Hartley (proprietor)

Phone	07 3379 8122 (work)
	07 3371 6087 (home)
Facsimile	07 3397 4158
Mobile	015 571 097

# From your Federation

By Astrid Kennedy, Executive officer

## Meetings

Your Federation's Board will meet again during the first week of October and the AGM will be held on Monday, 5 October 1998 in the Sunset Room, Big Pineapple, Nambour on the Sunshine Coast. A light lunch will be served between 12.30 and 1.15 p.m. with the AGM starting at 1.30 p.m. Your Federation, the HRDC and the AHC will present their reports to industry.

This is where you can hear first hand what your levies are buying and what is being done on your behalf. **All growers living or holidaying in the area, or passing through Nambour on that day are invited to attend.**

For catering purposes we need to know numbers and if you are able to attend please advise Astrid Kennedy on Ph (07) 3213 2477 or Fax (07) 3213 2480 by Wednesday, 30 September 1998.

The R, D & E Subcommittee met in June 1998 and formulated a Brief to "Optimise yield and fruit quality through an integrated nutrition/soil/water management system". The brief contained the specific objectives that need to be addressed by researchers and listed the desired outcomes. Expressions of interest from the R & D community will be considered at the Subcommittee's next meeting in November.

George Green, Chairman of the R, D & E Subcommittee, addressed New Zealand Avocado growers at their AGM and Research meeting last August.

## Endosulfan - Final Report

The final report from the Endosulfan Review was released on the Internet on Monday, 3 August 1998 (see web site [dpie.gov.au/nra/welcome.html](http://dpie.gov.au/nra/welcome.html)).

Overall, the outcomes favour the avocado industry and growers should not experience major problems with compliance.

However, there will be a financial cost to industry in meeting the data collection requirements. The industry must conduct worker exposure trials and provide the data to the NRA in order to continue using endosulfan after 30 June 2000.

Your Federation is negotiating the possibility of a joint data collection project with growers of other tree crops who use endosulfan.

A detailed report of the outcomes as they relate to the industry's key concerns is presented opposite.

## The Federal Government Tax package

The Coalition's proposed new tax package will affect growers indirectly because it reduces the tax on snack foods. Fresh food producers will experience for the first time a 10% tax impost at retail level. Manufacturers of snack foods will enjoy a 10% reduction in tax. This effectively provides a free kick for the "junk food" manufacturers.

Your Federation and a number of peak bodies from other horticulture commodities are jointly and individually writing to government to bring this situation to their attention and to urge them to compensate horticulture by financially supporting industry programs which promote the consumption of fresh produce.

## Horticultural Industry Alliance (HIA)

The HRDC/AHC Industry Strategic Alliance concept was introduced in the last edition of TA. It was advised that a Steering Committee had been formed to advance concepts and that your Federation's president, Rod Dalton, was a member of that committee.

## Progress to date

In brief, the committee was charged with the tasks of evaluating the needs of industry and of designing one or more entities to service those needs.

The committee has now met and held telephone linkups on a number of occasions. They plan to produce a draft options paper by December 1998, consult with industry between 1 January and 1 May 1999 and present industry's recommendation to government and implement the outcomes by August 2000. The proposal is that the process be funded in part by government and the remainder by levy payers and voluntary contributors who would pay a maximum of one per cent of their levy income for the next three years.

The Avocado Industry's contribution would be in the order of \$7,170 per annum for three years. An indicative budget is now being prepared.

In the late 1980's when the AHC and HRDC were formed it was seen by many that the organisations were initiated and handed down by government with little or no consultation with industry. This is now industry's opportunity to design organisations that suits the needs of horticulture today and into the future.



## Production Up

It appears that 1997/98 returned another bumper crop. Based on levy income for the financial year production was in the region of 23,000 tonnes.

## New Managing Director for AHC

Mr Mark Napper has been appointed as the new managing director for AHC. Mark has been with the Corporation since 1992. He has extensive commercial experience in both the private and public sectors and has been involved in Australian agribusiness for the past 14 years.

## PIB for Horticulture

The Horticulture 2000 Group has recommended to the Minister that a Peak Industry Body (PIB) for Horticulture be formed as a successor to Hort. 2000.

The Group recommends that a PIB should be based on a minimalist cost basis and structure, and should have maximum representation across industry sectors from peak national associations. It is proposed that the draft plan will be discussed with all sectors of industry before proceeding.

## Multi-commodity R & D Group

In the June edition of TA I reported that this group had been formed and was scheduled to meet in early June. The committee is now up and running and has selected three multi-industry projects for immediate attention. These projects are:

1. food safety,
2. an environmental audit in horticulture,
3. market development, including market access issues such as disinfestation.

It is proposed that levy paying industries set aside 5% of available funds in 1999/2000 for such projects.

## Endosulfan Review Outcome

By Rod Dalton, President AAGF

As a result of a comprehensive review over the past two years, the NRA is taking measures to control access to endosulfan, improve spraying and irrigation practices and verify maximum residue limits. The NRA considered over 150 public submissions (almost 50% from avocado and macadamia growers) on the draft review (released in December 1997) before reaching the final decisions.

Dr. David Loschke, who coordinated the review, said endosulfan was a key insecticide, especially among cotton and vegetable growers, because it was 'soft' on beneficial insects and one of the few remaining effective insecticides of its type.

"Unlike other chemicals of its kind used in the past, endosulfan doesn't persist for years in the environment and doesn't accumulate in the bodies of animals or people. The review has also determined there is no evidence for its involvement in cancer, birth defects or endocrine disruption."

"But endosulfan can be dangerous to agricultural workers if not used properly, and for the environment the main problem is harm to fish and other aquatic animals when drifting spray or storm run-off finds its way into rivers."

The main issues raised by the endosulfan review were:

- concerns over environmental contamination of streams and rivers in regions where it is used intensively, such as cotton growing areas;
- lack of data supporting the safety of agricultural workers; and
- lack of data supporting residue limits in commodities.

Dr Loschke said the NRA's review outcomes aimed to maintain access to endosulfan for producers provided there were appropriate controls to protect the environment, farm workers and other people. All existing uses of endosulfan have been allowed to continue on an interim basis while new data is generated to support these uses.

The measures taken by the NRA are designed to reduce contamination of the environment and protect agricultural workers and other members of the community. Some of the key measures that affect avocado growers are:

- development of environmental reduction targets, with continued use of

endosulfan contingent on meeting these targets by 30 June 2001;

- a requirement for generation of worker exposure data for the main agricultural uses of endosulfan by 31 December 1999;
- a two-day re-entry period for treated crops;
- restrictions on use to people with acceptable training in chemical use safety;
- a requirement to keep auditable spray records;
- a requirement to generate data by 30 June 2000 to support existing maximum residue limits; and
- orchard crops have been exempted from the limit of two sprays of endosulfan per crop per growth season.

This exemption is a major relief to the avocado industry that would have had major difficulty controlling Fruit Spotting bug with two sprays per season. The NRA has obviously taken notice of the submissions put in by the AAGF and the growers.

As these key measures indicate, a number of review outcomes require further data. Continued use of endosulfan is conditional on the avocado industry supplying this information to the NRA.

### Impact on Growers

- From 1 July 1999 you will need to have a current accreditation for chemical application, e.g. Farmcare Australia, Chemsafe Qld.
- Auditable spray records will have to be kept.
- A two-day re-entry period will apply for workers.

### Impact on Industry

To enable the avocado industry to have continued use of endosulfan a number of data packages will have to be provided to the NRA. Unfortunately it is unlikely that the chemical companies will do this work for us, as we are not seen as large enough users. Thus the work will have to be funded by the avocado industry.

Discussions have already been held with a number of other industries with a view to developing a combined approach to this work. The AAGF is working hard to ensure that the requirements of the NRA are met in the most cost-effective manner. The

limited resources of our industry, funds and time are regrettably being used in a reactive rather than a pro-active manner.

### Conclusion

The avocado growers have had a good result with the endosulfan review and should be able to manage the restrictions. The strategy of encouraging growers to lodge submissions with the NRA has had a positive outcome.

The fruit and vegetable industries, avocados and macadamias in particular, will now have to go to considerable effort and expense to generate the required data for the NRA to ensure that we are able to continue to use endosulfan. The chemical companies are likely to fund this data collection for the cotton industry and some field crops. The AAGF will be looking to work closely with all interested parties including the cotton industry to get the best outcome for our industry.

In conclusion I would like to thank all those who contributed to this result including the NRA staff and Board who "listened" to our submissions and especially growers who responded to a call for submissions.

**To Present Your Produce Attractively**

**CONTACT**

**Label Press**

**Manufacturers of:- SELF ADHESIVE FRUIT & POLYSTYRENE LABELS, GUMMED BACK, NON-TEARABLE & PLAIN TICKETS OR TAGS ON ROLLS OR SHEETS.**

**PRINTED TO YOUR REQUIREMENTS.**

Genuine honest quotes.  
No trick pricing. No hidden costs.

**Phone 1800 773 207**  
**25 Burke Street,**  
**Woolloongabba 4102.**





## TALKING AVOCADOS - HAVE YOUR SAY

Dear Sir,

**Why isn't Australian avocado research putting money back into the average grower's pocket?**

Avocado growers would do well to take heed of the underlying message in Graham Thomas's article in the December 1997 edition of "Talking Avocados" i.e. that despite years of substantial growers' levies and more recently HRDC matching funds poured into research, **average annual output per tree remains the same now as it was in 1974.**

**What other industry is surviving on outputs of a quarter century ago, or tolerates a zero return on its money?**

Growers should be well aware that they are coming under increasingly competitive pressures as tariff barriers are reduced or removed completely, a trend that will continue regardless of the political party in power. Growers need only study the impact on late season avocado prices over the last ten years of New Zealand imports to imagine what it would be like when South Africa, Chile or Mexico get around the current embargoes.

The answer is certainly not to pour more money into research without first establishing why little if anything has been achieved in the past; there should also be an open publication of present and approved future projects, including comprehensive details of aims, expenditure and likely financial benefits to growers. At the conclusion of all projects the AAGF research committee should issue its own report to members detailing the actual benefits or otherwise achieved. It is fundamental that those making decisions to spend growers' money must publicly share responsibility for the outcomes.

The research industry like the rest of us is no longer a protected species and its work must be measurable in terms of benefits to those providing the funding. Every time growers send a consignment to market the value of their efforts is subject to critical review, the research industry can no longer be an exception.

Some growers will point out that Australian research leads to phytophthora control with potassium phosphonate injection. This work was little more than validation of the process conceived and developed by Dr Joseph Darvos in South Africa and without which current Australian productivity would show a negative rather than a stagnant trend.

Many growers have to some degree controlled phytophthora by injection, however the process and its real value is still

poorly understood by most and much of the industry funded research is either incomplete and/or has led to inappropriate recommendations. The following areas should be reviewed in order to maximise the benefits of phosphorous acid injection as a healthy root systems is fundamentally linked to all areas of tree performance.

### Trunk Injection Verses Tree Injection and Where to Inject

Readers may at first think this is straw splitting, however the use of the term "Trunk Injection" is largely responsible for what is an unsustainable practice, particularly when operating in high disease pressure areas requiring twice yearly injection. Continued lower trunk injection results in an accumulation of damaged internal and external tissue, regardless of injection method used, causing restriction of tree fluid movements and declining tree performance. The effect is magnified by not using appropriate injection site sealing—more on this later. Tree Injection would be a more appropriate term.

Many growers now realise that by injecting out along the branches and by spacing injections well apart vertically the effects of tissue damage are not only minimised but once those branches are pruned off the problem is eliminated.

### Recommended Injection Rate

Recommended dose rate is 15 ml. per metre of canopy diameter i.e. 120 ml for a tree 8 metres in diameter and 30 ml for a tree 2 metres in diameter—a 4:1 ratio.

An 8 metre diameter tree has a root area 16 times greater than a 2 metre tree, so either the smaller trees are being overdosed or the larger trees underdosed. This does not take into account tree height or root depth differences and the consequential differences in translocation losses. To achieve the same root phosphorous concentrations the dose differences would need to be well in excess of 16 times.

### Dose Size and Concentration

Traditionally avocado injection practice is doses of 20 ml of 20% phosphorous acid concentrate. For more than two years owners of variable dose pump injection systems have been using 10 ml doses of 40% concentrate and achieving the satisfactory results with no additional leaf burn, the amount of active material per dose being the same.

The advantage of using the higher concentrate are faster injection times—when doubling the volume the time taken increases by approximately four at the same

injection pressure, conversely halving the dose decreases time to around one quarter.

### Injection Site Sealing

QDPI does not recommend sealing the injection holes. On checking the basis of this the writer was informed that in one year at the Maroochy Research Station injection holes sealed with silastic were checked and "some" found to have a "fungal" activity present. Such a small single sampling at one location is hardly the basis for going to print with an authoritative recommendation. Years of experience with plastic and wooden sealing plugs by dozens of Australian, NZ and South African avocado and kiwi fruit growers has proved the value of using an effective injection site sealing device particularly with debilitated trees, no bleeding and rapid and complete healing.

### Injection Timing

QFVG recommendations for injection timing are "after leaf hardening following spring and summer leaf flush". In the writer's experience, and as recommended in NZ, the most effective injection time is as trees are coming out of winter dormancy, this is particularly true for areas where fruit maturity is late in the year. Following spring, demands on the tree's energy reserves are at their highest. First there is flowering followed by fruit set and initial development, then production of a whole set of new leaves requiring the tree's energy. At the same time the tree is trying to bring the existing crop to maturity. With so much energy being expended the tree needs the root system to be as effective as possible for it to remain healthy, productive and resistant to Phytophthora.

### Currently Available Potassium Phosphonate has an Inappropriate pH

The Potassium Phosphonate currently supplied for agricultural use has a pH of around 5.7, is reactive and causes leaf and internal tissue burning. Anyone who has sectioned an injected tree will have seen purple streaks of damaged tissue. NZ practice is to formulate the pH of the solution to around 7.0 bringing it closer to the trees own tissue and fluid pH. NZ growers claim no leaf or tissue burn. Formulation of pH neutral potassium phosphonate would also make it easier to develop useful combinations with trace elements and insecticides etc. further providing cost savings to growers.

## Pressure Verses Passive Injection

Despite the successful use of a number of Australian developed manual and power operated pressure injection systems by hundreds of avocado and other tree crop growers in Australia and other countries, sections of the Australian avocado industry, its advisers and researchers, for reasons unknown, will not accept their clearly successful and cost effective use against phytophthora.

Whilst we acknowledge that uncontrolled high injection pressure can cause cambium separation, this form of tree injury isn't a problem with properly maintained injectors, operated as per the manufacturer's recommendations.

### Phytophthora Injection - Prevention or Cure?

Often we hear "I don't have phytophthora", "I only inject the sick trees", and "I'm on sandy soil, no Phytophthora". The "sandy soil" and "don't have" people should visit orchards on Perth's sand belt. New growers should heed the words of some of the old timers, "before phosphorous acid avocados in new ground survived for the first 10 years, then you could look forward to losing 10% of your trees each year". Following the 1974 "big wet", Queensland had lost half its mature trees by 1976.

The effects of *Phytophthora cinnamomi* are not always visible until a tree "crashes" and it can then take up to four years to bring it back to anything like full productivity.

Dear Sir,

I have just finished the two-day training course for the AVOMAN software, the final product is good.

I have used all the prototypes of AVOMAN right from the very first to a special release prototype just prior to the final version. After using the final version I think it is great. It has lots of graphs and reports and a few valuable improvements to help with data entry.

As shown in the training session it is not necessary to put in any data to get a lot of information to help in the growing of avocados. With a little training, practice, and help from the manual and the F1 key, anybody with very little computer skills will be able to put the necessary data into the program and obtain vital and accurate fertiliser and spray programs, tailor made to their location, variety, soil, and growth pattern.

Some of the people at the training were novices at computer operations but by the

## Conclusion

No industry, manufacturer or producer will remain viable in today's ever more competitive world without constant performance review and improvement. Despite such HRDC platitudes as "minimising risks inherent", "proactive approaches", "concept developments", "milestone management systems", "regular consultations", "most effective use of valuable resources", "good governance" and "well integrated R&D programs" about R&D project selection as stated in the March Talking Avocados (all indicating "she'll be right mate"), few growers have any real understanding of what is entailed in the current programs or what each program is costing. If past performances are the yardstick, growers are unlikely to derive any financial benefit from these programs. Does everybody out there understand what's involved in the "Canopy Management" project, what it's costing or what the estimated financial benefits the decision to fund it are based on?

If the management of the AAGF is to retain the confidence of, and provide value for, its members, it needs to develop a more open and transparent system regarding R&D project selection, contract placement, plus provide comprehensive progress reporting and financial benefit analysis at project's end.

end of the second day they were getting a handle on the program. All agreed it is worth the effort to understand how to operate the program as they could see how good the end result would be.

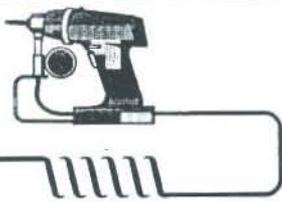
Over the last couple of years, I have used the fertiliser recommendations of the AVOMAN prototypes in my orchard. As a result this year's leaf and soil analysis were the closest to optimum levels that they have ever been, especially Boron—it was the big improver. Also this year the cost of fertiliser was reduced (more than enough to pay for AVOMAN) compared with what I would have applied using the past criteria. The trees are looking good at the moment with lots of flowers. All we need now is the right weather for fruit set.

To set up a Block with all its information, soil and leaf analysis, growth cycles etc. takes about fifteen minutes. At this stage fertiliser and spray recommendations can be obtained for the next twelve months.

Only with cost benefit driven research resulting in genuine increased productivity will Australian avocado growers get value for their money and production remain viable for the average producer. Optimising the full potential of potassium phosphonate would be a cost effective starting point, as the value of all inputs are diminished if a tree's root system is less than fully functional.

Geoff Eldridge  
Injection systems manufacturer  
and ex avocado levy payer.

**PUT THE SCREWS ON**



**PHYTOPHTHORA**

Full Range of Award Winning  
**POWER OPERATED DRILL INJECTORS**



**SIDEWINDER TREE INJECTORS**

PH/FAX 07 5448 0481  
MOB 015 598 885

For a small amount of time you get a big result.

As conditions change during the year, a little time can be taken to fine tune your program to maintain an accurate Fertiliser and Spray program.

I have found AVOMAN easy to use, cost effective and it takes the guess work out of fertilising and spraying which will, in the long run, help me to grow a high quality avocado.

I encourage every grower to seriously look at this technology. AVOMAN has been made for each and every avocado grower. If you haven't seen it yet then find someone who has it operating and get them to show you what it can do. You will be impressed.

Many thanks to the AVOMAN team, a job well done—so far.

Barry Daley  
"Upton" Teven  
Alstonville NSW

## The Electronic Age

For avocado growers, the age of electronics has arrived. The operational version of AVOMAN has been released and now computer management of avocados is a reality.

Irrigation using systems such as EnviroSCAN have improved crop production while at the same time conserving that precious commodity—water.

Information relative to avocados is becoming available through AVOINFO and other forms of communication.

Electronic marketing is on the horizon in Australia and it is only a matter of time before its impact is felt. Buying and selling via the Internet is still in its infancy. In 1996-97, more use of modems was made to obtain information via the Internet than for buying or selling.

Many growers have embraced the electronic age and now use a computer as a tool to improve their productivity and thus their bottom line—profit.

For those growers who are still using the old methods of farming or are reticent to acquire the technology necessary to meet the new age of electronics, the articles on pages 8 to 11 will give you an insight into what is available now or on the horizon.

The AVOMAN concept is a leader in computer management in horticulture and offers a golden opportunity for those without computer skills to learn how to use this piece of machinery. At no other time has this opportunity been so readily available.

It is now a matter of: Can you afford not to enter the new age? The new millennia will see many things change and horticulture is just one of those things.

At present, more than one in three farmers are using computers, according to the Australian Bureau of Agricultural and Resource Economics. The use of

computers on broadacre and dairy farms has more than doubled since 1993-94.

Most users keep track of income and cost details and managed their accounts using the technology.

Computers are used by more than two in three farmers in planning matters and, in many cases, help crop and livestock management. Use of computers in cropping industries outstripped use in other industries.

The main reasons farmers are not using computers is the lack of technical familiarity, and almost as many thinking a computer would not be useful.

The majority of users are younger members of the farm work force and those with at least five years of secondary schooling.

Farmers in areas closest to capital cities—the high rainfall zones—make less use of computers than farmers in the wheat/sheep or pastoral zones.

## 'Fresh Chain' - Australian Horticulture's Intranet

The Australian horticulture industry is establishing its own computer-based network to link all sectors on the Internet.

Dubbed "Fresh Chain", it will be an "industry members only" section of the Internet known as an Intranet, enabling cheap and immediate communications between growers, wholesalers, produce markets, customers, service providers and their associations. It is planned that Fresh Chain will be fully operational by early next year.

Senator Judith Troeth, Parliamentary Secretary to the Minister for Primary Industries and Energy, launched fresh Chain at the AUF '98 Conference in Sydney. Senator Troeth said "Fresh Chain will take the horticulture industry's communications system into the next century."

A major aim of Fresh Chain will be to provide a comprehensive directory of the Australian horticultural industry for national and international business contacts. It would also later provide the basis for a possible industry owned electronic trading system.

A national steering committee of industry representatives has gained the support of the Horticultural Research and Development Corporation (HRDC) and a variety of industry organisations to raise

almost \$200,000 for the project. The money is to be used to find out the most important communication needs of industry people around Australia and to design a system to meet those needs.

Specialist information technology consultancy Yameco has been appointed to do this, and its representatives will be talking to people in growing regions of Australia during September and October.

Industry Project Committee chairman, Melbourne Market Authority Chief Executive, Ian Webb, believes an Intranet will play an increasing role in business and the industry must therefore rapidly develop and own its own system.

"Fresh Chain will provide the industry with the communications network it must have to realise its full potential," he said.

Mr. Webb says Fresh Chain would mean:

- Full access to current Australian data on horticultural production and distribution.
- The opportunity to deliver world's best practices for a customer-driven market.
- A training and business information database.
- A first class communications infrastructure for the industry.
- A network to provide an industry owned and managed electronic trading system.

The Fresh Chain Internet home page, expected to be operational in early September, is at: [www.freshchain.com.au](http://www.freshchain.com.au)

Those wishing to put their views on system needs can contact John Metcalfe or Graeme Forsythe at Yameco, Level 12, 456 Kent Street, Sydney NSW 2000; Ph 02 9283 7986, Fax 02 9233 1800, E-mail [ryncon@ozemail.com.au](mailto:ryncon@ozemail.com.au)

Sponsors contributing either funds and/or expertise to get Fresh Chain going include:

- HRDC, QFVG, AUSVEG and Pivot Ltd
- Melbourne Market Authority
- Adelaide Produce Markets Ltd
- Perth Market Authority
- Brisbane Market Authority
- Melbourne Market Credit Service
- Victorian Chamber of Wholesalers
- Sydney Markets Ltd
- Australian Fresh Stone Fruit Growers
- Data Fresh
- National Farmers Federation
- Australian Horticultural Corporation
- Vic. Peach & Apricot Growers Association
- Victorian Summer Fruits Council
- Australian Avocado Growers' Federation
- Northern Victoria Fruit Growers Association
- Australian Apple and Pear Growers Association
- Mid Murray Citrus Growers Association

## Market To Evolve In Electronic Age

By Fiona Douglas, National Marketplace News, August 1998

Defining the future nature of the Melbourne Markets was the purpose of a series of meetings held across Victoria late last month.

Meetings were tailored to the three stakeholders in the markets; growers, wholesalers and retailers. A central message was the wholesale markets might evolve into a distribution centre in an era where electronic produce sourcing is inevitable.

About 200 greengrocers, who source produce from the markets attended the retailer meeting, held at Moonee Valley Racetrack, Moonee Ponds on July 28. The meeting was hailed by Melbourne Market Authority (MMA) chief executive officer, Ian Webb, as an 'all time first' in the one and a half century history of the markets.

"In the past, there was a feeling that the markets belonged to the wholesalers and growers because they paid the rent. But there would be no rent to pay if it wasn't for the retailers. Retailers are key stakeholders and need to be involved in the planning process. This has not happened before in the past 150 years, but we now want to make up for lost time," he said.

Wholesale markets are going through a period of enormous change, Mr Webb said. "Retailer numbers have dropped by half over the past two decades and there is

concern or even anxiety and desperation as to what will become of the industry. We see the future of the independent retailer as not bleak - not over. We may need to make changes and we need to begin to address these together," he said.

In a video presentation tailored for retailers, the possibilities for the future were summarised as follows:

- Expansion of the MMA retailer development program.
- A scheme to increase investment in promoting produce.
- Electronic commerce system and access to all retailers.
- Automated entry system involving card swiping.

Electronic commerce was presented as the way of the future for efficient and price competitive produce sourcing.

"Retailers need to buy on competitive terms because if they can't buy at the right price they can't sell at the right price. Achieving the same competitive terms as the bigger buyers involves electronic commerce. Selling via a computer system is inevitable," Mr Webb said.

"All retailers should have the opportunity to access the competitive buying that electronic trading offers. We see computer terminals installed at the markets and these being the first stop for people arriving at the market. They will be able to find

out what's available, from whom and at what price.

"The next step from this, in a few years, will be buying product from your own shop via your computer without the need to come into the markets at all. This is important to try and reduce the work load retailers put into sourcing product.

"There is a need to be more efficient—to do things smarter. Retailers without computer screens will still be coming in and pushing a barrow and hoping prices are good. You can still be sourcing your produce from the markets, but you don't have to be pushing a trolley to do this.

"As the markets move towards a distribution centre, there are other ways to buy."

All greengrocers at the meeting had an opportunity to present their views in written form, with small groups asked to list at least five areas to be addressed.

Among the topics raised was a concern that electronic trading would remove the opportunities that face to face interactions present. For example, a retailer may need certain items, but others lines often present as good value on the day. Such opportunities can be useful as loss leaders and give a competitive edge. Similarly, it was mentioned, trading involves more than produce and prices, such as personal rapport with supplying growers and the opportunity to haggle or negotiate deals.

## Shaping The Future With Information Technology And The Internet

From the Rural Industries Research & Development Corporation Newsletter: Issue No. 1 - September 1997

Research commissioned by the Rural Industries Research and Development Corporation (RIRDC) to improve understanding of the information technology (IT) needs of rural Australia is at the leading edge of work in this field.

Prior to 1995-96 when RIRDC commissioned a benchmark study on telecommunications infrastructure issues for rural Australia, little substantive research had been undertaken on the contemporary issues facing regional communities in building electronic communication networks and the use of those networks.

Since then, RIRDC has funded over 10 major projects in this area, covering such diverse issues as telecommunications policy, Internet content, personal computer usage and standardising the classification of information in agricultural systems.

Current research projects include:

- a study on the capacity of existing telecommunications infrastructure to meet demand and the potential of alternative;
- an assessment of Australian agricultural content available on the Internet;
- a guide to the Internet for Australian farmers;

- an assessment of the policy implications of extending digitised communication systems to rural Australia;
- a pilot project to deliver training and support to farmers, advisers and scientists via the Internet;
- options for improving the accessibility of agricultural information on the Internet;
- patterns of information technology and their impact on farm management; and
- increasing the availability and use of computer-aided learning resources for agricultural education and training.

Research priorities are determined as part of RIRDC's research and development plan and annual operating plan. The plans are based on substantial analysis of industry needs and extensive consultation with key extension agencies, other R&D Corporations and stakeholders such as the National Farmers' Federation.

The Human Capital, Communication and Information Systems Program is a five year strategy supporting research which aims to:

- develop accessible, client centred information and communication systems;
- develop more effective communication and education processes;
- understand, evaluate and change institutional and organisational structures for research, communication and education;
- better target clients by understanding and defining the agricultural sector; and
- understand the nature of change and innovation in the farm sector.

RIRDC is the only agency with a national and cross-industry program in communication, education and information systems. The area of information technology and online communications is an important part of the program.

## Turning farmers on to the 'net'

A problem common to people involved in business, including agriculture, is that of information overload. Available information is not utilised to the fullest because it cannot be accessed as simply and efficiently as required.

There is also considerable duplication of effort by individuals to store information so that it can be easily retrieved when needed.

People in agricultural industries require more control over their ability to access information as they need it. Electronic information systems are one way to address this. Those farms who want to be part of a competitive, world class industry will require a positive attitude to electronic information systems, high level skills and unimpeded access.

A pilot project by Farmwide, a subsidiary of the National Farmers' Federation, is investigating this issue, together with RIRDC, and should demonstrate its potential benefits and disadvantages.

Widespread access to appropriate electronic information systems and their beneficial use by farmers will not necessarily develop through market forces.

The following are necessary for the successful use of such systems by the agricultural sector:

- infrastructure at an affordable access price,
- farmers educated and equipped to use the Internet,
- content and applications on the Internet to meet the needs of farmers, and
- easy and quick access to good content.

RIRDC has recently completed a project on issues concerning the establishment of an infrastructure for Internet access, and a content analysis of existing Australian World Wide Web sites for Australian farm businesses.

A considerable amount of research and development is still required before the four criteria above are met. How useful is the information currently available on the Internet in relation to farm management? How useful is it to farmers? What impact does it have on decision-making? How could it be improved to meet user needs? How can appropriate infrastructure be more rapidly established in rural areas? Some of the projects currently being funded by RIRDC, and outlined in this article, should help us to answer some of these questions.

## Who's using IT on the farm?

There is little detailed information available on the use of information technologies within farm businesses and their impact on farm management and practice. Yet it has been widely predicted that the uptake of IT by farmers will bring significant benefits.

## Why do farmers use PCs?

The adoption of computer based decision support and information systems by rural producers has been widely promoted (and, in fact, assumed) since such systems integrate significant volumes of information with farmer knowledge and experience in a way that is designed to assist farmers in making business decisions.

Despite large amounts of money being spent on software development, promotion and extension programs, it appears the use of the personal computer (PC) on-farm remains limited. The 'rosy picture' of potential farmer use of PCs predicted in the 1980s has not been realised, despite the fact that many farmers now have easy access.

So why and how are farmers using their PC? A collaborative project in Victoria is examining the views and attitudes of both PC users and non-users to reveal the factors which influence their use (or non-use),

their needs and concerns about software, their training requirements and opportunities and their capacity to use other information technologies in the future.

Information gathered from this study will assist training providers, extension staff and software providers to better understand farmers' computer needs and provide the support and resources they require to maximise the benefit of their PC usage for their farm.

## Learning with computers

Better access to computers and information technology in the farm sector has opened up the opportunity to improve education, extension and training services using computers.

To improve the quantity, awareness and use of this valuable tool in agriculture, RIRDC has provided support to researchers in NSW who will identify the resources currently available, users' experience with them and where the gaps are in order to stimulate the development of new and better information technology products.

## The Farmwide Online Services Pilot Project

The Farmwide Online Services Project has connected 1,000 farm families across rural and remote Australia to online services.

The project is providing invaluable information about farmers' access to and use of online services. From analysis carried out to date, it is clear that access to online services in rural areas is in many cases difficult and inferior in speed and quality of access.

Once the participants are online, they are using their service for an average of 10 hours a month compared with 6.3 hours for metropolitan users. The participants are finding e-mail and the World Wide Web to be the most useful services, followed to a far lesser extent by banking, livestock trading and online shopping.

The most commonly accessed sites on the web are those containing weather, commodity pricing and technical, production-type information.

The Farmwide Internet site ([www.farmwide.com.au](http://www.farmwide.com.au)) includes links to over 700 sites of interest and includes Eureka, a commodity pricing service updated daily, chat sessions with a trainer and guests each week, discussion groups and subscriber e-mail lists, quick downloads of free software on the web and feedback functions for the participants to publish their thoughts on useful software and web sites of interest.

## New Telecommunications Network To Deliver Quality Services To Rural Australia

Telstra has announced it will be upgrading its AMPS mobile telephone network to a new technology known as CDMA.

"This announcement creates certainty for rural people on the issue of mobile phone coverage to regional, rural and remote areas," said Senator Troeth, Parliamentary Secretary to the Minister for Primary Industry and Energy.

"Telstra has provided a solution to the phase out of the AMPS network which was decided by Mr Beazley and the Labor Party back in 1992. CDMA is one of the newest mobile phone standards available and is widely used in South Korea as well as in the United States and Japan.

"It is digital technology similar to the GSM system already in operation in

Australia and provides a similar range to that of analogue technology or the AMPS system. The CDMA network, like the digital network, will provide short messaging and paging services to the consumer.

"With the phasing in of the CDMA system country people will not have to rely on two different handsets to communicate as a dual-mode handset will be able to pick up both analogue and digital services," Senator Troeth said.

Telstra will begin constructing its CDMA network as soon as possible, with a view to ensuring that it is in place in those areas where the AMPS network is required to close down at midnight on 31 December 1999.

"The Government previously secured an in-principle commitment from the carriers that AMPS may continue to operate beyond 2000 in some limited parts of regional Australia where no reasonably equivalent coverage would be available for alternative technologies," Senator Troeth said.

"In these areas it is likely that the AMPS coverage will continue beyond 2000 until such time as it is replaced by CDMA coverage.

"The Coalition Government welcomes any decision by Telstra that ensures the delivery of quality services to all Australians."

## Packing Shed Software

One company that produces packing shed software is SMART Software Australia Pty Ltd. They are one of the leaders in the field of Horticultural, Agricultural and Packing Shed Software.

The Company was established 10 years ago and produced a DOS Payroll Program. SMA now has a suite of 14 products, with various levels of integration. The company's goal is to develop a suite of integrated solutions for agriculture.

One of their software programs is called "SMARt Packhouse", essentially a professional packing shed management tool for any packing enterprise, from oranges and apples to avocados.

From the time a delivery is received, SMARt Packhouse will track that delivery via a unique docket number to the packed process through to sales. Your fruit is also able to be tracked by pallet numbers, so you will never lose track of any packouts that you do.

If you currently manage your shed with a manual recording system, you will be astounded at the very professional way SMARt Packhouse produces Grower Returns and Statements with the click of a mouse.

SMARt Software is also committed to working with individual packhouses to integrate SMARt Packhouse with electronic grading equipment as well as the utilisation of scanning devices.

Utilising open architecture design, SMARt Packhouse can be customised to user specifications either by the company or they will assist those with the relevant in-house expertise to do their own customisation. That means your 'special' systems can be catered for without having to share your secrets with the world.

Features of SMARt Packhouse are as follows:

- Commodity Receival Tracking
- Pallet Tracking
- Multiple packed records per delivery
- On screen Pack Out information
- Sales Recording
- Balance of Stock on hand

- Handles multiple sales from multiple growers from multiple pack runs
- Automatic Industry Levy calculations
- Automatic Waste Levy calculation
- User definable setup
- Analyse Sales by Market, Agent, Commodity or Grower
- Generation and printing of bar codes labels

All of SMARt Software products are covered by a 1800 support number for 12 months. For further information, contact SMA Software of Australia, 42 Lemon Avenue, MILDURA VIC 3500 Ph: 03 5022 1823 Fax: 03 5021 1608.



### BATSON FAMILY AVOCADO NURSERY



#### ANVAS accredited Avocado Trees

Varieties Include: Fuerte, Hass, Sharwil, Wurtz, Pinkerton and Reed

Merv and Pat Batson have been growing avocados on their farm on the Sunshine Coast for 25 years and have operated the avocado nursery on a commercial basis for 20 years. They have a wealth of experience and knowledge and are more than happy to spend the time needed with customers to pass on this knowledge.

Place your order now! Phone/Fax 07 544 21657

P.O. Box 105, Woombye Qld 4559

Or call at the nursery at Schulz Road Woombye near the Big Pineapple



## Industry Manager's say ....

By Wayne Prowse



Two weeks ago I had the pleasure of attending the Brisbane show and spending about an hour on the Avocado stand with Henry Kwaczynski.

It was a great experience to not only speak to dozens of consumers but also to appreciate the valuable contribution made to the promotion of avocados by growers who participate in planning and managing the stand. A great effort indeed that will be repeated I know in Adelaide in early September and in Perth later in the month.

Thanks go to all growers giving their time to promote Australian Avocados.

We launched our new point of sale material at the Brisbane show and from all accounts it was well received. Supplies have now been forwarded to all states and a sample is included in this edition.

### Communications

As many growers are aware my role is as much a communications role as it is a marketing program management role. Communications includes:

- the publication of this article;
- meeting face to face with growers at regional meetings where arranged;
- reporting to the AAGF at formal meetings and AGM or conference;
- communicating on a weekly basis with your President and Executive Officer; and
- coordination of the industry marketing forum who provides direction and guidance for the pulling together of the marketing plan.

Effective communication needs to be two ways.

Through the AAGF and the marketing forum we have a number of people communicating issues that can and are being addressed in marketing programs. We always welcome opportunities to hear from growers directly. Even the marketing programs are essentially a communication program—a program of communicating to consumers and retailers information about avocados that is relevant to their needs with a favourable result for the avocado industry.

### Changes at the top in AHC

Two significant changes have occurred in the Australian Horticultural Corporation.

Mr Mark Napper has been appointed Managing Director. Mark has been Acting Managing Director since the departure of John Baker in March this year. Prior to this Mr Napper was Corporate Services Manager at the AHC responsible for the financial management and accountability to government.

Mr Bob Seldon has been appointed chairman of the AHC. Mr Seldon has a wide experience in senior management holding directorships of a number of companies. He is also chairman of Windsor Farm Foods (Mushrooms), Balfours SA (Flour and pastries) and of Seldon and Assoc (Merchant Bankers). His appointment as chairman of the AHC brings valuable management experience at a time of significant change for the corporation.

### Marketing plan update

#### Public Relations is a planned program

Whenever you read an article about Australian avocados, chances are that it is an outcome of a planned activity. Last month Jo Anne Calabria from "fctv" filmed a cooking segment in an avocado orchard on the Sunshine Coast and gave avocados an excellent plug on TV. The relationship with the food media is important and allows us to take advantage of such opportunities.

A similar TV segment for Better Homes and Gardens TV filmed at Mount Tamborine went to air 4 August and we will receive a double benefit when the TV stories are followed up with segments in the magazines of the organisations.

During the next 12 month we are planning 6 press releases that will all be quite different and appealing to food writers whilst focussing on different products and angles of avocados. The plan at this stage is:

- August** Hass – the dark fruit with the Golden Heart.
- September** Go Avocados with Vikki Leng – recipe features.
- October** From Tree Tops to Table Tops – a perspective from a

grower and a chef on how to prepare avocados.

**February** Greenskins – from Shepards to Wurtz.

**March** Let's talk avocados – from nutritionist's perspective with Catherine Saxleby.

**April** Variety – the spice of life – focus on avocado varieties.

Being aware that it takes several weeks for media to take up stories it is important to be slightly ahead of time. In some areas, particularly Western Australia, the timing will be changed to suit the local conditions.

### Merchandisers tell it like it is

The AHC's team of merchandisers visited some 600 high delivery retail stores spreading a quality message about avocados to produce managers in August. The team has worked together for over 12 months and has built a strong relationship with their retail contacts, so coming in with avocados is not a one off, rather a product variation in their monthly visits.

Last week I participated in a merchandisers' debrief to gather first hand their perceptions of the trade in relation to avocados. The news was varied.

The interesting outcome was that no individual chain excelled in all states. In Victoria some chains were doing a poor job supplying retail outlets with avocados that were significantly over ripe leading to high wastage whilst the quality in other stores was excellent.

The outcome of this program was discussed at a Quality Program workshop in Nambour on 25 August. A position on the progress of the industry quality plan will be announced shortly. There is no doubt that quality overall has improved; however the pockets of poor quality are not good for the industry.

The merchandising program is an opportunity to communicate directly with retail produce managers who manage the last point in the chain before consumers. They can make a real impact on the quality of avocados that reaches consumers.

### New Point of Sale – Consumer leaflets (include pic)

The new consumer leaflets and point of sale posters have been printed. The layout



is similar to last year though we have included some more information about the season that our research showed was lacking in consumer and retailer knowledge.

We commissioned home economist, Vikki Leng, to prepare some great new recipes to encourage consumers to try using Australian avocados. The recipes are all very healthy, approved by the heart foundation and not difficult for most consumers to prepare. Even our "hero" cover shot may look stylish though is quite simply avocado on toast with cheese, capicum and a touch of cracked pepper—simple and delicious.

The consumer information on storage, preparation and nutrition is again included and helps fill a gap in consumer knowledge about avocados.

There are 300,000 leaflets printed for distribution to independents, Coles and Woolworths retail outlets and also in-store demonstrators to give directly to consumers. Anyone who wishes to obtain supplies can contact Wayne Prowse (fax 02 9356 3661).

## Your Levy at Work July - September 1998

### Point of Sale material

- New Recipe leaflets printed and distribution commenced.
- New retail Posters printed for distribution.
- 3 super large posters printed for use at Brisbane, Adelaide and Perth Shows.

### In-Store Demonstrations

Avocado Industry in-store demonstrations conducted in August and September focussed on Hass varieties. The program continues to November.

NSW	36 x 4 hrs
VIC	28 x 4 hrs
QLD	32 x 4 hrs
SA	20 x 4 hrs (Started in September)
WA	15 x 4 hrs (Most in October/ November)

In addition there were 450 x 4 hr demonstrations funded jointly by your levy and Woolworths across all states. This included avocados and a prepared salad pack.

### Merchandising

Merchandisers visited 590 stores across Australia during August and reported back in a teleconference 20 August. There were 8 merchandisers working for the avocado program:

Sydney	2	Joe and Margaret
Brisbane	2	Greg and Chris
Melbourne	2	Chris and Catherine
Adelaide	1	Wendy
Perth	1	Gillian

The next merchandising program is scheduled for March.

### Public Relations

- Hass – the golden heart release issued-July.

- Avocado Recipes with Vikki Leng - September.
- Nutritionist - Sally James - represented Australian Avocados at the Australian Cardiologists' Conference in Perth - 1-5 August to promote the health benefits to one of our most important opinion leader groups.

### Advertorials

*Bounty Magazines* - new magazine out for distribution to Maternity Hospitals - on going.

*HeartHealth magazine* - new free editorial layout with recipes in addition to our advertorial commitment. Takes us to a double page spread in the magazine with an annual distribution of 130,000 health conscious people.

### Advertising

Our "winter" theme advertisement has been printed in:

- Cosmopolitan** - July and September issues.
- New Woman** - August issue.
- Who Weekly** - 13/9, 4/10 and 11/10
- Better Homes & Gardens** - August Issue.

## Nutrition Recommendations For People With Diabetes Mellitus

By Ann M. Coulston, MS, RD, Senior Research Dietitian, Stanford University Medical Center Member

In the May 1994 issues of *Diabetes Care* and the *Journal of the American Dietetic Association*, a panel of doctors and dietitians who treat people with diabetes published "Nutrition Recommendations and Principles for People with Diabetes Mellitus".

Based on current medical research, the new guidelines focus on nutrient and food intake to meet the patient's blood glucose and blood lipid goals. Since diabetes is a condition that can occur any time throughout the life cycle, from very young children to the oldest adult, nutrition guidelines need to be flexible to meet the lifestyle and food preferences of a variety of individuals.

After reviewing the literature, the committee decided not to prescribe recommendations for the amount of carbohydrate, fat and protein. To meet protein requirements for growth and development in children and to maintain muscle tissue in adults, 10-20% of calories from protein are needed. The remaining 80-90% of calories are divided between carbohydrate and fat.

We know that saturated fat, which is found primarily in animal fats, contributes to heart disease when eaten in excess. However, the type of fat primarily found in AVOCADOS, called monounsaturated

fat, does not contribute to risk factors for heart disease in patients with diabetes.

Since people with diabetes, especially adults, may notice an increase in heart disease risk factors when diet plans are low in fat and high in carbohydrate content, choosing foods higher in the type of fat NOT associated with heart disease is a good solution.

**In support of these research findings and based on the new guidelines, authorities in America have developed several recipes that incorporate AVOCADOS into meal plans for people with diabetes.**

# Australian Round-up



## Sunshine Coast

SCAGA's annual pilgrimage to the 'smoke' for the 1998 Brisbane Exhibition (EKKA) has once again come and gone and as for previous years has introduced new food for thought for the avocado industry. Eighteen family groups from SCAGA, supported by four groups from the Mount Tamborine area carried the product promotion banner proudly on behalf of all Queensland growers.

Feedback from the groups suggests that there is growing interest in all aspects of avocado consumption from flavour to health and seasonal variations. Unfortunately some of the myths regarding fat content and its impact on health still persist. Some of the more common questions centred on buyer preferences for green skins. Interestingly, more and more people are rejecting Hass because it is very difficult to be sure that the piece of fruit being bought is fresh and edible whereas a visual inspection of 'greenskins' can give a pretty good indication as to the quality of the fruit.

Our EKKA display drew attention to the seasonal availability of the various cultivars and many show-goers were surprised to learn that there was such a variety of fruit to be found in Australia. Sharwil received a lot of favourable comment for its flavour as too, did the Reed and Wurtz. Many visitors expressed disappointment that Reed avocados were not readily available in Queensland. Overall it was clear that the consumer is steadily becoming more discerning in his/her selection of fruit and that growers must adopt 'best practice' in all aspects of production and post harvest handling.

One particular concern was the extent of apparent chill damage that is being experienced by buyers at their local outlet. Anecdotal evidence suggests that there are green grocers and chain stores that conscientiously ensure the 'mean' temperature of their coolrooms by setting a minimum temperature a little lower than what is required to compensate for frequent door opening and closing. However, overnight these temperatures drop to below that which is a safe minimum for avocados and chill damage occurs. Stem end rot may account for some of this damage but

descriptions of the browning of fruit flesh seem largely to be more consistent with chill damage.

There is another issue that is worthy of further thought and that is the matter of fruit size. It was interesting to note that when questioned, consumers who had purchased and tried small (32 or less) fruit unanimously agreed that it was tastier, good value for money and less waste due to fruit damage. However, the resistance to small fruit was based on a number of false assumptions; the fruit was too 'green' (immature), it was all seed and skin or it would be stringy and tasteless.

It is up to the grower to promote the virtues of small fruit and don't be surprised if it is to be found to be well worth the trouble.

When asked about the advantages of giving kids a whole avocado in their lunch box a teacher pointed out that it would require a knife to open the fruit and that knives of any type were now banned in most schools. This stimulated the idea for a promotion based on the parents running a knife around the fruit before putting it in the lunch box and then the 'kids' could 'Unscrew an Avocado for Lunch'.

Whatever the approach, there is ample scope for the promotion of small fruit which will always be a fact of life in an industry which has yet to develop a processing alternative for small and other sub-standard fruit.

On the eve of the launching of AVOMAN and AVOINFO, it is appropriate that SCAGA extend it's congratulations to the AVOMAN Team on the completion of this huge project. It is also appropriate to remind growers that formal training in the use of AVOMAN will only be offered during the initial release period and those who decide to purchase the program beyond that time will be on their own in terms of training. Growers would be well advised to review the effect of using AVOMAN in their management strategy, and decide quickly whether or not to adopt this extensive, comprehensive and dynamic program as the basis of future operations.

Wednesday 9 September will see Rob Battaglia (QDPI) at the Glasshouse Mountains property of Bob and Shirley Brown for the conduct of his "Orchards Only" Chemicals Spraying Workshop. Growers who are members of an LPA can expect to receive a personal invitation to participate. SCAGA will be including its

September QGM as part of the day's activities. Growers are also reminded that under the just released findings on Endosulfan use, growers must become Farmsafe Accredited in order to purchase the chemical for use on their orchards. Certification may only be obtained by completing a fully accredited training course. Subject to grower expressions of interest, a course specifically targeted at orchard use may be arranged on the Sunshine Coast. A large percentage of the cost of this course is recoverable under the Rural Assistance Scheme.

Finally, the news all Southeast Queensland growers have been awaiting. The Canopy Management and Tree Health Workshop will take place on Wednesday 7 October 1998, commencing at 8.30 a.m. at the Big Pineapple, Nambour Connection Road, NAMBOUR. There will be a buffet lunch at the Big Pineapple. In the afternoon, growers will be taken by bus to private orchards for the practical sessions of the day. The all-inclusive cost is \$25 (\$10 for SCAGA members). LPA co-ordinators are requested to confirm their travel arrangements with the Secretary SCAGA no later than Monday 22 September 1998.

## West Moreton

Now that spring is almost upon us I hope I can say that this has been a warm moist winter with few frosts. Thankfully we have not had the rainfall recorded in parts of NSW and south Queensland though some run off would be appreciated coming into summer. Flower development is on schedule and with no frost damage (to date) and warm conditions most growers will be looking for a good fruit set.

A spray application workshop is being held on 4 September and will, I'm sure, provoke some interesting discussions. The timing will be excellent, being just prior to the spray season and following a harvest season when many growers have reported unacceptably high levels of Fruit Spotting Bug damage.

Harvesting appears to be progressing normally with most growers satisfied with price levels although green skin prices were rather poor at the end of the Fuerte season. I think there is a clear message there for the future.

Small fruit size has been a concern in many Hass crops although there are crops around with excellent size and crop loads.

I believe the level of management, particularly of irrigation, has been a critical factor contributing to the variation in crop performance.

Looking forward to a productive season now that "el Nino" is behind us (for a year or two at least we hope).



The horticultural industry in general and the avocado industry in particular received a boost with the release of the Endosulfan Review report on 3 August. In contrast to the Draft Review, which, if implemented, would

have been disastrous for the industry, the final review provided very favourable outcomes. e.g. the restriction of 2 sprays/crop/season no longer applies to orchard crops. Spray diaries must be kept and will be subject to audit by inspectors.

Much has been said about chemical handling accreditation in recent months. This review (by 30 June 1999) restricts the purchase and use of Endosulfan to persons so accredited.

The NRA has an ongoing program of review of all farm chemicals. This restriction on purchase and use will, in time, extend to cover all the chemicals we use in our industry.

Would all growers not holding current accreditation please contact their local Branch of the NSW Avocado Association (NSWAA) to register their need for this training. Details of who to contact in your area were included in the June mail-out.

The survey, on this subject, sent out in June met poor response. The NSWAA needs your input if it is to help you on any issue.

We have however gained several new members and membership now stands at 63. Welcome to all new members.

Following the success of the Stuarts Point field day and the previous field day at Halfway Creek, the NSWAA Committee will promote one major field day each year alternating between the southern and northern regions. Furthermore, there will be no Christmas Dinner this year. Instead, a dinner will be arranged following the next field day, which will be held by the Richmond, Tweed and Brunswick Branches in April/May 1999.

The NSW Government review of the State's water and how it is used, while a welcome initiative in many respects, has facets that are of real concern to growers who irrigate. Growers who irrigate from dams on dry watercourses could be particularly disadvantaged with the proposed restrictions on low river flow pumping.

During such periods river irrigators will have to cease pumping and so will those irrigating from hillside dams. If put into practice these measures will severely affect our industry.

We have seen that lobbying and the sending submissions arguing our position on issues that affect the industry does help our position—witness the Endosulfan Review. The good outcome achieved was due without doubt to the flood of public protest that descended upon the NRA. The NRA on that issue received over 150 public submissions.

Now it is time for the power of the few to pen reasonable argument to help our industry on this very important issue of water and our ability to irrigate our trees to good economic effect.

I urge all growers who are directly or indirectly affected by the proposed changes taking place to lobby their local member.

If we work together we can make a difference.

# CHEMJET® Tree Injectors

## Ideal for pesticides fungicides & fertilisers

The aim of tree injection is to use the trees natural transport system to distribute pesticides, fungicides and fertilisers to the area where they are most effective. For example; in order to effectively fight root rot in avocado trees, the phosphonata fungicide used needs to reach the roots.

The Chemjet® tree injector allows the tree to take up the fluid in the natural sap flow and carry it to the affected areas. This is done under gentle pressure applied through a spring.

Injection under too great a pressure can lead to cell damage which may impair the sap flow thus preventing the chemical from reaching the affected areas. High pressure injection may also be counter productive as the chemical can be forced into the tree when the tree is not ready to absorb it. The tree will only take up fluid during the respiration stage of its metabolic process.

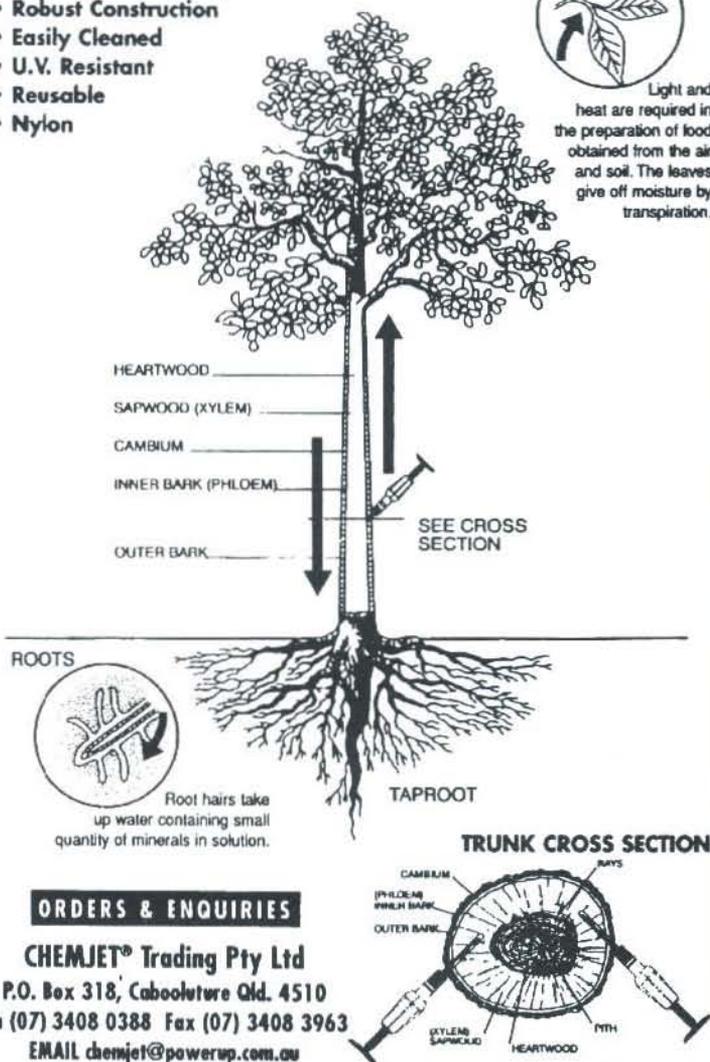
## For cost Efficient Injections

- 1-Phosphorous Acid 2-Trace Elements 3-Pesticides  
4-Fungicides 5-Fertilisers

- Tapered Screw Nozzle
- Non-corrosive spring
- Robust Construction
- Easily Cleaned
- U.V. Resistant
- Reusable
- Nylon



Light and heat are required in the preparation of food obtained from the air and soil. The leaves give off moisture by transpiration.



### ORDERS & ENQUIRIES

CHEMJET® Trading Pty Ltd

P.O. Box 318, Caboolture Qld. 4510

Ph (07) 3408 0388 Fax (07) 3408 3963

EMAIL chemjet@powerup.com.au

or contact your agricultural supplier: Primac, Ag-tec, Co-op, Savere & Sons, Agrichem & Iama.

**RECOMMENDED  
COMMERCIAL  
VARIETIES**

**HASS  
SHEPARD  
PINKERTON  
GWEN**

Other varieties  
grown to order



# BIRDWOOD NURSERY

Established 1978

Export Approved to all  
Australian States and  
Overseas



Member

## RECOMMENDED ROOTSTOCK

### Seedling

- Proven Australian  
West Indian/  
Guatemalan Velvick  
Group Hybrids -  
many exclusive to  
Birdwood Nursery

- Vutano

### Clonal

- Selected Australian  
West Indian/  
Guatemalan Hybrids
- Velvick

**ALL TREES GROWN IN  
FULL SUN UNDER STRICT  
HYGIENE**

**Tree Guards:** Generally not  
required due to our robust tree  
grown in full sun.

**Tree Establishment:** Our well  
developed, guaranteed quality  
tree with our proven planting  
and establishment guide results  
in earliest possible production  
24-30 months from planting

**Plant Health:** Participation in  
two National Accredited  
Schemes to regularly monitor  
health status of all fruit tree  
types grown.

### Additional Health

**Certification:** As part of QA  
ISO9002 implementation, we  
now supply a current Avocado  
plant health certificate with  
every order. Regular monthly  
root sample testing by QDPI  
laboratory over and above  
normal ANVAS tests is  
Birdwood's commitment to  
supply you with the cleanest  
trees possible.



**BIRDWOOD'S GUARANTEED  
"AVOCADO NURSERY TREE  
STANDARD"**

**Tree Appearance:** Dark  
green, healthy appearance, well  
leafed, straight stem. Tip  
pruned in nursery to produce  
multi leaders to promote earlier  
fruiting.

### Tree Height:

Min. - 650mm  
Max. - 1200mm

### Trunk Diameter:

Ground level - min. 12mm  
- max. 25mm

### Graft Union:

Smooth and totally calloused  
Graft height - min. 200mm  
- max. 450mm

### Root System:

Planter bag depth min. 300mm  
Well developed with white tips

**Rootstock:** Every tree marked  
with individual rootstock code  
since 1980 to enable superior  
productive rootstocks to be  
identified in your locality and  
re-ordered.

**ORDER NOW - HASS AND SHEPARD FOR AUTUMN TO SPRING PLANTING**



Member

Phone Sales Manager Miles Porteous or Peter & Sandra Young  
71-83 Blackall Range Road, Nambour Qld 4560 Australia  
Phone: (07) 5442 1611 Fax: (07) 5442 1053 Mobile: 018 715 994  
Email: birdwood@peg.apc.org



**1997 Qld Nursery Industry Association 'Nurseryman of the Year' Award Recipient**



## The Speech By Chairman Of Queensland Horticulture Institute, Carl Hoffmann, At The Launch Of AVOMAN And AVOINFO On 25 August 1998

It gives me great pleasure today to announce that, after six years of research and development, the avocado management program known as AVOMAN is now ready for release on the Australian market. It is set to lead the rapidly growing Australian avocado industry into the new millennium.

This sophisticated computerised avocado management system puts the practical results of high quality research over a wide area, at the fingertips of every member of the avocado industry.

Let me take a moment to outline how the AVOMAN project came about. In 1992 technology transfer, or put simply, getting knowledge out to the people who could benefit from it, was identified as a common deficiency. Existing methods and technologies were either unknown to many growers or were not always being appropriately applied. The average productivity and fruit quality from Australian orchards was known to be well below its potential.

The aim was to provide every member of industry with access to the most up to date agronomic knowledge available. And so the concept for the decision support system AVOMAN was born.

A wide net was cast. The project team amassed a vast collection of avocado related references from around the world and also worked closely with their colleagues and growers in other states of Australia through the Regional Productivity Groups, which were set up as part of the project.

This information then had to be focused and brought together to provide readily accessible agronomic and management recommendations customised for a variety of growing areas.

As part of the project, a second piece of software, AVOINFO was developed. It contains more than 4000 avocado related references drawn from 85 years of material published around the world. It is ready for simultaneous release.

I would like to congratulate Simon Newett and his team here at the Maroochy

Research Station for their efforts. The contribution of the Horticultural Research and Development Corporation, the Australian Avocado Growers' Federation, and the Department of Agriculture in both New South Wales and Western Australia should also be acknowledged.

AVOMAN demonstrates the mission of the Queensland Horticulture Institute as the key provider of innovative research services and support for the development of horticulture in Queensland.

It will have significant positive implications for the avocado industry around Australia and has also attracted interest from around the world.

I am particularly pleased by the sharing of information it represents. We are not locking up our secrets but making research readily accessible and at affordable cost. This meets the Queensland Horticulture Institute's aim of improving the delivery of research and development services to the rural industries.

While projects such as AVOMAN are taking the horticulture industry into the age of technology and putting cutting edge research and development at the fingertips of any grower with a computer, the structure of the industry in this State remains a concern.

We have a lot of small, and sometimes marginal, farms. We need only look around us in this area alone, to see that. It is not the way of the future. Values are changing. The urban drift continues.

More and more people are moving off the land their family has farmed for generations and there are few newcomers being encouraged to consider farming as a career option.

Just last weekend, the Weekend Australian reviewed Jobs of the Future and I regret to say that farmers were not among them. Farming was listed under the headline of "Disappearing Jobs" and it was stated that there are prospects for only modest employment growth.

We can't go on like this. The Board of the Queensland Horticulture Institute is charged with looking ahead and at this

time, primary industry appears doomed unless we move now to reverse that trend.

This business is far too important to the State's economy for it to be allowed to become fragmented.

Anyone can grow trees in their backyard, but rather than the current trend of adding small farms, we need to become stronger and more efficient.

And the QHI has to tailor its programs to that reality.

We must look to a structural change in the social perception of farming or we are going to see more and more small growers becoming poorer and poorer. Horticulture needs to apply the same amount of forward planning and strategic development to its industry as does, for example, the car manufacturers.

It is difficult to imagine a motor company without a new prototype under wraps in its planning division and yet our horticultural industries are left to grow in a higgledy piggledy fashion. We need to take the same approach as other big business and plan now to safeguard our future—to restructure and make our long-term a development project. It is about perceptions and telling the community that horticulture is a modern, high technology industry that demands a variety of high level skills.

Projects such as AVOMAN go a long way to demonstrating to the community that modern day horticulture is as different from its ancestors as the computer is from the slate.

It is in this arena that our secure future lies, so it now gives me great pleasure to officially launch the AVOMAN program and its sister software, AVOINFO.

**All AVOMAN and other technical articles and reports published in this magazine are sponsored by the HRDC and the avocado industry.**



## Setting Your Own Nutrient Rates A New Feature In AVOMAN For Experienced Growers

A new feature in AVOMAN has been designed for experienced growers. For the three elements that generally require annual maintenance applications (nitrogen, potassium and boron) growers who know their orchards well have the opportunity to set their own annual rates.

The "Your Rates" facility, which is launched from the operations page, presents the results of the latest leaf analysis, the

optimum leaf levels, the total rate you have applied in the last 12 months and the standard AVOMAN base rate together for comparison.

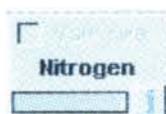
With this information to consider you can then make a valued judgment and enter your own annual rate. The last column shows how much this rate varies from the amount applied during the previous year.

### Choose your own base rate for the N, K or B recommendations

Block : Sample 1		Soil texture : Clay				
Variety : Hass		Last leaf analysis : 8/04/1998				
Element	Your last valid leaf element level	Optimum leaf level	Element applied in the 12 months prior to the last leaf analysis (grams / sq.m)	AVOMAN standard base rate (grams / sq.m)	Adjust your rate here (grams / sq.m)	Percent change on last rate
Nitrogen	2.5	Fuerte/Sharwil : 1.6 - 2.0 % Other : 2.2 - 2.6 %	11.37	14.0	12.5	9 %
Potassium	1.2	0.75 - 2.0 %	7.93	10.0	12	51.2 %
Boron	29.0	40 - 60 ppm	0.54	Sand = 0.68 Sandy loam = 0.91 Loam = 1.13 Clay loam = 1.36 Clay = 1.63	1.1	103 %
<input type="checkbox"/> OK <input checked="" type="checkbox"/> Cancel <input type="checkbox"/> Help						

Having set your own rate, once back on the operations page you can then decide whether to follow the AVOMAN rate or use your

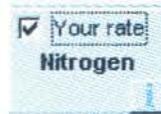
own. You can compare the two rates (AVOMAN's and your's) in the grid by clicking the "Your rate" check box on the nutrient panel.



Nutrient panel without a "your rate" set.



Nutrient panel with a "your rate" set, but not selected.



Nutrient panel with a "your rate" set and selected.

Having set your own rate and decided to use it you have made a conscious decision to bypass the factors such as leaf and soil nutrient level, root rot status, crop load, soil texture and root stock that AVOMAN will usually take into account to calculate the rate.

For this reason it is not appropriate to give a recommendation rating. AVOMAN selects timing for nutrient applications depending on a number of relevant factors for each element. Most of this logic will still apply even if you choose to use your own rate.



## 1998 AVOMAN Software Training Schedule And RPG Details

SESSION #	DISTRICT	ADDRESS	DATES	TIMES
1	ALSTONVILLE	Wollongbar Research Station, Bruxner Highway, Wollongbar	Mon 31 Aug Tue 1 Sep	11 a.m.-5 p.m. 9 a.m.-3 p.m.
2	COFFS HARBOUR	Jordan Pavilion, Show Grounds, Pacific Highway, Coffs Harbour	Wed 2 Sep Thur 3 Sep	9 a.m.-3 p.m. 9 a.m.-3 p.m.
3	MAREEBA	QHI, DPI, Peters St, Mareeba	Sat 31 Oct Sun 1 Nov	10 a.m.-4 p.m. 10 a.m.-4 p.m.
4	GATTON	Computer Lab, University of Queensland, Gatton Campus	Sun 20 Sep Mon 21 Sep	11 a.m.-5 p.m. 9 a.m.-3 p.m.
5	NAMBOUR/GLASSHOUSE	Library, Sunshine Coast University College, Sippy Downs	Tue 22 Sep Wed 23 Sep	10 a.m.-4 p.m. 10 a.m.-4 p.m.
6	NAMBOUR/GLASSHOUSE	Library, Sunshine Coast University College, Sippy Downs	Thu 24 Sep Fri 25 Sep	10 a.m.-4 p.m. 10 a.m.-4 p.m.
7	BUNDABERG	University of Central Queensland	Mon 28 Sep Tue 29 Sep	11 a.m.-5 p.m. 9 a.m.-3 p.m.
8	TAMBORINE/GOLD COAST	Gold Coast Institute TAFE, Ashmore Campus	Thu 1 Oct Fri 2 Oct	11 a.m.-5 p.m. 9 a.m.-3 p.m.
9	ALSTONVILLE	Wollongbar Research Station, Bruxner Highway, Wollongbar	Mon 12 Oct Tue 13 Oct	11 a.m.-5 p.m. 9 a.m.-3 p.m.
10	COFFS HARBOUR	Jordan Pavilion, Show Grounds, Pacific Highway, Coffs Harbour	Wed 14 Oct Thu 15 Oct	9 a.m.-3 p.m. 9 a.m.-3 p.m.
11	WEST AUSTRALIA	Edith Cowan University, Bunbury	Fri 23 Oct Sat 24 Oct	12 p.m.-6 p.m. 9 a.m.-3 p.m.
12	MILDURA	Sunraysia TAFE, Benetook Ave Mildura	Wed 4 Nov Thu 5 Nov	10 a.m.-4 p.m. 9 a.m.-3 p.m.
13	BERRI/WAIKERIE	Berri TAFE	Fri 6 Nov Sat 7 Nov	10 a.m.-4 p.m. 9 a.m.-3 p.m.

Regional Productivity Group (RPG)	AVOMAN coordinator	Address	Phone	Fax	E-mail
Atherton	Irene Kernot	DPI, PO Box 1054, Mareeba, Qld 4880	07-40928555	07-40923593	KernotI@dpi.qld.gov.au
Bundaberg Childers	Chris Searle	DPI, M/S 108, Ashfield Rd, Bundaberg, Qld 4670	07-41556244	07-41556129	SearleC@dpi.qld.gov.au
Nambour Glasshouse West Moreton Tamborine Mtn	Simon Newett	DPI, PO Box 5083 SCMC, Nambour, Qld 4560	07-54412211	07-54412235	NewettS@dpi.qld.gov.au
Burringbah Alstonville	John Dirou	NSW Agric, PO Box 72, Alstonville, NSW 2477	02-66262400	02-66285209	Dirouj@agric.nsw.gov.au
Coffs Harbour Sunraysia	Greig Ireland	NSW Agric, PO Box 530, Coffs Harbour, NSW 2450	02-66519040	02-66512780	Grieg.Ireland@agric.nsw.gov.au
Perth Manjimup	Alec McCarthy	Agric WA, PO Box 1231, Bunbury, WA 6231	08-97806100	08-97806136	alecm@agric.wa.gov.au

# Progress Drives World Produce Expansion

By Bob Galinsky, courtesy of the Asia Regional Agribusiness Project/Fintrac Inc. through the Market Asia web site at: [www.marketasia.org](http://www.marketasia.org)

Because of the lessening of trade barriers and advances in production and transportation technology, more fresh produce is being traded now than at any other time in history. Several trends have been driving this expansion, including global and regional trade agreements and the expansion of the supermarket trade worldwide. At the same time, fresh-produce suppliers are being forced to deal with greater consumer concern about food safety, which has been rising along with imports. Finally, environmental, or green, issues will continue to affect consumer decisions in developed countries. Innovative, progressive suppliers will be rewarded in the market.

## Knocking Down Barriers

One major trend affecting the fresh-produce trade has been the relaxing or dismantling of trade barriers worldwide. Global trade agreements such as the General Agreement on Tariffs and Trade (GATT) and regional agreements by groups such as ASEAN have reduced tariffs and made other, non-tariff barriers subject to scientific justification. Because of these trade agreements, one can now find products such as US apples and lettuce and Chilean stone fruit and grapes for sale in markets all over the world. This writer has spent a lot of time in Indonesia, for example, and has been amazed at the penetration of Washington State apples into the smallest village. The opening of new markets creates exciting new business opportunities for suppliers. Just recently, Mexico opened its doors to US cherries. Additionally, China has allowed access to US apples and grapes, and Japan has decided to allow imports of US tomatoes. The opening of these markets will mean millions of dollars to US growers.

Of course, getting countries to abide by trade agreements like GATT is not always easy. Free trade in fresh produce is often seen as a direct assault on a country's farmers, and many countries will go to great lengths to keep out competitors. Patience and perseverance are required, and governments must work closely with private growers and exporters not only to lobby for access to foreign markets but also to provide the scientific evidence often required as a condition of entry.

## Supermarket Bulge

Another trend affecting the produce trade worldwide is the expansion and consolidation of supermarkets. Some US supermarkets, such as Wal-Mart, have expanded into Latin America and Asia. Meanwhile, European chains have been so busy buying one another that some analysts estimate that in five years 10 supermarket companies will account for 60 percent of the European market. Many European supermarkets are also expanding abroad. For example, Carrefour, a French company, is now the largest supermarket chain in Brazil. Likewise, Makro, a Dutch supermarket company, is busy growing in south-east Asia, especially in Indonesia and Thailand.

German supermarkets such as Rewe and Swiss-owned Metro have ambitious plans to build hundreds of stores in the next few years in China, Poland, the Czech Republic, Hungary, and other countries in Eastern Europe.

This expansion presents great opportunities as well as challenges to suppliers. The advantages stem from the fact that supermarkets are steady buyers and payers, usually operating on a contractual basis rather than on consignment as many wholesalers do. Because more and more people worldwide are doing their food shopping at supermarkets, selling to these large stores is a great way to increase retail sales of tropical fruit.

Supermarkets are also well positioned to increase sales of tropical items through point-of-sale materials, in-store sampling, price promotions, and fresh-cut items. Although selling directly to supermarkets has its advantages, it also poses significant challenges.

Supermarkets are extremely demanding when it comes to suppliers and often expect them to change their production schedules to meet store supply schedules, rather than the other way around. Supermarkets typically are very strict with quality specifications and often do not provide a sales outlet for second- or third-grade product.

On the up side, supermarkets will give many suppliers the opportunity to grow and expand along with them, a benefit to serious growers. Competition among suppliers is fierce, however, and supermarkets

will choose their suppliers based not only on product quality, but also on variety, convenience, consistency, and marketing assistance. Consequently, only the best suppliers should try selling to supermarkets directly; the fresh-produce trade is unforgiving, and it is not a good idea to promise anything one is not ready to deliver.

## Is It Safe?

Supermarkets are not the only ones that are unforgiving when it comes to unsuitable product: consumers who get sick from contaminated produce also are unlikely to be repeat buyers. In all major developed markets, food safety has always been a great concern among consumers, but it has become especially publicized of late. Because of recent media attention on the issue in the United States, for example, recent polls have shown that food safety ranks at the top of the consumer's fear index, ahead of plane crashes.

For the past two years, outbreaks of food poisoning in the United States linked to a parasite have been traced to Guatemalan raspberries. As a result, Guatemalan suppliers have lost millions of dollars in sales and spent millions more to upgrade their packing facilities to maintain access to the US market and regain consumer confidence.

Food-safety concerns are not confined to the United States. A 1996 *e. coli* outbreak that sickened 6,000 people in Japan and was blamed on domestic radishes caused all fresh-produce sales to plummet.

Hong Kong's consumers are reportedly wary of vegetables from China because of high pesticide residue levels.

In Europe, many supermarkets are extremely vigilant about hygiene and require their foreign suppliers to adhere to the highest sanitary standards.

Vegetable suppliers in Africa must undergo periodic audits to assure nervous European buyers that their produce is safe and wholesome.

What can one do about bad publicity related to food safety, which can cost millions of dollars in lost sales? The best response is to invest in proper handling procedures that meet or even exceed food-safety standards like HACCP. When accused of causing food-borne illnesses, growers should be able to show that their

safety procedures are impeccable and that the contaminant in question probably occurred somewhere else in the supply chain. It is also a good idea for growers' associations and governments to set up strict standards for all exporters, so that exporters with poor sanitary practices are prevented from causing health problems and ruining their country's reputation as an exporter.

### Sensitive Sellers

Another important trend in the produce business is the continuing success of food producers who demonstrate concern for consumer health, labour issues, and the environment.

The most dramatic example of this trend has been the boom in organic and natural foods. The organic-food market is growing rapidly in all of the major developed markets, especially in the United States, where supermarket chains specialising in organic foods provide effective avenues for retail distribution. Annual growth in the country's organic-food industry has approximated 20% for the past several

years and so far shows no sign of slowing. Japan, with its extremely health-conscious population, is another strong market for organic-food products.

Low-pesticide vegetables are selling extremely well in Tokyo's wholesale markets, for example, and major trading companies are increasing their imports of organic frozen vegetables. Several US-based organic certifying agencies have opened offices in Japan to certify producers of organic foods. Health foods have a long history and a wide market in Japan, and the professionalisation and accreditation of organic-food producers should only serve to bolster this industry.

In Europe, organic foods are also growing in popularity, but ethical issues lately have overshadowed health concerns. Supermarkets in the United Kingdom, for example, have come under criticism for sourcing cheap food from developing-country producers that have poor safety and labour records. European concern for worker well being accounts for the success of "fair trade" bananas in the region's northern markets. These bananas,

although higher priced than standard bananas, are certified by a non-profit foundation as coming from low-pesticide, worker-friendly producers. Fair trade bananas will be introduced in Germany, Europe's largest market, this summer.

It is clear that the future presents many challenges as well as opportunities for produce suppliers worldwide. Freer trade will bring more choices but also fiercer competition.

The expansion of supermarkets offers a great opportunity to increase distribution and consumer awareness of a variety of products. Still, it challenges suppliers to increase their level of professionalism and reliability or be left behind. Similarly, consumer concerns about food safety, environmental stewardship, and labour issues can be viewed as either potential threats or legitimate demands that should be met in the marketplace.

The most successful suppliers of tomorrow will be those who recognise, and respond to, the opportunities offered by these trends, and who rise to the challenge of meeting them head-on.

## Cruise the Avocado Highway

*An extract from the California Avocado Commission's Internet web site*

The 1997-98 California avocado crop, expected to yield 320 million pounds of fruit, will soon be on its way to retail locations across the US, much of it via the newly named 'Avocado Highway'. The Avocado

Highway is a stretch of Interstate Highway 15 where a major percentage of California's avocado crop is grown. The Highway was recently named by a California State Assembly Resolution.

"Popular California avocados will be on their way to retail locations across the US, with a large portion of the crop beginning its journey along the newly named 'Avocado Highway,' by mid-December," said Bob Bednar, chairman of the board for the California Avocado Commission at the naming of the highway.

California avocados are available throughout the year for use in a variety of holiday and everyday dishes, including Super Bowl dips, Cinco de Mayo guacamole, and summer salads and sandwiches.

"The more than 22-mile stretch of Interstate 15 between San Diego and Riverside counties, renamed the 'Avocado Highway', houses nearly 30,000 acres of avocado groves, contributing greatly to the \$1 billion California avocado industry," said Bednar.

An estimated 140 million pounds of the fruit are expected to be produced this year in San Diego County alone. As the leading growing area for California avocados, San Diego County is also known as the nation's Avocado Capital, and Riverside County, the third largest growing region of the state's avocado crop, is projected to yield nearly 40 million pounds of avocados.

### MOUNTAIN VIEWS NURSERY PTY. LTD.

A.C.N. 010 647 784



**SMALL OR LARGE  
ORDERS  
CATERED FOR.**

*One of the largest  
wholesale growers and  
suppliers of  
container grown Fruit  
& Nut trees in Australia.  
Exporting worldwide.*



**COMPETITIVE  
PRICES. QUALITY  
ASSURED.**

**SPECIALISING IN:** Citrus, Stonefruit, Pecan Nut, Macadamia Nut, Avocado, Persimmon and Mango.

**Also offering a good range of exotic fruit trees.**

Free wholesale price list available upon request.

**45 PAVILION STREET, POMONA, QLD. 4568**

**PHONE SUE DAVIS: (07) 5485 1375, FAX: (07) 5485 1377**

**Trading Hours: Monday to Friday 8.30am to 4.00pm**

NURSERY INSPECTION WELCOME. PLEASE PHONE FOR MUTUALLY CONVENIENT APPOINTMENT.

## Fruit Spotting Bug Research

Fruit Spotting Bug research is well underway with the scientists involved now issuing a report each three months.

The "Spotting Bug Progress Reports" were developed to facilitate the flow of information. At this stage, the reports are disseminated to 12 different organisations, many of which reproduce the report in their own industry newsletters. A number of consultants and well over 70 individual growers also receive the report. So far we have received plenty of great feedback—please keep it coming!

Talking Avocados will endeavour to reproduce these reports as they become available so that all avocados growers will have the opportunity of knowing what progress is being made.

What follows, is the third report on spotting bug. It sums up where the research is at present and what the researchers will be tackling in the near future.

### Who is on the "Spotting Bug Team"?

#### Maroochy Research Station (QDPI)

Geoff Waite, Principal Entomologist  
Shaun Hood, Project Entomologist  
Russell Parker, District Experimentalist

#### Mareeba Research Station (QDPI)

Harry Fay, Principal Entomologist  
Stefano DeFaveri, District Experimentalist

#### Tropical Fruit Research Station (NSW Dept. Agric.)

Gus Campbell, Entomologist  
Craig Maddox, Technical Assistant

### Guess what? Spotting bugs are already on the move!

It's official, spotting bugs are already on the move! Populations are building-up on ornamentals such as Mock Orange and early fruits like Mulberry. They are also probably making the most of lots of other suitable hosts in the native scrub surrounding your orchards.

Since the beginning of the year we have been monitoring the egg production of both bug species in an outside insectary at Maroochy Research Station.

Both species produced an average of about two eggs per day during the warmer summer months (i.e. February/March) with some bugs producing as many as nine

eggs in a single day! During the cooler winter months (i.e. May, June and July) the bugs were occasionally found mating, but they laid very few eggs. In the third week of August, egg production started to slowly increase.

So what triggers egg production? Is it temperature, humidity, day length or a combination of all of these? Experiments will continue to attempt to identify what triggers renewed activity in spring and the shutdown in winter.

### What beneficials help control spotting bugs?

One of the most common questions asked by growers would have to be: 'What are the natural enemies of fruits potting bugs?' In this and later issues, we will talk about the potential of some of the more common biological control agents that might be found in your orchard. In this issue, Shaun Hood relates his experience with ants as predators of the banana-spotting bug in cashew plantations.

In the sub-tropics and tropics ants are considered important predators of many insect pests. While working on cashew I observed a number of different ants capturing many of the major insect pests, including banana spotting bug. As it turned out, two ant species dominated my field-site in the Northern Territory. The red meat ant (*Iridomyrmex sanguineus*) was most abundant in the younger blocks where the tree canopies had not yet joined. This was probably because ground-nesting ants require relatively high nest temperatures to maintain a high rate of worker production.

In the older, shaded parts of the orchard where the tree canopies had joined, the green tree ant (*Oecophylla smaragdina*) was the most abundant species. The success of the green tree ant as an efficient predator may well be attributed to its ability to construct nests amongst the leaves on the tree. Green tree ants typically establish territories that can be anywhere up to 1500 m<sup>2</sup> in area. It has been demonstrated that the green tree ant was capable of significantly reducing infestations of the four major insect pests in cashew, one of which was the spotting bug. Trees with more ants produced higher quality nuts than trees with fewer ants.

Because green tree ants have the ability to prey on a large range of arthropod pests, they have been identified as a good

biological control agent in cashew. Unfortunately there are a number of side effects that should be considered. One of the main potential problems with ants is that they can tend other pests like scales and aphids for the honeydew these produce. In return the ants protect these pests by interfering with or preying on their natural enemies. At my field site, both the red meat ant and green tree ant tended the cotton aphid (*Aphis gossypii*) which is a major pest of cashew.

Another problem with ants is that they are extremely susceptible to insecticide applications. At my field site green tree ants were relatively abundant on a non-sprayed block, but they were absent in the sprayed part of the orchard.

In an ant predation experiment I monitored an extremely active red meat ant population during the monsoonal flush. The population was virtually eliminated with just one insecticide application. The few ants that survived the first treatment were eliminated by the next application.

Another big problem with the green tree ant is that they are extremely territorial and each colony maintains a certain area. This means that when different colonies meet, they tend to fight. The result is usually disastrous with thousands of ants from both sides dying in battle. Because of their territoriality, green tree ants tend to protect only certain patches of the orchard.

A similar problem with ants in cocoa plantations has been noted. It would be impossible to maintain a cover of abutting ant territories over a large area without supplying a food supplement. However, this might reduce the efficiency of the ants as a control agent by reducing their intensity and range of foraging.

Apart from these disadvantages, there is one other significant problem—orchard workers and green tree ants are not particularly compatible, especially at harvest time!

### What have we been up to since the last report?

#### We have been extending ourselves!

The "Spotting Bug Team" devoted most of the last three months to extension. Given that spotting bugs feed on a range of



The article on this page is sponsored by HRDC and the avocado industry.

sub-tropical tree crops, there are a number of industries that are relying on our research. The recent "Endosulfan Review" makes the project even more topical and critical.

It appears that a number of industries will have to deal with possible restrictions on its use in the not-too-distant future. At this stage the National Registration Authority (NRA) has taken steps to manage the use of endosulfan on an interim basis.

At a recent Horticulture Industry Consultative Committee meeting, Cassie Wright (QDPI Chemical Services) stressed that all industries currently using orchard ground spray applicators to apply endosulfan **must** generate worker exposure data by the 31 December 1999. This data will be used by the NRA to establish permanent acceptable use patterns. This date is not far away and industries affected should be taking steps to obtain the relevant data **now!**

It is perhaps worth noting at this point that although we will do our best to spend roughly an equal amount of time on each of the major crops there will be times when, for very good reasons, we will use one particular crop rather than another, for our research. For example, Harry Fay used carambola as a model crop to study the effect of canopy characteristics on spotting bug damage levels. Obviously results from this research will have important implications within a range of crops such as macadamia, avocado and custard apples.

### We have been looking at what makes a good 'hotspot'

To achieve part two of project milestone number three ("weather and site-specific characters interpreted") we have been working on a follow-up questionnaire designed to complement the original posted out at the beginning of the project.

In a series of one-on-one interviews, we have spoken to a large number of growers and consultants here on the Sunshine Coast and at Bundaberg. To complete the picture, later this month we will visit growers and consultants in northern New South Wales.

Already we have identified some interesting trends that will ultimately help identify 'high risk' spotting bug damage areas. In the long term, this type of data will ensure monitoring is more reliable and it should also make management easier. Perhaps we might be able to get away with spraying just the edges of an orchard?

So far we can tell you that 'hotspots' are usually found near the edges of orchards

right next to a patch of native scrub. They are often associated with low points and are generally right next to a creek. Many of you will already have discovered this in relation to your own orchards. We are keen to document it over a range of localities and orchard types to confirm that it is a consistent behavioural pattern.

During this coming season we will be looking in more detail at tree species within the native scrub. We hope to identify the host plants that are the source of immigrant bugs.

Harry Fay noted that bug damage generally occurred in clumps of trees, rather than individual trees, and in particular sections of the orchard (...whole sections were untouched by bugs). Bugs were consistently found in these same trees, suggesting minimal dispersion from them or major ongoing immigration from outside the orchard.

### What do we have planned for the next three months?

To complete the project milestones, this coming season will have to be our most productive. In the last three months the "Spotting Bug Team" has been busy preparing for this coming season. Our study sites have been selected, the methods have been established and materials have been organised. We are just hoping this is a good 'Bug Season'—does anyone else share that sentiment?

### We will identify seasonal conditions associated with bug activity

Rather than spreading ourselves thinly over a number of study sites between northern New South Wales and Bundaberg the "Spotting Bug Team" has chosen to utilise pest-monitoring data collected by consultants. To do this we are using a questionnaire designed specifically for consultants. The observations and data generated will be related to climatic effects and local weather so that we can identify particular seasonal conditions (if any) associated with exceptional spotting bug activity.

### We will look at the time lag between feeding and visible damage

We have designed a series of experiments that will hopefully improve the current monitoring techniques used within the various industries. To follow-up on preliminary experiments performed last season, we will repeat feeding trials in both macadamia and avocado. At intervals

throughout the season (October, December and February), spotting bugs will be caged on fruit for 24-hours and the fruit will then be monitored for the development of visible damage.

To obtain an estimate of how many spotting bugs are responsible for damage observed in certain trees we will collect insects that fall from trees onto tarps and smaller containers, after an endosulfan spray. This experiment will be carried out in both macadamia and avocado orchards in northern New South Wales, on the Sunshine Coast and at Bundaberg. Not only will we be able to identify which of the bug species is feeding on each crop; we will also learn more about the efficacy of the endosulfan.

### We will test some promising "alternative" insecticides

The chemical bio-assays carried out by Gus Campbell at Alstonville revealed that Bulldock<sup>®</sup> (beta-cyfluthrin) and Mavrik<sup>®</sup> (fluvalinate) may be suitable as companion products (or substitutes) for endosulfan.

This coming season we will evaluate the residual activity of these insecticides using a field trial on pawpaw at Maroochy Research Station. Basically we will spray blocks of pawpaw with the selected insecticides; we will then feed the sprayed plant to spotting bugs at varying intervals after the spray and assess mortality. We will also test these products in a couple of field trials on selected avocado and macadamia orchards. We are currently in the process of applying for trial permits through the NRA.

### We need your help!

OK, here is the challenge. This coming season we will need 1000 spotting bugs for our laboratory and field experiments.

In the last month we have been busy sweep-netting numerous Mock Orange plants around Buderim and already we have collected just over 100 bugs. But we still need at least another 900 bugs, so if you can help we would really appreciate it. If you manage to collect 10 bugs we will give you a certificate and add you to the "Spotting Bug Hall of Fame". And yes, there is a catch—they have to be alive! Crispy critters collected after an endosulfan spray don't count!



The article on this page is sponsored by HRDC and the avocado industry.

# Avocado Irrigation - Practical Observations In Determining Water Need, Irrigation Design And Frequency Scheduling

An edited extract from a paper presented at Conference '97 by C J Partridge - Avo Systems Limited, Tauranga, New Zealand

## Summary

While irrigation is felt to be essential for successful avocado production in many countries, it is not a widely adopted practice in New Zealand and very little or no data is available to support the author's contention that lack of irrigation could be a limiting factor. The aim of this article is to hopefully stimulate some progressive growers to experiment with the concept and at the same time provide some guidelines as a starting point for local conditions.

## Introduction

There are some factors fundamental to the successful cultivation of avocados:

- soil selection
- using good quality plant material
- irrigation
- management
- fertilisation
- pest and disease control

Provided the prevailing general climatic conditions are conducive to fruit set, it is the successful integration of the above factors that will encourage, maximise and sustain avocado yield in any given orchard. For many years, *Phytophthora* rootrot was the scourge of avocado orchards worldwide and was the most limiting factor for profitable production. The advent of effective control measures is now reason for every grower to re-evaluate the factors most limiting on his or her orchard and irrigation management, or the lack thereof, could prove to be the next most limiting factor for avocados in New Zealand.

While there is a fair amount of published research on avocado irrigation worldwide, there is a distinct lack of information on irrigation under New Zealand conditions. In fact, the majority of New Zealand growers do not have irrigation systems installed.

By reviewing some research results of other countries and combining this with the author's field experiences, primarily in South Africa, it is hoped that interest will be stimulated amongst local growers and possibly even cause growers with

irrigation here and elsewhere, to revisit their systems. It is not within the scope of this article to extensively review equipment or irrigation engineering, as it is felt that armed with relevant horticultural knowledge, irrigation engineers should be able to design to the tree's requirements.

It should be stressed that the avocado industry in New Zealand is based almost exclusively on the variety 'Hass' and while research elsewhere has been done on other varieties, the main focus here will be on the requirements of the 'Hass' variety.

## Avocado Tree Requirements

Avocados evolved under warm to cool subtropical rainforest conditions where rain is evenly distributed throughout the year and where they grow on well drained, leached soils. It is generally accepted that water is essential for growth, fruiting and producing marketable sized fruit and that New Zealand is blessed with an abundance of the precious commodity. What should be of interest to growers though, is the distribution of that rain and whether there is sufficient in normal years to supply the tree's needs in terms of photosynthetic efficiency, nutrient uptake etc. at the critical times.

Phenological growth cycles have been used to identify critical periods for various inputs such as irrigation and nutrition. These growth cycles provided a platform for better understanding of avocado tree management but are more directly applicable to Australian and South African conditions where summer rainfall and warmer temperatures are the norm and also, the work was done on the 'Fuerte' cultivar.

More recently, reports have been forthcoming on tree growth cycles under New Zealand conditions—this important work should ideally be reconfirmed since the local grower community has had time to implement better rootrot control practices. Also, rain falls in New Zealand mainly in winter and growing conditions are generally cool. It can therefore be expected that growth cycles will be peculiar to local conditions.

It is well known that the act of flowering and fruitset is in itself a stressful time for the tree. Any factor that increases the stress load will decrease the potential of the tree to maximise its production. It has been estimated that a tree in full flower increases its surface area for potential water loss through soft flower tissue by up to 80%. Apart from the avocado's genetic limitations on fruitset, stress will aggravate the already low propensity (as low as only 0.4% of total flowers setting) of the tree to set fruit.

Even when the tree manages to set a good crop it still has to regenerate vegetative growth and roots if it is to stand any chance of having fruit the following season. These processes will be curtailed by any stress affecting leaf retention and root regeneration.

Professor Wolstenholme (South Africa) makes reference to the energy expense to the tree of producing an oil containing fruit. In New Zealand, many orchards will be carrying fruit from the previous season while flowering and setting for the coming season in any given year, so energy demands can be expected to be high under these conditions.

## Grower and Market Requirements

Simply put, growers require a sustainable return on their long-term investment and have to satisfy the demands of the markets in order to achieve this. The avocado tree's habit of alternate bearing can frustrate both the grower and the market.

Minimising tree stress to try and even out the bearing cycles is one avenue for the grower to follow but the picture is further complicated by the fact that fruit volume alone will not satisfy the market. Speak to any fruit marketer and the message is clear—the market increasingly demands the larger sized fruit with good internal and external quality.



The article on this page is sponsored by HRDC and the avocado industry.

Careful irrigation scheduling and management, coupled with good nutrition, can improve fruit size in Hass dramatically. Under South African conditions, small Hass fruit size is an ongoing problem. It was interesting to the author in the mid 1980's, to observe a situation in Kiepersol in eastern Transvaal where a grower interplanted Hass in a banana plantation which was due to be removed over time. The grower in question continued to apply a banana irrigation and fertiliser regime, which was lavish by previous conventional avocado wisdom, resulting in the production of over 15 tons per ha of the largest Hass fruit seen until that time. This sowed the seed that the conventional wisdom based mainly on Fuerte work was not ideal for Hass and prompted the author to review his advice to growers.

Since then various researchers have confirmed the positive effect of good irrigation practices on fruit size and yield in Hass and dramatic yield improvements over two years have been reported following a heavy irrigation regime (between field capacity and -40 kPa tensiometer reading) with Hass on clonal Duke 7 rootstock.

Some researchers working on a mulching trial reported an increase of 11.88% in mean fruit mass and 16.7% more fruit over two seasons when mulching was applied. This was directly attributable to a reduction of plant water stress.

Similarly, early work with Fuerte showed improved post harvest quality and implicated pre-harvest water stress in predisposing fruit to post harvest quality problems. It is extremely likely that the same principles will apply to Hass.

## How Much Water is Required to Irrigate Avocados?

Soil water holding capacity and prevailing weather conditions will play a major role in water usage, but provided some method of measuring soil moisture is employed, a grower can at least determine when water is needed.

However, it is all very well to have a guideline of 'irrigate at a tensiometer reading of -40 kPa' for example, but this does not give any idea of how much stored or available water is required over a period of time. In order to try and make a 'guesstimate' of what is necessary under New Zealand conditions, it is useful to review some case studies:

- In South Africa, it was long suspected that Hass had different water requirements from Fuerte, the dominant variety. The first inkling that this was true

came in the mid 1980's when a grower in the Levubu area established a block of Hass and Fuerte, both on the same rootstock, at the same time on identical soils and separated only by a road. Using tensiometers, he noticed that those in the Hass block reached the irrigation reading twice as fast as the Fuerte. Unfortunately his actual application rates were never recorded but as a rule of thumb, it is now accepted that Hass requires twice as much water as Fuerte

- Grower "A" tried to irrigate with microjets according to tensiometers during a very dry period on a 10-year-old Hass block on Edranol seedling rootstock. Because bananas also had a priority, he was unable to irrigate optimally when the tensiometers indicated that the soil was dry and therefore irrigated when he could on a biweekly basis for 12 hours at a time, from June 1993 to December 1993. During this time no rain fell and the trees went through flowering and fruitset (critical times for water needs). Actual water usage was measured and it was found to be 611,712 litres per month (or an average of 153,000 litres per week). This resulted in a crop of less than 20 tons per hectare, but more importantly, the grower said he would have irrigated more heavily and more often if he could have done.

- Grower "B" has a well managed, mature block (tree canopies nearly covering the total planted surface area) of Hass on clonal Duke 7 irrigated with microjets. Tensiometers were never installed despite much encouragement! Irrigation was applied weekly for a set time of 8 hours at a time and other management inputs were carried out diligently. The orchard had been averaging over 15 tons per ha over four years and water usage was calculated to be in the order of 240,000 litres per hectare per month during the critical flowering and fruitset periods. The yields achieved were far above average but in the author's opinion, could have been even better if irrigation was more scientifically scheduled.

- Staff at Westfalia Estate in South Africa, have estimated that they try and apply the equivalent of 30-35 mm rainfall per week to the mature producing Hass orchards during flowering and fruit set. If it is assumed that about 65% of the surface area is wetted by their microjet irrigation system, this equates to around 240,000 litres per

hectare per week which is similar to the case study above.

- A trial showed that 12700 cubic metres of water per hectare per year was the minimum required for avocado orchards in Western Galilee, Israel, for desired cropping using under-canopy sprinklers. The introduction of drip and microjet irrigation allowed reductions in water use but within the parameters of the trial, every reduction in water applied resulted in a corresponding yield reduction. Salinity is an additional complicating factor in Israel.

The weather conditions are generally much less harsh in New Zealand over the dry summer months compared with those in South Africa or Israel and the soils are generally well drained. A guesstimate of water requirements in New Zealand would be 120,000-150,000 litres per hectare per week on mature orchards during the critical periods. In making this guess, only careful monitoring of actual requirements and applications over time will prove it right or wrong.

Obviously water requirements will be much less in the early years of an orchard's life. However, most avocados are grown in regions of the world where rain does fall heavily at some time of the year. The trees naturally grow out to colonise new areas during these times and so the rooted area expands when conditions permit. It is therefore very important to design for the mature orchard's requirements. By

26



The article on this page is sponsored by HRDC and the avocado industry.

## For Sale

K.W. Avocado 6 bin packing machine with elevating feeder bin, polishing brushes and inspection bench. Minimal use by hobby farmer. \$9900

Rawlins hydraulic tree injector as new. \$200

Also 475 avocado trays, 70 T35 avocado boxes, 600 liners sizes 16-30. ½ price.

Martin Davis Ph/Fax 07 5530 5981 All hours.

'maturity', it is meant that stage when the total planted area is almost fully covered with leaf canopy; this is a function of planting distance and not necessarily tree age. Also, an irrigation system should ideally be designed to cover 65-70% of the canopy surface area with water at orchard maturity so that irrigated water adequately covers the rooted zone.

Maximum water requirements during critical periods imply that this demand will only occur for a relatively short period of the growing season as cooler weather or rainfall will reduce irrigation demand at other times. In effect, it is a case of not always needing the capacity but needing it badly during key events in the trees production cycle. In New Zealand, this will probably be at times from late September to February, corresponding to the flowering and fruit set period.

## Irrigation Systems

Apart from gentle rain, there is no perfect irrigation system although designers are getting close to it. Some, like high volume, dragline or floppy sprinkler systems used in South Africa, are very good from a water distribution point of view, but wasteful in the early years and can be labour intensive to operate. Others, like drip irrigation are suitable initially but end up not being able to distribute the water adequately and are prone to blockages—in the author's opinion drippers are not recommended for avocados at all. Microjet irrigation systems provide a compromise, can be expensive, but together with the floppy sprinkler system would appear to be most suited to local conditions.

It is felt that the ideal system would have the following characteristics:

- Capable of delivering water to a limited area under each tree when young to reduce water wastage initially.
- Capable of increasing the wetted area to take into account tree growth and cover 60-70% of the canopy area at orchard maturity. In the design of the system, sufficient pressure and pipe delivery must be designed for, as the system has to expand.
- Not be prone to blockages.
- Should be capable of delivering 60 litres of water per hour per emitter or more i.e. is capable of high delivery rates.
- Should be designed such that the cycle time between irrigations does not have to exceed one week. On well-drained soils, stress conditions can develop

rapidly especially during periods of hot weather.

- Be designed such that different cultivars, age groups, or blocks on different soil types are capable of being irrigated as separate entities. This is important as water requirements can differ.

## Managing and Scheduling Irrigation

An orchard's water requirements can vary considerably over a short period of time. Calendar irrigation scheduling can not take into account the often subtle changes in soil moisture status and additionally, the avocado does not thrive under poorly aerated soil conditions so a drying cycle is required. This can only be achieved by using some form of soil moisture measuring device.

There are some sophisticated scheduling devices on the market, unfortunately often at prices too sophisticated for the average grower. The following are some examples of what is available:

- Evaporation pan
- Tensiometers
- Neutron probes
- EnviroSCAN

While it is not the intention to provide a list of pros and cons of each device it is this author's assumption that tensiometers would be the choice of the average grower. This is because despite some shortcomings, they have proved their reliability in the field, have been tested under experimental conditions, are relatively inexpensive and are easy to install and maintain. Their drawbacks should be mentioned as well, however, and these are:

- They measure moisture in a very limited soil area and so careful site selection is necessary.
- They require discipline on behalf of the grower to read and service regularly.

At a minimum, two tensiometers should be installed per irrigation block. A 30 cm and a 60 cm tensiometer with the shallow one to indicate cycle frequency and the deep one cycle duration. It is also very important that they be installed within the area wetted by the irrigation system, of a representative tree in the block, on the drip line of the warmest side of the tree.

It would appear that some researchers and orchard managers are overlooking a possibility of fine tuning irrigation needs even further. Avocado roots thrive in well aerated soil conditions and mulching encourages root development in the mulch and at the soil/mulch interface. Thereafter these roots are often ignored from an irrigation point of view. This author would

argue that there would be benefit in installing 15 cm tensiometers wherever mulching has been applied to monitor the moisture conditions in this zone, where some of the healthiest roots will be found.

In the light of research results and personal observations, it is felt that if using tensiometers, irrigation should commence at a reading of -40 kPa on clays and volcanic soils in New Zealand and -30 kPa on sandy soils. Although a slight stress period may be thought to be beneficial under some circumstances in other countries, the fact that two crops are generally hanging on the trees at any one time, is probably stressful enough.

## Irrigation and Fertilisation

Fertiliser cannot be effectively utilised by the tree in the absence of available soil moisture. Having an irrigation system therefore allows the grower to be more certain that the fertiliser inputs are effective at the desired times. This is of especial note under New Zealand conditions where a lot of essential fertiliser is required during the summer growing period when rainfall is erratic.

## Over-irrigation

Avocado roots are intolerant of prolonged periods of poorly aerated or waterlogged conditions. Additionally, *Phytophthora* rootrot is encouraged by such conditions. It has been observed that young trees especially, can be over-irrigated while their roots are confined in a fairly small soil area and so, growers should take care to manage irrigation especially carefully during the first year of establishment.

## Where to from here?

If you already have irrigation installed, reading this article will hopefully give you some useful information on how to re-examine your system and its management.

If you are unsure of whether irrigation is required or not, before committing a substantial capital outlay to an irrigation system, you could purchase some tensiometers to monitor the soil moisture conditions in your orchard over a period of a full season. Whatever the results, they will be interesting and a very useful aid to determine whether you should be considering installing an irrigation system.



The article on this page is sponsored by HRDC and the avocado industry.

## Hard Decisions On Avocados

By Kirby Anderson, Queensland Country Life, 16 July 1998

Grantham district avocado and stonefruit grower, Rod Dalton, is not afraid of making the hard decisions.

Since last year's stonefruit harvest, he has bulldozed 1200 peach and nectarine trees and he is interplanting his major avocado variety Fuerte with a view to ultimately replacing it with the retailer-preferred Hass variety.

His aim from both decisions is simple—stronger performance in the marketplace.

Mr Dalton removed the five blocks of peach and nectarine trees following further encroachment from other growing areas, such as in the Stanthorpe region where there has been significant plantings of early stonefruit varieties, on his farm's traditional two-month harvest phase of mid-October to mid-December.

He has since replanted stonefruit as well as another 1000 non-astringent persimmon trees, but he said the decision to remove the trees meant he would lose about one-third of potential production for the next two years.

"It hurts the bottom line in the short term but at the end of the December period basically I was at the stage where I couldn't make money out of it," he said.

"I am going to go from a break-even point of view to making a profit."

Also Mr Dalton, a Queensland Fruit and Vegetable Growers Board member, has replaced about 300 mango trees on an easterly slope of the property with stonefruit, which he says will mature earlier than the fruit grown on the flat.

The avocado side of Mr Dalton's operation is also undergoing significant change with the greenskin, earlier maturing Fuerte variety to be replaced.

"I've taken the management decision for the long term, I need to get rid of Fuerte. I can't afford to continue with it in my program," he said.

He said that decision was based on Hass' popularity with the avocado growers' immediate customers—the retailers.

"The chain stores like Hass and prefer it for a very logical reason. If the green skins have a bad spot it is obvious and the retailer throws it out. If Hass (which develops a dark skin as it ripens) has a bad spot it's not obvious and the consumer is the one that throws it out," he said.

But Mr Dalton, the Australian Avocado Growers Federation president, said the industry was well aware of problems of consumer dissatisfaction with Hass.

"Hass is still a very good variety, but the consumer does have some dissatisfaction with it and they have difficulty identifying whether it is a perfectly good fruit or a perfectly rotten fruit," he said.

He said the industry was educating consumers—via in-store brochures, demonstrations and media releases—to buy at the right stage as well as educating wholesalers and retailers about how to handle the product.

But Mr Dalton said growers had a crucial role to play beyond the farm gate and he believes most recognise that.

He said currently there was a problem with small fruit in the market.

"Fruit size can be a problem with Hass and the industry this year has a significant problem in the marketplace. There is a premium price being paid for large, good quality fruit because there is a shortage," he said.

Mr Dalton said the problem results from the combination of a big crop in many areas, a comparatively hot summer (growers have not used enough irrigation to handle those conditions) and insufficient fertiliser to compensate for the crop the trees carried.

Water, nutrition and disease management were the crucial areas of farm management he cited in his own operation of 1200 avocado trees.

"I am on a free-draining sandy loam. I need to manage my water well and also nutrition. Because we are on sand it is critical," he said.

Mr Dalton said for six years he has worked with a consultant to conduct soil and leaf analyses biannually (double the frequency recommended for tree crops) to monitor and manage his nutrition program.

In terms of disease control, he said the fungal disease of Anthracnose was the biggest problem (citing only minor problems with the Fruit Spotting Bug and Queensland Fruit Fly) and he sprayed copper oxychloride on the trees on a two to four-week basis.



Rod Dalton, President of the AAGF

Further treatment of the fruit is also done in the packing shed.

"To improve my disease management all the trees are topped at 6 m, because I don't believe I can get effective disease control above that height with my current air-blast sprayer.

To allow adequate light to penetrate to the lower half of the tree to assure healthy leaf and bud development, the trees were heavily pruned after harvest last season.

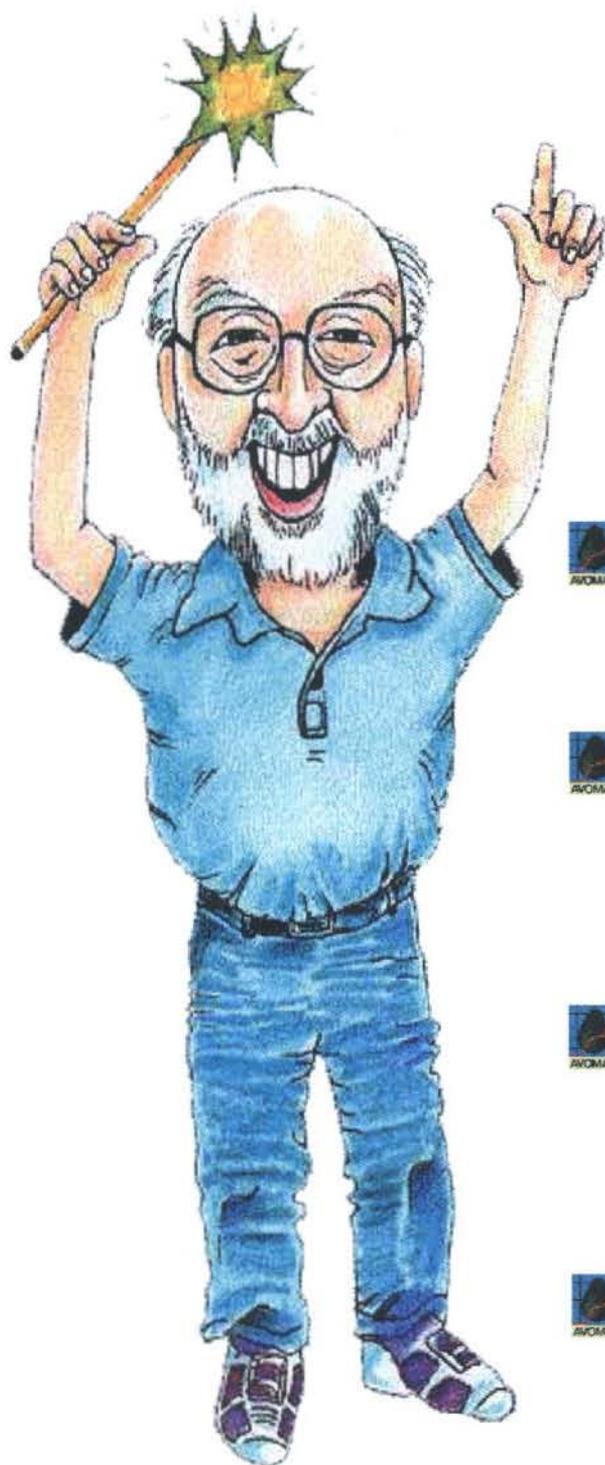
"Severe pruning is the reality now of managing a mature orchard," he said.

"I will suffer a yield loss this year but I expect to get a good crop next year. If I had done nothing, next year I would have basically had no crop. There is no future in that."

In terms of marketing, since 1996 Mr Dalton's avocados have been graded and marketed by the Sunshine Coast Fruit Marketing Cooperative at Nambour. Previously he and another four growers marketed their produce under the AusAvo brand.

The decision to join the Sunshine Coast Fruit Marketing Cooperative was taken to improve his long-term marketing position. He said avocados were more suited to the bulk bins and central packing house arrangement than stonefruit. And while he continues to pack his stonefruit, he said marketing would demand similar action in regard to stonefruit.

# AVOMAN



Take home  
your full-time  
horticulturist



One price includes training, user manual, tutorials, phone support and software.



Suited to experienced orchardists who have records to keep and wish to adopt best practice. Saves valuable time.



Suited to new orchardists who need to know everything to establish high yielding orchards. Saves hours of searching.



Year 2000 compliant, suited to Windows®95 and Windows®98.

Ring 1800 816 541 to arrange your special preview.

**Tony Whiley - The Avocado Guru**