

**Helping Murray valley citrus growers  
thrive in an ever changing environment  
by addressing regional and national  
issues**

Hugh Flett  
Murray Valley Citrus Board

Project Number: CT09044

## **CT09044**

This report is published by Horticulture Australia Ltd to pass on information concerning horticultural research and development undertaken for the citrus industry.

The research contained in this report was funded by Horticulture Australia Ltd with the financial support of Murray Valley Citrus Board.

All expressions of opinion are not to be regarded as expressing the opinion of Horticulture Australia Ltd or any authority of the Australian Government.

The Company and the Australian Government accept no responsibility for any of the opinions or the accuracy of the information contained in this report and readers should rely upon their own enquiries in making decisions concerning their own interests.

ISBN 0 7341 3083 X

Published and distributed by:  
Horticulture Australia Ltd  
Level 7  
179 Elizabeth Street  
Sydney NSW 2000  
Telephone: (02) 8295 2300  
Fax: (02) 8295 2399

© Copyright 2013



*Horticulture Australia*

Final Report  
for  
CT09044  
(31 January 2013)

Helping Murray Valley citrus growers thrive in an ever  
changing environment by addressing regional and national  
issues

Hugh Flett *et al*  
Murray Valley Citrus Board



*Horticulture Australia*



## HAL Project – CT09044

### Project Leader:

Hugh Flett  
Chief Executive  
Murray Valley Citrus Board  
PO Box 1384  
Mildura  
Vic 3502

### Other Key Personnel:

Mary Cannard – Murray Valley Industry Development Officer

### Project Statement:

To facilitate the communication and development of the Citrus Industry in the Murray Valley through co-ordination and allowing growers the opportunity to view and uptake best practice technology.

### Funding Sources:

This project has been funded by HAL using voluntary contributions from industry (Murray Valley Citrus Board) and matched funds from the Australian Government.

### Date:

31 January 2013

### Disclaimer:

Any recommendations contained in this publication do not necessarily represent current Horticulture Australia Limited policy. No person should act on the basis of the contents of this publication, whether as to matters of fact or opinion or other content, without first obtaining specific, independent professional advice in respect of the matters set out in this publication.

## Table of Contents

Media Summary .....	3
Introduction.....	4
Quality Growing Management and Best Practice .....	5
Projects.....	5
CT10030 Extension of citrus practices to maximise marketable fruit size and economic returns through on-farm trials .....	5
Victorian Department of Agriculture (VicDPI) and Biosecurity Citrus Exotic Pest Survey... ..	6
Projects Steering Committee Member .....	6
Tendency to biennial bearing minimised .....	6
Irrigation Efficiency and Drought Mitigation .....	6
Other Irrigation Activities .....	7
Grower Education and CITTgroup sessions .....	7
Pest and Disease Management .....	8
Queensland Fruit Fly.....	8
Fuller’s Rose Weevil.....	9
Citrus Gall Wasp .....	9
Dissemination of information for citrus canker, huanglongbing (HLB) and other exotic pests.....	10
Australian Citrus Dieback .....	11
Australian Plague Locusts and Spur-Throated Locusts .....	11
Market Access Requirements .....	12
Domestic Market Reports.....	12
Quality Control Training Course.....	12
Registered Crop Monitors Course.....	12
Japanese Inspectors Visit .....	12
Maximum Residue Limits.....	12
Export Protocols.....	12
Other Activities .....	13
Planting and Production Data .....	14
Crop Forecasting and Planting Statistics.....	14
Regional data for National Planting Statistics database.....	14
Communication .....	15
Media Publications.....	15
Weekly Citrus Board News 2010 .....	15
Weekly Citrus Board News 2011 .....	16
Weekly Citrus Board News 2012 (Weekly News Features in Sunraysia Daily).....	17
On the Grapevine (Feature in the local Sunraysia Daily Newspaper). .....	18
MVCB Citrep (Quarterly Magazine) .....	18
The Weekly Times .....	19
Other Media.....	19

Television/Radio.....	19
MVCB Website .....	19
<b>Networking and Development .....</b>	<b>20</b>
Collaborate with Citrus Australia’s General Manager – Market Development on national initiatives. ....	20
Conferences and Field Days.....	20
Training and Personal Development .....	20
Industry and Related Meetings.....	21
<b>Evaluation .....</b>	<b>22</b>
<b>Discussion .....</b>	<b>23</b>
<b>Recommendations .....</b>	<b>25</b>
<b>Appendix One.....</b>	<b>26</b>
Evaluation of chemicals for controlling citrus gall wasp.....	26
– Trial 2010-2011.....	26
Evaluation of chemicals for controlling citrus gall wasp.....	29
– Trial 2011-2012.....	29
<b>Appendix Two - .....</b>	<b>33</b>
Crop Forecast Booklet 2010/11.....	33
Crop Forecast Booklet 2011/12.....	55
Crop Forecast Booklet 2012/13.....	79
<b>Appendix Three .....</b>	<b>103</b>
MVCB Website Links .....	103
<b>Appendix Four .....</b>	<b>108</b>
Evaluation.....	108

## Media Summary

The Murray Valley Citrus Board (MVCB) continued the communication and development of the Citrus Industry through its Industry Development Officer position funded by Horticulture Australia Ltd using voluntary contributions from the MVCB and matched funds from the Australian Government under the project “Facilitating the communication and development of the Citrus Industry in the Murray Valley” from February 2010 to January 2013. The project worked to achieve international best practice in the Australian Citrus Industry, in particular the Murray Valley citrus growing region of Victoria and NSW.

The Murray Valley Industry Development Officer (MVIDO) position was created by the MVCB in 1999 to co-ordinate the transfer of information from research and markets to industry and to assist in the identification of research and development opportunities and communicate these opportunities back to the research community for consideration.

Mary Cannard has held the position of Industry Development Officer for the Murray Valley Citrus Board since July 2007.

The project was driven by a steering committee comprising of growers, packers and representatives of research organisations to ensure the needs of the citrus industry were being addressed and to maximise the opportunities for two-way information exchange between growers and researchers.

The MVIDO facilitated best practice by assisting the transfer of information to approximately 380 citrus growers in the Murray Valley using a range of communication and capacity building methods including grower information sessions and farm walks, technical fact sheets, media releases, newsletters, website and field days.

Growers, packers/processors and researchers/agronomists highly valued the information flow and opportunities for more coordinated best practice and market-driven approaches to industry development arising from the project. While quantitative data was difficult to define, qualitative information and the credibility of the project/MVIDO role within the industry was certainly forthcoming through an independent evaluation of the project.

The anecdotal information provided within evaluation discussions with industry stakeholders concerning outputs such as industry development, culture change and best practice on-farm developments was very positive. The fact that interviews with Murray Valley citrus growers brought forward a range of issues during discussions and interviewees were willing to advance constructive comments on areas for inclusion in future industry development work could be seen as proof of on-going industry development and awareness of best practice issues (ie. a “positive culture” development).

## Introduction

The Murray Valley Citrus Board (MVCB) is a grower funded statutory authority that provides services to 376 citrus growers in Victoria and New South Wales.

The position of Murray Valley Industry Development Officer (MVIDO) was created to co-ordinate the transfer of information from research and markets to industry, and to assist in the identification of research and development opportunities and communicate these opportunities back to the research community for consideration.

The aim of the project was to achieve international best practice in the Australian citrus industry, in particular the Murray Valley citrus growing region.

The project was overseen by a Steering Committee consisting of citrus growers, local state government agencies scientific and extension staff and MVCB Board members that provided advice and feedback to the MVIDO. The MVIDO reported to MVCB Chief Executive.

The MVIDO facilitated best practice by assisting the transfer of information to growers using different communication methods ranging from grower information sessions and farm walks through to technical fact sheets, media releases and field days.

The MVIDO provided timely dissemination of technical and market information to stakeholders to meet the requirements for:

- Export and domestic market access;
- Fruit quality and size;
- Production, harvest and variety;
- Pest and disease management; and
- Water management.

The MVIDO position was created in 1999 in response to citrus growers' need to access new technology and the results of Australian and international research as it became available.

The 2010-2013 MVIDO project aimed to facilitate best practice citrus production and market access through the effective and efficient transfer of information between industry sectors at the regional level. This was undertaken utilising methods such as facilitation, co-ordination, communication, development, collaboration and networking.

Project outputs included specific workshops/training, dissemination of information in a range of formats appropriate to grower/packer requirements, attendance at various forums, conferences and networking opportunities, developmental work on some tools to assist growers in best practice production, information collection, collation and analysis and some investigative work.

It was anticipated that the project outcomes would be:

- Murray Valley Citrus growers utilising the latest information on water availability, climate and market requirements.
- Citrus growers adopting and adapting practices to thrive in an ever changing environment.

## Quality Growing Management and Best Practice

This involved the monitoring, collation/packaging of research outcomes and other best practice information and transfer of the information to citrus producers in the Murray Valley. CITT groups, workshops, field walks and training sessions were the vehicles used to communicate this information to citrus producers.

### **Projects**

#### **CT10030 Extension of citrus practices to maximise marketable fruit size and economic returns through on-farm trials**

Every day growers are bombarded with information and glossy brochures of products and recommendations that claim to improve fruit size or productivity. Many of these products and much of the information comes from overseas where the products have been trialled in different soil types and in situations not commensurate with Australian conditions. The big question is, 'do these products and/or practices work under Australian soil types and conditions'. Therefore, there is desperate need to trial these products and practices so growers can make an informed choice on where to spend their money.

Through HAL project CT10030 (using voluntary contributions from MVCB and matched funds from the Australian Government), 21 demonstration on-farm trials were initiated in spring 2010, 2011 and 2012 to evaluate various products and practices. Many of the trials are focused on improving fruit size, which is an important factor to profitability. This project was led by NSW Department of Primary Industries (NSW DPI) and the role of the MVIDO was to facilitate the participation of growers in the trials and also to organise field walks for growers to view trial results.

The trials have been examining:

- Corasil<sup>®</sup> - a new fruit sizing spray;
- Ralex<sup>®</sup> - a flower manipulation spray;
- Ethrel - a fruit thinning spray;
- Summer pruning of late Navels;
- Ground applied and foliar applied Potassium;
- Brotomax<sup>®</sup> – an organic nutrient that helps promote vegetative growth of young trees; and
- Kaolin clay – a spray to reduce heat stress and evapotranspiration in plant leaves.

The trials are on-going and the results from most trials have not been analysed. However preliminary results from the Corasil<sup>®</sup> trials have shown a 1 to 4 mm increase in fruit size in most instances. This is positive indication, but when the packout data is analysed we will be able to determine if the sprays have provided a financial gain.

Preliminary results from the Ellerslie pruning trial on 30 year old Scopelliti Navels have not shown an increase in fruit size, however, packout results will need to be analysed to determine if other parameters, such as the amount of blemish, has improved. The early summer pruning trial on 19 year old Barnfield Navels at Gol Gol has shown a slight (1 mm) increase in fruit size.

The on-farm trials have been a fantastic opportunity for growers to actively participate in research on practical topics that have a direct impact on their profitability.

### **Victorian Department of Agriculture (VicDPI) and Biosecurity Citrus Exotic Pest Survey**

Under international biosecurity agreements, Australia must regularly conduct surveys of citrus properties to prove to trading partners that certain exotic pests and diseases are not present. Victorian citrus properties were surveyed in 2010. Using the board's database, the MVIDO was able to select with confidence the properties to be included in this assessment.

### **Projects Steering Committee Member**

The MVIDO was a steering committee member on a number of committees predominately focused on best practice for citrus producers. The Project Steering Committees included:

- Fuller Rose Weevil Project (South Australian Research and Development Institute, SARDI);
- Citrus Postharvest Research (SARDI);
- Citrus Gall Wasp Chemical Trials (NSW DPI);
- Murray Valley IDO Network; and
- Irrigation Environmental Management Action Plan (Vic DPI).

### ***Tendency to biennial bearing minimised***

A heavy crop in the 2008/09 season and an extended hot period in November 2009 causing heavy fruit drop, resulted in a record low crop occurring in the 2010/11 season. A heavy crop load of small fruit was again anticipated in the 2011/12 season. Therefore, the MVIDO in collaboration with the Citrus Australia Limited, General Manager - Market Development, initiated grower education sessions in 2011 to reduce the crop load and manage fruit size. The workshops covered flower suppression, tree pruning, fruit thinning and fruit sizing sprays.

- 1 June – Flower Suppression Workshop – Colignan;
- 2 June – Flower Suppression Workshop – Mourquong;
- 16 June – Pruning Workshop – Dareton;
- 17 June – Dr Andy Krajewski Pruning Workshop – Dareton;
- 21 July – Pruning Bus Trip, visits to the properties of David Stevens, Richard Bertalli, Col Nankivell and Sevenfields;
- 22 July - Pruning Workshop – Dareton;
- 12 August – Pruning Workshop – Barham; and
- 10 November – Fruit Thinning and Fruit Sizing Field Walk – Iraak.

### ***Irrigation efficiency and drought mitigation***

Irrigation efficiency is still an important strategy identified within the MVCB's Operations Plan. To update producers on the severity of the drought situation, the MVCB organised a water forum at the Mildura Football Club on 5 May 2010.

This was a policy information session for irrigators and the general community to update their knowledge of how the Murray River system operates the Northern Region Sustainable Water Strategy and the management of Menindee Lakes under the MDBA. The session was chaired by Jan Denham, Chairman, MVCB.

Speakers from NSW State Water (David Harriss), Victorian Department of Sustainability and Environment (DSE), (Joe Banks), Murray Darling Basin Authority (Trevor Jacobs) and Goulburn Murray Water (Graeme Hannan) were included on the agenda. Over 150 participants attended this session.

#### **Other Irrigation Activities**

The MVIDO promoted irrigation efficiency programs and research findings utilising the MVCB website and publications and dissemination of findings through workshops and CITTgroups.

Best practice articles, (eg water use efficiency) were included in Citrep (the quarterly newsletter of the MVCB) and on the MVCB website to reduce wastage and improve productivity.

### **Grower education and CITTgroup sessions**

CITTgroups aim to monitor local and overseas technology, exchange individual ideas and experiences, and often initiate and record practical trials designed to improve citrus yields and quality. This information is passed on to growers, ensuring that they are up to date with the latest in information and technology from around the world. The basis of the groups is the interchange of ideas between growers to discuss production techniques, pest management control, marketing and other industry topics. A self-help concept, CITTgroups have proven to be very effective in generating and disseminating information to small groups of growers.

The MVIDO's role was to monitor new citrus technology and coordinate CITTgroup events for citrus growers in the Murray Valley

<b>Event/Theme</b>	<b>Date</b>	<b>Total Attendance</b>
<b>Drought</b>		
Drought Monitoring Workshop	20 March 2012	8
Murray River Update	5 May 2010	92
<b>Pest and Diseases</b>		
Crop Monitors Course	22 March 2010	15
Spring Locust Control	19 August 2010	19
Red Scale	15 September 2010	32
Crop Monitors Course	22 March 2011	14
Ellerslie Fruit Fly Control	13 April 2011	15
Citrus Gall Wasp and Fuller's Rose Weevil Workshop	11 October 2011	32
Copper Application for Disease Control	24 February 2012	14
Crop Monitors Course	28 March 2012	16
Queensland Fruit Fly Meeting Mildura	21 August 2012	22
Queensland Fruit Fly Meeting Boundary Bend	22 August 2012	8
Huanglongbing in Florida	13 September 2012	8
Copper Application	13 October 2012	11
Citrus Gall Wasp and Fuller's Rose Weevil Workshop	31 October 2012	41

<b>New Varieties</b>		
Varieties Display	11 August 2010	20
<b>Agronomy</b>		
Leaf Analysis Farm Walk	3 & 4 March 2010	25
Crop Regulation Using GA3	1 & 2 June 2010	48
Pruning and Crop Regulation	16/17 & 23 June 2010	54
Field Trials Workshop	3 August 2010	27
Martinez Nutrition	20 August 2010	12
Ethrel & Corasil Field Walk	10 November 2010	21
Potassium Field Trials	11 May 2011	45
Ralex/Corasil/Pruning Trials	8 June 2011	
Citrus Research Field Walk	29 June 2011	43
Pruning Bus Trip	21 July 2011	18
Dr Krajewski Pruning Course	4 August 2011	37
Strategic Cost Savings On-Farm	31 August 2011	36
Advanced Fertigation	13 October 2011	12
Koalin Clay Field Trials	4 April 2012	23
Hand Thinning Farm Walk	31 May 2012	38
Field Trials Farm Walk	18 June 2011	43
Winter Yellows Farm Walk	25 July 2012	34
<b>Packing and Marketing</b>		
Quality Control Course	19 April 2010	24
Postharvest Roadshow	29 April 2010	16
Citrus Export Workshop	19 September 2010	17
DNE End of Season Review	8 December 2010	24
ICA56	11 March 2011	15
Quality Control Course	19 April 2011	14
Korean Export Protocol	11 October 2011	18
<b>Miscellaneous</b>		
Gate to Plate Bus Tour	9 – 12 March 2010	8
New Horticulture Industrial Awards	24 March 2010	14
Exceptional Circumstances	24 March 2011	52
Pre-Season Meeting	20 April 2011	24
Citrus Pre-season Meeting	12 April 2012	20
Smart Phone Use in Horticulture	6 June 2012	12

## ***Pest and disease management***

### **Queensland Fruit Fly**

The last two years have seen an unprecedented number of outbreaks of Queensland Fruit Fly (Qfly) in the Murray Valley. At one stage there were up to 34 outbreaks operating within the Sunraysia Pest Free Area at one time. Around half of these outbreaks are on commercial grower's properties with the rest being in peri-urban areas.

The MVIDO worked very closely with both the Victorian and New South Wales Departments of Primary Industries and other government agencies to help eradicate the outbreaks and regain regional access to lucrative Qfly sensitive domestic and export markets. The strategy for the 2011/12 summer period varied from the 2010 program with growers being asked to

take a hands-on role in performing eradication measures on their properties with Government departmental staff focusing on peri urban areas.

MVCB has been proactive in making the Qfly chemical, Naturalure, available to both New South Wales and Victorian citrus growers within the Murray Valley, with the MVIDO co-ordinating chemical distribution to growers and facilitating workshops on the correct application method.

Growers operating horticultural business within 1,500 metres of an epicentre of a declared Qfly outbreak must take action to control Qfly on their properties. At the peak of the Qfly outbreaks there were approximately 132 citrus properties inside the 1500 m radius, comprising of around 1500 hectares which required eradication measures.

The good news is that because of the targeted and strategic approach undertaken by the MVCB, a large number of outbreaks (41 to date) have been successfully eradicated, and these areas have been reinstated to enable the movement of fruit into Qfly sensitive domestic and export markets such as Thailand, New Zealand, Indonesia, India and the European Union.

Areas that have been reinstated are:

Abotts Tank, Boundary Bend West, Cardross, Karadoc, Lake Powell, Narrung, Nyah West, Speewa, Wemen, Yelta, Beverford South, Piangal, Woorinen, Nyah, Euston, Gol Gol East, Merbein, Merbein East, Mildura, Nichols Point, Robinvale, Wood Wood, Pooncarie, Racecourse Corner, Dareton North, Tulney Point, Cabarita North, Tol Tol, Kenley, Kenley South, Beverford South, Lake Boga, Bountry Bend West, Goodnight North, Tooleybuc and Nangiloc.

MVCB is very much aware of the regional implications of Qfly outbreaks in both our export and domestic markets and will continue to work diligently towards eradicating Qfly in the 16 remaining outbreaks, therefore achieving Pest Free Area status again.

#### **Fuller's Rose Weevil**

The MVIDO instigated a collaborative research project with SARDI, to reduce Fuller's Rose Weevil (FRW) populations. FRW is a quarantine pest for Australia's Asian markets, particularly Thailand, China and the Republic of Korea.

A steering committee which included the MVIDO provided direction for the project which was undertaken in two stages. Postharvest research focusing on postharvest oil and high pressure washing of the fruit to remove FRW egg rafts was undertaken in 2006/07.

Federal Government money was obtained for a three-year project which finished in 2011. This focused on both post-harvest and field research aimed at significantly reducing FRW populations and preventing FRW from entering the canopy to lay their eggs under the calyxes of citrus fruit.

Outcomes from this project have seen new orchard protocols adopted by growers. These protocols include trunk banding sprays, weed management and monitoring systems. These orchard protocols have been accepted by the Republic of Korea and trade to this country is increasing under these new protocols.

#### **Citrus Gall Wasp**

An incursion of citrus gall wasp occurred in the Holland's Lake district. MVCB funded and organised a release of native parasitic wasps in 2007 to start to manage this incursion.

Funding was obtained from HAL (CT08000 – Establishment of citrus gall wasp parasites in the Murray Valley region) for future annual releases of these parasitic wasps (2008 to 2010) to establish a population in this area. Citrus gall wasp parasites were purchased from Bugs for Bugs and distributed by the MVIDO and MVCB Field Officer to affected growers in early November each year of the life of the project. Workshops were held in October/November each year with affected growers to discuss release methodology and back up spray application to citrus patches that hadn't had releases.

These workshops were aimed at the growers around the Holland's Lake district that were initially affected by an incursion of citrus gall wasp. As only one insecticide – Supracide – is registered for citrus gall wasp and due to the annual life cycle there is only one opportunity for insecticide application.

The MVIDO worked with one grower during the 2009 season to trial a low concentration, high volume horticultural mineral oil (HMO) spray just before and during the time of adult emergence. The theory being that the oil coating on the leaves would be a deterrent to the female wasp landing and laying eggs. The wasp has receptors in its tarsel segments to enable it to recognise a citrus twig; the oil coating disrupts this recognition process.

Observations in 2009 indicated that adult gall wasps showed a great reluctance to land on the oily leaves of the citrus trees. Instead, large numbers of adult gall wasps were landing and resting on a nearby nectarine tree that had not been treated with oil.

This small trial led to the MVCB to apply for HAL funding (CT10021 – Managing citrus gall wasps in southern citrus regions) for trialing some chemical alternatives including HMO, Confidor Guard and Movento in comparison to the only product registered for use, ie. Supracide. These chemical trials were undertaken by Dr Jianhua Mo, Research Entomologist, NSW DPI, with the MVIDO assisting in data collection and site selection. The project is funded by HAL using voluntary contributions from the MVCB and matched funds from the Australian Government and is due to finish in October 2013

Results from these chemical trials have shown that HMO is a promising alternative to chemicals for the management of citrus gall wasp. The results of these trials have been disseminated to Murray Valley growers in the form of workshops in October/November each year and in written articles published in the Board quarterly magazine Citrep. The most recent articles are in Appendix 1.

#### **Dissemination of information for citrus canker, huanglongbing (HLB) and other exotic pests**

Exotic citrus pests and diseases will be very detrimental to the citrus industry in the Murray Valley if an incursion occurs. Ensuring growers are able to identify the symptoms of citrus canker and HLB is an important strategy in the early detection of exotic citrus pests and diseases. Information on the symptoms of citrus canker and citrus greening has been disseminated to all growers in the Weekly Citrus Board News, Citrep magazine and one workshop.

Dr Tim Spann, a Florida University researcher spoke to Murray Valley growers in September 2012 on the progress of Huanglongbing (HLB) in Florida.

HLB, also known as citrus greening disease, is caused by a phloem limited bacterium and affects all citrus and a number of related species. To date no natural resistance has been

identified among citrus varieties. The disease is spread by the insect vector, Asian citrus psyllid (ACP), which was introduced to Florida in 1998.

HLB was first discovered in the Southern tip of Florida in 2005 and has since spread to all citrus producing counties in Florida. A psyllid control and tree eradication program was then instigated, but as the disease symptoms can remain latent for two years growers were fighting an uphill battle to remain profitable while eradicating diseased trees.

In 2006, Florida grower, Maury Boyd chose not to remove HLB affected trees and treat the disease symptoms and single handedly created a revolution within the Florida citrus industry. It became clear to Maury that the disease and ACP were not going to be eradicated from Florida and he had to take steps for his business to remain viable.

HLB blocks the vascular system of the plants so nutrients cannot be distributed throughout the plant and carbohydrates from the leaves cannot be distributed to the roots.

Maury developed a foliar and ground applied nutrient program that stimulates the trees to produce more vascular tissue which allows the infected citrus trees to remain in production much longer. Maury's program is not a silver bullet and does not cure the trees, but it does allow Florida growers to remain in business while researchers try to come up with tolerant and resistant varieties.

Dr Spann urged growers in Australia to be vigilant and report any sightings of ACP or HLB as early detection increases the chance to eradicate the disease and the insect. His take home message was to put all your resources into eradicating ACP if it appears in Australia. The biggest mistake made by the Florida citrus industry was they did not execute control/eradication measures against ACP when it was originally detected in 1998.

Florida researchers now think that the disease was already in Florida when ACP arrived, possibly in back yard trees propagated from illegally imported citrus material. The disease was then able to spread to citrus orchards when the psyllid arrived.

#### **Australian Citrus Dieback**

The MVIDO collaborated with researchers from University of Western Sydney on a project to determine the presence of a phytoplasma associated with Australia Citrus Dieback in grapefruit trees. The MVIDO collected samples of affected grapefruit trees from Gol Gol and Colignan.

#### **Australian Plague Locusts and Spur-Throated Locusts**

Spring 2010 saw a plague of Australian Plague Locusts and Spur Throated Locusts in the Sunraysia district. The MVIDO disseminated information from the Departments of Primary Industries in Victoria and NSW on both species to growers and wrote articles published in the local newspaper to ensure growers were aware of the management of these two locust species.

## **Market Access Requirements**

### ***Domestic market reports***

The MVIDO has collated, analysed and communicated accurate market information and encouraged a market responsive approach throughout the industry by analysis of market manifests, shed door prices, processor meetings and dissemination of information to growers and stakeholders through a weekly domestic (Melbourne, Sydney and Brisbane) market report throughout the Navel harvest period by fax and email.

### ***Quality control training course***

A quality control course for packing shed staff delivered by Rod Twyford (Private Consultant) was organised in April 2010 and April 2011 before the harvest season commenced. The MVIDO developed a handbook for all participants to take away with them.

The handbook information and images on all pests and diseases of export concern, pests that are currently classified as actionable, defects for class one and two fruit, produce specification for Woolworths, quality defect percentages, Riversun specifications, example of inspection documents, Navel carton packing patterns and end-point sampling and phytosanitary inspection procedures for certification of fresh fruit and vegetables. The course was well attended and extra copies of the handbook were requested from most packing houses.

### ***Registered crop monitors course***

Registered crop monitors courses were facilitated by the MVIDO for March/April each year. Steve Falivene, District Horticulturalist, NSW DPI delivered the course content. This course ensures that orchards are inspected by trained personnel before they are registered for export to China, Korea and Thailand. All participants were given a guide to pests and diseases of export quarantine concern with a checklist to fill in for each orchard inspection.

### ***Japanese inspectors visit***

In June 2000 and 2011 the MVIDO coordinated a five day visit from an inspector from the Japanese Ministry of Agriculture Forestry and Fisheries (MAFF). The inspector visited export packing sheds to check packing conditions in order that they be allowed to export citrus to Japan under seasonal area freedom.

### ***Maximum residue limits***

Maximum residue limits for all export markets have been disseminated to citrus producers through the Weekly Citrus Board News and the MVCB Website as required.

### ***Export protocols***

The MVIDO organised, with the Australian Quarantine and Inspection Service (AQIS), NSW Industry and Investment and other key industry people, training on Export Protocols for the Republic of Korea, Thailand, China, etc for industry. Numerous teleconferences were held over this period. A presentation of the Crop Protection Officers course for China protocol accreditation was also facilitated each year.

### ***Other activities***

- Disseminated export and domestic market requirements to Murray Valley citrus producers as required;
- Facilitated pre-season meetings with the Australian Government Department of Agriculture, Fisheries and Forestry (DAFF) and Biosecurity Australia each year;
- Facilitated USA Season Review meetings each year;
- Participated in the Vic DPI's Horticultural Industry Network; and
- Produced articles in regard to export market requirements for inclusion in Weekly Citrus Board News and local newspapers.

## **Planting and Production Data**

### ***Crop forecasting and planting statistics***

The MVCB Crop Forecasting System manages data collected from field density and size counts. Current season information is related to historical information to calculate expected fruit sizes and crop yield prior to harvest.

In December each year there was a review of all sites to ensure they remain representative of varieties and ages planted in the region. To be able to maintain accuracy all sites have been Globally Positioned (GPS) and organised into folders, categorised by area with an ortho-imaged map of each property. Also to improve data entry into the database program, the MVIDO implemented the use of hand held Personal Digital Assistants (PDA) for rapid data entry from field collected data.

The MVIDO evaluated the collection of fruit blemish data in 2010 and simplified the number of ratings used to assess degree of blemish. The blemish report categorises the blemish into Class One, Class Two and factory fruit.

Crop forecasts have been issued in April of each year to packers, processors and other citrus industry stakeholders. The MVIDO also presented this information to growers at the annual consultative meetings each year.

The crop forecast was made available to Citrus Australia Limited (CAL) for inclusion in the national crop forecast.

Crop Forecasting Booklets for 2010/11, 2011/12, 2012/13 are attached to this final report in Appendix 2.

### ***Regional data for national planting statistics database***

The National Planting Statistics database has officially commenced, and the MVCB regional database has been provided to Citrus Australia Limited for inclusion in the nation planting database. Up to date property maps and registration forms have been delivered to growers to review current details.

## Communication

### **Media publications**

The MVIDO has contributed numerous articles to industry newsletters and magazines as well as newspapers. The tables below list the names of all print articles produced by the MVIDO.

#### Weekly Citrus Board News 2010

15 February	Fruit Fly Detection Update
23 February	Time for Copper Spray Application
2 March	Citrus Leaf Analysis Farm Walk
9 March	Freshcare Update
16 March	Citrus Oil Sprays and Water allocations for Vic
23 March	Gate to Plate Bus Tour
30 March	Japan Inspector Visit and Horticulture Mediation Advisor
6 April	Citrus Quality Control Course
13 April	Postharvest Road Show
20 April	Important of Good Harvest Practices
27 April	Japan MAFF visit /Murray River Update
4 May	Importance of good harvest practice/Oleocellosis
11 May	Horticulture Grower 1-2-1 Business Advisory Service
18 May	Crop regulation using Winter GA3 spray
25 May	Annual consultative meetings
1 June	On Line Chemical Survey for Horticulturalists
8 June	Crop Regulation Farm Walk/Pruning Workshops
15 June	Grower Consultative Meeting Report
22 June	Weather Information Session
29 June	Japan Gives Grapefruit Green Light
6 July	Victorian Water Allocations
13 July	Final Irrigation Management Course
20 July	Irrigation Allocation Update
27 July	Export and Domestic Market Information/Tri-State Meeting Outcomes
2 August	First Allocations for Victorian Growers/New Varieties Display and Tastings
9 August	Citrus Fertilisers/Citrus Promotions
16 August	Allocation Announcements
22 August	Locust Control Information
29 August	MDB Water Update
6 September	Locust Meeting for NSW Growers
13 September	USA Update
20 September	Nutrition Expert Tour/Water Update
4 October	Schools First Announcement
11 October	Basin Plan Submission
19 October	Foliar Nutrient Sprays for Citrus
2 November	MDBA Meeting Overview
9 November	National Citrus Conference Roundup
16 November	New National Citrus Quality Standards for the 2011 Season
23 November	Update on MDB Plan and Ants in Citrus
30 November	Round Table Conference in Canberra

7 December	Qfly Detections
14 December	New SARDI Researcher Appointed
21 December	Korean Export Protocols

### Weekly Citrus Board News 2011

11 January	Change to NZ Fruit Fly Protocol/Summer Copper Application
18 January	NSW Flood Affected Farmers/Fruit Fly Outbreak at Robinvale
25 January	Management Strategies to Improve Fruit Size/Citrus Export Forum
1 February	Fruit Fly Outbreaks and Detections/ GA summer spray
8 February	Fruit Fly Notification/Change to MVCB Office Hours
15 February	Fruit Fly Outbreak Notifications/Locus Update
22 February	All weather citrus harvesting/Bridal creeper management
1 March	Recording Herbicides a Must/Tissue Sampling
8 March	Horticulture Industry Inundation Assessment Form
15 March	Drought Monitoring Project Workshop
22 March	Exception Circumstances Workshop
29 March	AQIS Pre-season meeting
5 April	Citrus Industry Fruit Fly Outbreak Fruit Movement Requirements
12 April	Citrus Pre-Season Meeting
19 April	Crop Forecast/Good Harvest Practices
26 April	Clamp Down on Immature Fruit
3 May	Annual Consultative Meetings
10 May	Oleocellosis Risk Assessment
17 May	Fruit Fly Outbreaks
24 May	Disaster Income Recovery Subsidy
31 May	Citrus Research Field Walk
7 June	Ellerslie Field Trials Farm Walk
14 June	MVCB Facilitates Japanese Inspector Visit
21 June	School's First Citrus Promotion at Docklands
28 June	Citrus Research Field Walk/Season Update
5 July	Research Field Walk Well Attended
12 July	Fruit Fly Fine for Local Woman
19 July	Label Changes for the Use of Azinphos-Methyl/Avoid Picking Small Fruit
26 July	MVCB Funds Citrus Promotion in Melbourne Markets
2 August	AQIS Potential Industrial Action
9 August	Neglected Lands and Landholder Responsibility
16 August	Mulch Trial Participants/Market Best Practice
23 August	Strategic Cost Savings CITTgroup/Fruit Fly Detections
30 August	Growers Needed for On-Farm Trials/Agricultural and Rural Restructuring Gender Perspectives
6 September	Qfly Work in Sunraysia
13 September	September – Current Management Focus/Citrus Exports to Japan
20 September	Taste of Melbourne/MVCB Promotions
27 September	Tour of the Murray/Collingwood Brownlow Dinner
4 October	Citrus Gall Wasp and Korean Export Protocol CITTgroup
18 October	Advanced Irrigation Course & Mildura Show
25 October	Pest Focus and Qfly Update
8 November	Queensland Fruit Fly Chemical Availability
15 November	IDO Visit to Pakistan

22 November	Potassium and Urea Trials & Qfly Chemical Update
29 November	QFF Outbreaks – Grower Action Required
6 December	Growers Needed for Trials
13 December	Remaking of the MV Citrus Board Order
20 December	Qfly Baiting Program

### Weekly Citrus Board News 2012

10 January	Summer Copper Application to Combat Fungal Infections
17 January	Queensland Fruit Fly Baiting Program Update
21 January	Management Strategies to Improve Fruit Size
29 January	Copper CITTgroup in February
7 February	Citrus Oil Sprays/Kelly's Citrus Thrips
14 February	Carbon Farming Initiative/Qfly Detections
21 February	Drought Monitoring Workshop/Consult Meetings
28 February	Board Advocates for Permanent Roadblock/Consult Meetings
6 March	MVCB Wins Gold at Hanging Rock/ Murray Valley Citrus Board Championing the Interest of Citrus Growers in the Region
13 March	Vic DPI consults with growers over Board remaking
20 March	On-Farm Field Trials Farm Walk
27 March	Chemical Alternative for Citrus Gall Wasp
3 April	AQIS Pre-Season Meeting
10 April	Riverina Fruit Fly Program Crushed
17 April	Murray Valley Crop Forecast
24 April	Qfly Detections
1 May	Oleocellosis Risk Assessment
8 May	Smart Phone Use in Horticulture CITTgroup
15 May	MVCB Supports United Australian Citrus Industry
22 May	Vital Ag Data at a Cost
29 May	Reminder to Vote/Citrus Gall Wasp Phenology Project Update
5 June	Reminder to Vote/Board Achievements
19 June	Minister Announces the Continuation of the MVCB
26 June	Annual Consultative Meetings Reminder
3 July	Message from chair/Illegal citrus imports infected with canker
10 July	MVCB transition arrangements
17 July	CITTgroup BBQ Breakfast and Farm Walk
24 July	Crop Regulation and Winter Yellows
31 July	NSW Government Finalises Board
7 August	Vic Agriculture Minister Appoints New Board
14 August	International Citrus Congress and Study Tour
21 August	Board Operational Plan and Papers
28 August	Board Meets With DPI over Queensland Fruit Fly (Qfly)
4 September	Citrus Greening CITTgroup
11 September	Qfly Update & US Navel Inventories Uncomfortably High
18 September	New MVCB Chair meets with Citrus Australia Limited
25 September	Qfly Update and Free Chemical Users Course
2 October	Copper CITTgroup and Farmer to Farmer Mentor Program
9 October	Industry and growers meet with Shadow Minister for Agriculture
16 October	Citrus Gall Wasp and Fuller's Rose Weevil CITTgroup Report
23 October	Mildura Show a Successful Citrus Promotion
30 October	HLB Warning at National Citrus Conference

6 November	Bees and Pesticides Guide
13 November	Queensland fruit fly/Foliar Nutrient Sprays
20 November	Super Trade Mission to the Middle East - Assistance Program
27 November	Summary of Minister Burke's Announcement – MDB Plan
4 December	New Carryover Calculator on Water Register Website
11 December	Annual Charges for Horticulture Registered Establishments
18 December	Citrus Inquiry Looms

**On the Grapevine (Feature in the local Sunraysia Daily Newspaper).**

May 2010	Crop Regulation for Fruit Size
August 2010	Decisions Need to be Made Now for Next Season's Crop Load
October 2010	Pruning Citrus
November 2010	Citrus Gall Wasp Releases
January 2011	Summer Rain and Fungal Infection
February 2011	Leaf Tissue Sampling
March 2011	Committing Fruit for Export
April 2011	Citrus Export Market
May 2011	Oleocellosis Risk Management
June 2011	Ralex Window Closing
July 2011	Krajewski Pruning Courses
August 2011	Citrus Benefits from Compost Integrated Pest Management
	Integrated Pest Management
October 2011	Longtailed Mealybugs
December 2011	Early GA Spray
February 2012	Leaf Tissue Sampling
March 2012	Biosecurity Risk Citrus Gall Wasp Parasites
April 2012	Our markets are in your pickers hands
May 2012	Committing Fruit For Export Citrus Industry at Risk
July 2012	Crop Regulation using flower manipulation

**MVCB Citrep (MVCB Quarterly Magazine)**

Volume 60	HLB and Asian Citrus Psyllid Katydid Management in Citrus
Volume 61	Gate to Plate Tour Possible Problems with Plague Locust Hatchings
Volume 62	Advanced Nutrition Training for Sunraysia Growers Murray Valley IDO Activities
Volume 63	Integrated Pest Management Murray Valley IDO Activities
Volume 64	Fruit Movement Under Qfly Outbreaks New Insights Into the Biology of Citrus Gall Wasp Murray Valley IDO Activities
Volume 65	Field Trials Farm Walk 2011/12 Crop Forecast Murray Valley IDO Activities
Volume 66	Corasil/Ralex Field Trials Farm Walks

	Murray Valley IDO Activities
	Pruning with Dr. Andy Krajewski
Volume 67	Citrus in Pakistan
	Murray Valley IDO Activities
	Taste of Melbourne Promotion
Volume 68	Citrus Information Technology Transfer
	Murray Valley IDO Activities
	A CAL Conference Presentation
Volume 69	Promising Chemical Alternatives for Citrus Gall Wasp
	Murray Valley IDO Activities
	Certifying Qfly Area Freedom in Sunraysia
	Potassium Field Trials Farm Walk
Volume 70	Funding Application for Sunraysia Red Scale Model
	Murray Valley IDO Activities
	Qfly Eradication continues

### **The Weekly Times**

April 2010	2010/11 Season Crop Forecast
April 2011	2011/12 Season Crop Forecast
April 2012	2012/13 Season Crop Forecast

### **Other media**

The MVIDO also participated in the following radio and television interviews.

#### **Television/Radio**

March 2010	HLB trip to USA and Leaf Analysis Farm Walk
April 2010	Horticultural Industry Network
May 2010	HLB trip to USA and Leaf Analysis Farm Walk
September 2011	Strategic Cost Saving on Farm
October 2011	Fuller's Rose Weevil and Citrus Gall Wasp Farm Walk
April 2012	Win TV On-Farm field Trials
April 2012	ABC Rural Report MV Crop Forecast
May 2012	ABC Rural Report Slow Citrus Market

#### **MVCB Website**

Linkages on the MVCB website were reviewed, updated and more created in 2011. A list of the current links are given in Appendix 3.

## **Networking and Development**

### ***Collaborate with Citrus Australia's General Manager – Market Development on national initiatives.***

The MVIDO collaborated with Citrus Australia's General Manager, Market Development on the following:

- Participated in teleconferences with other citrus IDO's as needed;
- Participated in the National Orange Week promotions;
- Organised and participated in orchard visits for Thailand delegation, (2010);
- Attended Citrus Export meeting, 2012;
- Organised and participated in orchard visits for Vietnam delegation, (2010);
- Organised and participated in orchard visits for Chinese delegation, (2011);
- Participated in the Citrus Strategic Agrichemical Review Process, (2012);
- Study Tours and Conferences and Field Days; and
- The MVIDO attended a variety of conference and study tours throughout the duration of the project. These conferences provided an excellent learning environment and an opportunity to network with other horticulture and citrus industry stakeholders.

### ***Conferences and field days***

The MVIDO attended the following national and international conferences:

- Citrus Australia's National Citrus Conference 2010, Hervey Bay, Queensland 31 October – 03 November 2010;
- Fresh Event, Melbourne Victoria, 11 June 2010;
- HAL IDO Conference – 8/9 August 2012;
- Citrus Australia's National Citrus Conference 2012, Leeton, New South Wales, 21 to 23 October, 2012; and
- 12<sup>th</sup> International Citrus Conference and Study Tour, Valencia, Spain, 12 to 24 November, 2012.

The MVIDO coordinated a stand at the Mildura Horticultural Field Days held in May of each year. The MVIDO's display was located in the Horticultural Industries tent, showcasing the role of the MVIDO. The display also highlighted the need for crop regulation to minimise biennial bearing patterns. Information on management of pests such as citrus gall wasp, Qfly and FRW was also available. The display also included information on citrus publications and fact sheets. Many growers took the opportunity to discuss issues relating to citrus production with the MVIDO.

The MVIDO attended the Riverland Field Day held in September each year.

### ***Training and personal development***

The MVIDO attended the following courses:

- 23 & 24 February 2010 – Australian Women in Agriculture Leading the Way Course;

- 8 & 9 April 2010 – Agrigator training. Agrigator is a horticulture business decision software developed by Vic DPI and available to growers free. A tour of a dried fruit property, Paul Scopeliti’s netting at Merbein and Sunbeam dried fruit factory was also included;
- 12 May 2010 – Freshcare Course at Dareton Research Station;
- 10 June 2010– Launch of ‘DPI services to horticulture producers’ discussion draft;
- 26 July 2010 – Evaluation Training;
- 13 September 2010– Training needs analysis and Industry Reviews;
- 26 October 2010– Managing Change Workshop;
- 27 October 2010 – Bureau of Meteorology Website Training;
- 7&8 December 2011 – Corporate Governance Workshop; and
- 2 February 2012 – Writing Media Articles/Designing Promotional Material.

### ***Industry and related meetings***

To keep abreast of the latest research information and other citrus industry requirements, the MVIDO attended a number of industry meetings, including:

- Citrus Industry Researchers and Extension Officers Liaison Day 2012;
- Horticulture Australia Ltd IDO/IDM Conference 2012;
- MVCB Board meetings 2010 to 2012;
- MVCB Budget meetings 2010, 2011, 2012;
- MVCB Grower Consultative Meetings 2010 to 2012;
- Murray Valley Industry Development Officer Network, 2010 to 2012; and
- Horticultural Industry Network Victoria, 2010 to 2012.

## Evaluation

The evaluation of the MVIDO Project CT09044 (Appendix 4) was conducted by an external consultant and examined the effectiveness of the project in addressing regionally specific challenges, the overall effectiveness of the role over the last three years, and strategic directions for the next three years.

The evaluation was conducted through an examination of existing data, and the development of new information through semi-structured interviews with twelve citrus growers, with six growers who regularly attend CITTgroup events and six growers who do not regularly attend CITTgroup events.

It was found that the IDO project has been highly effective in addressing regionally specific issues for Murray Valley citrus growers. The strongest examples were specific pest and disease issues and the effective transfer of information addressing *locally based* agronomy/growing practice and biosecurity issues.

A comprehensive record of participant assessments of each CITTgroup event have been collated and maintained by the MVIDO. This record provides a snapshot of citrus growers' reactions to the events that have been organised for them over the last four years.

Individual comments on the feedback sheets provided valuable information for the IDO in planning future events and providing "evaluation on the run".

Participants indicate whether or not they are likely to change any practices due to what they have seen or heard at each CITTgroup event. For nearly all events there was a very high ratio of participants indicating that they intended to make changes after a CITTgroup event.

Based on the information examined in the evaluation and individual event assessment forms it appears that the overall IDO role has been effective in meeting project objectives. Citrus growers spoke highly of the networking and communication outputs of the project. There was a high level of satisfaction with the organised events, for example, the majority of survey respondents at IDO organised events were either satisfied or highly satisfied. Comments from growers who were less satisfied with the role indicated that they had expectations that were outside the scope of the project, ie '*I expect the MVCB to lobby the Government more*'. As MVCB is a statutory authority running under Victorian Government legislation and the MVIDO is funded through a HAL project they are prohibited from lobbying Government.

Overall the evaluation indicated a very high level of satisfaction with the events that the MVIDO project facilitated. This was confirmed in the grower interviews (Appendix 4).

## Discussion

The MVIDO position was created by the MVCB in 1999 to coordinate the transfer of information from research and markets to industry and to assist in the identification of research and development opportunities and communicate these opportunities back to the research community for consideration.

Mary Cannard has held the position of Industry Development Officer for the Murray Valley Citrus Board since July 2007. This jointly funded project worked to achieve international best practice in the Australian citrus industry, in particular the Murray Valley citrus growing region.

This project was driven by a steering committee comprising of growers, packers and representatives of research organisations to ensure the needs of the citrus industry were being addressed and to maximize the opportunities for two-way information exchange between growers and researchers.

In the past decade the Murray Valley citrus industry has experienced difficulties associated with a number of influencing factors, including, drought, reduced water availability, low returns and high labour costs. More recently the high Australian dollar and biosecurity issues such as Queensland fruit fly (Qfly) outbreaks and competition in our traditional export markets from countries with very low production costs have had a significant negative affect on returns to growers.

The reduction in involvement in general direct extension and Qfly activities by state agriculture agencies and concomitant reduction in private agronomic consultancies operating locally in the Murray Valley, combined with the fact that growers have little capacity to pay for consultant advice has increased demand for the MVIDO to provide independent, objective advice and coordination of the transfer of technical, practical, biosecurity and general industry information to citrus growers in the Murray Valley.

It is critical for growers to be able to take action that will maximise long term productivity in an economic environment and climate that is highly variable and creating a plethora of short term crises that need to be addressed without compromising future production.

The reducing involvement by state agriculture agencies has led to a requirement for someone to co-ordinate the transfer of technical, practical and general information to citrus producers. The MVIDO has facilitated the transfer of information to citrus producers through different communication methods from field days to farm walks, technical workshops and production of fact sheets. The MVIDO has also been able to swiftly react to industry crises and present information to citrus producers enabling them to move forward.

Further, the MVIDO has developed closer links with packers, processors, researchers and other industry stakeholders in order to analyse and co-ordinate the timely dissemination of relevant, up-to-date information of benefit to the entire industry.

The external, independent evaluation of the MVIDO project highlighted the successes of the MVIDO position and the credibility of the position throughout the Murray Valley citrus industry (Appendix 4).

The MVIDO project has therefore, encouraged the adoption of practices that will assist growers to maintain their profitability whilst adapting to the changing economic, biosecurity (e.g. Qfly, FRW and citrus gall wasp) and climatic circumstances.

The MVIDO project has also provided information to citrus producers so more informed objective decisions can be made regarding new varieties, and agronomic practices that will enable citrus growers to supply fruit that meet the specific requirements of domestic and export markets.

Citrus growers in the Murray Valley have seen a significant deterioration in returns during the last two seasons. High exchange rates coupled with greater costs related to on-farm and postharvest disinfestation treatments to access export markets, has led to an oversupplied domestic market. Juice processors have moved away from using locally grown product, instead using higher volumes of imported juice concentrate. Growers need advice and have difficulty accessing and understanding all the technical publications, biosecurity actions, variety types and agronomic practices which can assist them. The MVIDO role has filled that gap.

## Recommendations

In the next three years, pest and disease management, growing fruit for market specifications and keeping pace with new production techniques will continue to be important issues to Murray Valley citrus producers. Increasingly important are the issues of dealing with biosecurity, specifically Qfly outbreaks, changes in the industry structure, local climate, and increasing cost of production.

Issues facing the Murray Valley Citrus industry over the next three years:

- Biosecurity (Un-precedented Qfly outbreaks);
- Generational change (who are the new growers?);
- Production techniques (change to production technology);
- Varieties for the future (growing for the market);
- DPI role change (regional person {wholesale v's retail information delivery});
- Decision making skills (enhancing growers' ability to make decision for long term outcomes); and
- Managing in uncertainty (assisting growers to plan with confidence in a context of uncertainty).

In order to deal with these current and emerging issues the ongoing communication and networking outputs of the IDO role will continue to be of vital importance to Murray Valley Citrus growers. The information transfer role needs to continue, however, there may be enhanced outcomes from a reduced emphasis on specific issues and a new focus on enhancing citrus growers' long term decision making skills and assisting growers to plan with confidence in an uncertain future

The specific issues addressed by the current IDO project are still relevant to the Murray Valley citrus industry. These include:

- Growing quality fruit;
- Pest and disease management;
- Market access requirements; and
- Planting and production data.

The time devoted to addressing these specific issues will need to be prioritised against the time required to address the new issues.

The networking, communication and social responsibility roles of the IDO project have been valuable to industry, and it is likely that they will continue to be of value over the next three years.

# Appendix One

## *Evaluation of chemicals for controlling citrus gall wasp*

### *– Trial 2010-2011*

Jianhua Mo, Andrew Creek, Scott Munro, and Mark Stevens

NSW Department of Primary Industries

#### **Summary**

A field trial was conducted on a citrus farm in the Coomealla Irrigation District in far west NSW during 2010-2011, to evaluate new chemical options for citrus gall wasp control. Three unregistered insecticides, BioPest<sup>®</sup> (a petroleum spray oil product), Confidor Guard<sup>®</sup>, and Movento<sup>®</sup> were evaluated along with the registered Supracide<sup>®</sup>. A single application of Confidor Guard<sup>®</sup> in late October reduced total gall weight in May in the following year by 62%, gall number by 60%, and the proportion of galled shoots by 47%. Similar reductions were achieved by three applications of the oil. On the other hand, Movento<sup>®</sup> and Supracide<sup>®</sup> did not show any control of the gall wasp. More trials are needed to confirm the efficacy of the new chemical options.

#### **Introduction**

Supracide<sup>®</sup> (400 g/L methidathion) is the only registered insecticide for citrus gall wasp (CGW). It has been reported to kill over 90% newly hatched citrus gall wasp larvae when applied between egg hatching and the formation of woody tissue around the larvae (Papacek & Smith 1989). Unfortunately, the chemical is highly toxic and disruptive to citrus IPM. A scoping study (Steven Falivene, personal communication) identified Confidor Guard<sup>®</sup> (350g/L imidacloprid) and Movento<sup>®</sup> (240 g/L spirotetramat) as potential alternatives to Supracide<sup>®</sup>. Petroleum spray oil is registered for use in citrus and may deter oviposition by CGW adults and was recommended for testing in technical forum on CGW management (Creek and Hardy 2009). This trial was conducted to determine the efficacy of the three new chemicals.

#### **Materials and Methods**

The trial was conducted in a 1.41-ha block of 'Autumn Gold' Navel orange trees (root stock: 'Citrange') on a farm in the Coomealla Irrigation District in far west NSW. The trees were 16 year-old, 2.5-m tall, spaced at 3-m within rows and 6-m between rows. The trial was designed as randomised complete blocks, with five replicates and each block occupying a separate row. A plot is two consecutive trees within the same row. Neighbouring blocks were separated by a buffer row and neighbouring plots within the same block by two trees. Three unregistered chemicals, BioPest<sup>®</sup> (815 g/L paraffinic oil), Confidor Guard<sup>®</sup>, and Movento<sup>®</sup> were tested along with the registered Supracide<sup>®</sup>. BioPest<sup>®</sup> was applied to the foliage at 0.5% with 4-L water/tree on 25 October, 9 November, and 19 November 2010. Confidor Guard<sup>®</sup> was applied as soil drench at 9-mL/tree with 1-L of water/tree along the drip lines on 25 October 2010. Movento<sup>®</sup> was applied to the foliage at 40-ml/100L with 4-L water/tree on 9 November and 9 December 2010. Supracide<sup>®</sup> was applied to the foliage at 125-ml/100L with 4-L water/tree on 9 December 2010. For all foliar sprays, Hasten<sup>®</sup> was added at 50-mL/100-L as the adjuvant.

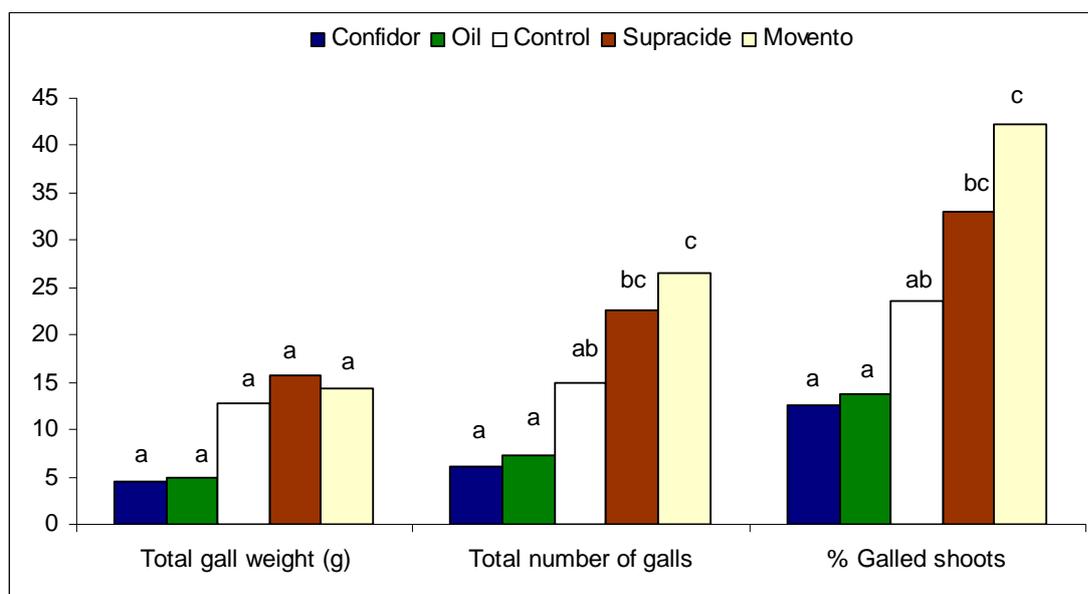
On 25-26 October 2010, before any sprays were put out, 20 current-year shoots were randomly selected from each tree in each plot and tagged with plastic tags. Half of the tagged shoots were measured for length and diameter. On 4-5 May 2012, all tagged shoots were cut from their bases and taken to the laboratory. Galls on the tagged shoots were counted and individually measured for diameter and length. Finally, galls from the same plot were put together and the total gall weight measured.

Treatment effects were analysed with respect to total gall weight, number of galls, and the proportion of galled shoots. Where significant treatment effects were detected ( $P < 0.05$ ), the treatment means were separated by Fisher's LSD tests. Proportional data were transformed by arcsine $\sqrt{x}$  before analysis. Data from plots with missing shoots were corrected by the respective proportions of tagged shoots recovered to ensure equality of sample size.

### Results and Discussion

Significant treatment effects were detected in total number of galls ( $F = 4.30$ ;  $df = 4, 16$ ;  $P = 0.0150$ ) and the proportion of tagged shoots galled ( $F = 5.75$ ;  $df = 4, 16$ ;  $P = 0.0046$ ) but not in the total gall weight ( $F = 1.79$ ;  $df = 4, 16$ ;  $P = 0.1801$ ). In comparison to the control, BioPest<sup>®</sup> and Confidor<sup>®</sup> reduced total gall weight by over 60%, total number of galls by over 50%, and proportion of galled shoots by over 40%, however, we were unable to statistically separate the two treatments from the control (Fig. 1). The inconsistency was probably due to presence of outliers in data. While the Confidor<sup>®</sup> treatment produced fewer galls than the control in four of the five trial blocks, the reverse was true in block-5 (Fig. 2). Similarly, the BioPest<sup>®</sup> treatment produced fewer galls than either the control, Supracide<sup>®</sup>, or Movento<sup>®</sup> in four of the five blocks but had more galls than Supracide<sup>®</sup> in block-1 (Fig. 2).

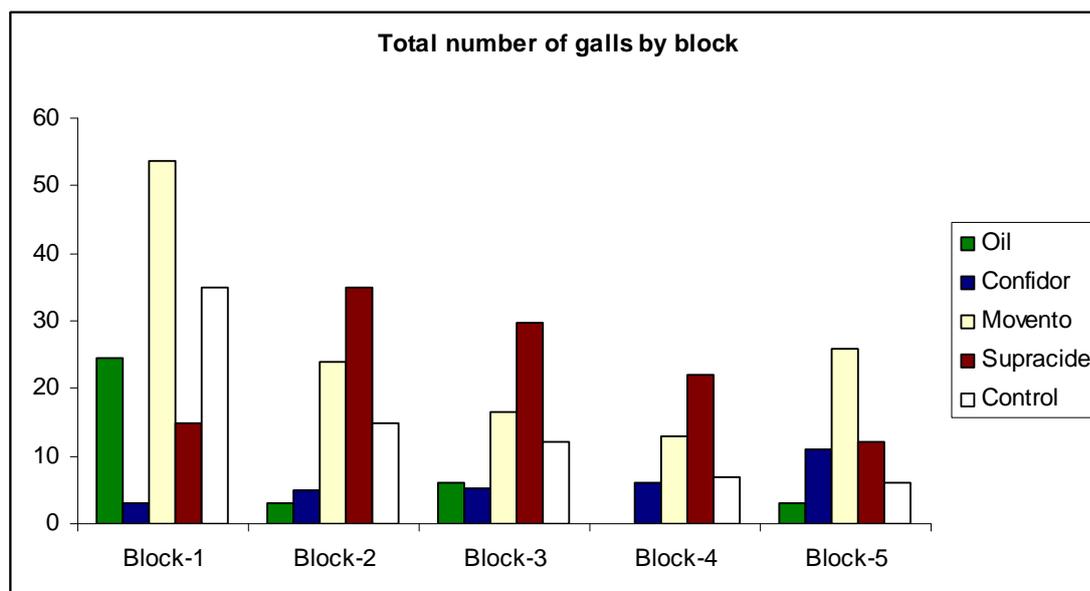
Neither Movento<sup>®</sup> nor Supracide<sup>®</sup> showed any effects on any of the three gall wasp infestation indices ( $P > 0.05$ ). Interestingly they performed worse than the control in all three galling indices analysed (Fig. 1) and the difference between Movento<sup>®</sup> and the control was significant in the total number of galls ( $P < 0.05$ ). It is unlikely that Movento<sup>®</sup> had actually enhanced the galling activity. The result was more likely due to pre-treatment variations of the test trees in their attractiveness to the citrus gall wasp.



**Fig. 1.**  
Total gall

weight, number of galls, and proportions of tagged shoots galled in different treatments in field trial 2010-2011. Bars in the same group sharing a common letter are not significantly different by LSD test at  $P = 0.05$  following detections of significant treatment effects by ANOVA.

**Fig. 2.**  
Total  
gall



number galls by trial block in field trial 2010-2011.

### Acknowledgement

The study is part of a project funded by Horticulture Australia Ltd with voluntary contributions from the Murray Valley Citrus Board. Mr Troy Witte of NSW DPI and Ms Mary Cannard and Mr Tony Bothroyd of Murray Valley Citrus Board helped with data collection. Mr Richard Bertalli provided the study sites. Thanks also to Andrew Beattie from the University of Western Sydney for his technical advice.

### References

- Creek A & Hardy S 2009. Final report - Citrus gall wasp technical forum. NSW Department of Primary Industries, 18 June 2009.
- Papacek DF & Smith D 1989. Insecticidal control of citrus gall wasp in Queensland. *General and Applied Entomology*: 21: 2-4.

# ***Evaluation of chemicals for controlling citrus gall wasp***

## ***– Trial 2011-2012***

Jianhua Mo, Andrew Creek, Scott Munro, and Mark Stevens

NSW Department of Primary Industries

### **Summary**

A second field trial of chemicals was conducted on a citrus farm in the Coomealla Irrigation District in far west NSW during 2011-2012. Three unregistered insecticides, BioPest<sup>®</sup> (Petroleum spray oil, PSO), Confidor Guard<sup>®</sup>, and Movento<sup>®</sup> were evaluated. BioPest<sup>®</sup> was tested at two rates, 0.5% and 0.25%. Confidor Guard<sup>®</sup> and Movento<sup>®</sup> were tested at single recommended rates. Two sets of efficacy data were collected, one from tagged shoots and the other from frame sampling. Data from tagged shoots showed that only the high rate BioPest<sup>®</sup> was effective, however, data from frame sampling showed that Confidor Guard<sup>®</sup> and Movento<sup>®</sup> were similarly effective. The reason for the difference is unknown but may have been due to the different sampling heights of the two data sets. The only treatment that was ineffective in both data sets was the low rate BioPest<sup>®</sup>. Considering a PSO rate lower than 0.5% is unlikely to be accepted for red scale control, future evaluation of BioPest<sup>®</sup> should target only 0.5%. The residue data suggest that Movento<sup>®</sup> is better applied immediately after peak egg hatching whereas Confidor Guard<sup>®</sup> can be applied well before peak egg hatching without losing its efficacy against CGW.

### **Introduction**

Filed trial 2010-2011 showed some promise of Confidor Guard<sup>®</sup> (350g/L imidacloprid) and BioPest<sup>®</sup> (815 g/L paraffinic oil) in reducing CGW infestation. While the results for Movento<sup>®</sup> (240 g/L spirotetramat) was discouraging, it is too early to say that the chemical was not effective since results of field trials are influenced by a large number of factors in addition to the treatments introduced, many of which are beyond the control of the experimenters such as weather and pest pressure. This trial was conducted to determine the efficacy of the three new chemicals. To see if the oil stays effective at a lower rate, BioPest<sup>®</sup> was tested at both 0.5% and 0.25%. Supracide<sup>®</sup> was not tested again considering its potential disruption to citrus IPM.

### **Materials and Methods**

The trial was conducted in a 1.35-ha block of 'Autumn Gold' Navel orange trees (root stock: 'Citrange') on a farm in the Coomealla Irrigation District in far west NSW, which is adjacent to the farm used in the 2010-2011 trial. The trees were 8 year-old, 2.5-m tall, and spaced at 3-m within rows and 6-m between rows. The trial was designed as randomised complete blocks. A block consisted of a row of single-tree plots separated by two trees in the same row. Six blocks were placed in two rows of citrus trees with a in-row buffer of two trees and a buffer row between the two treatment rows.

Five treatments were tested in this trial: BioPest<sup>®</sup> foliar spray at 0.25 and 0.5%, Confidor Guard<sup>®</sup>, Movento<sup>®</sup>, and a water-only control. Biopest<sup>®</sup> was applied to the foliage with 4-L water/tree on 21 October, 31 October, and 10 November 2011. Confidor Guard<sup>®</sup> was applied once as soil drench at 9-mL/tree with 1-L of water/tree along the drip lines on 21 November 2011. Movento<sup>®</sup> was applied to the foliage at 40-ml/100L with 4-L water/tree on 17 November and 8 December 2011. All foliar sprays used Hasten<sup>®</sup> as the adjuvant at 50-mL/100-L.

Two sets of efficacy data were collected, one from tagged shoots and the other from frame sampling. On 10-11 October 2011, before any sprays were put out, 40 randomly-chosen, current-year shoots were tagged from each tree and their lengths measured. On 7-8 May 2012, all tagged shoots were cut from their bases and taken to the laboratory. Galls on the tagged shoots were counted and individually measured for diameter and length. Galls from the same plot were put together and the

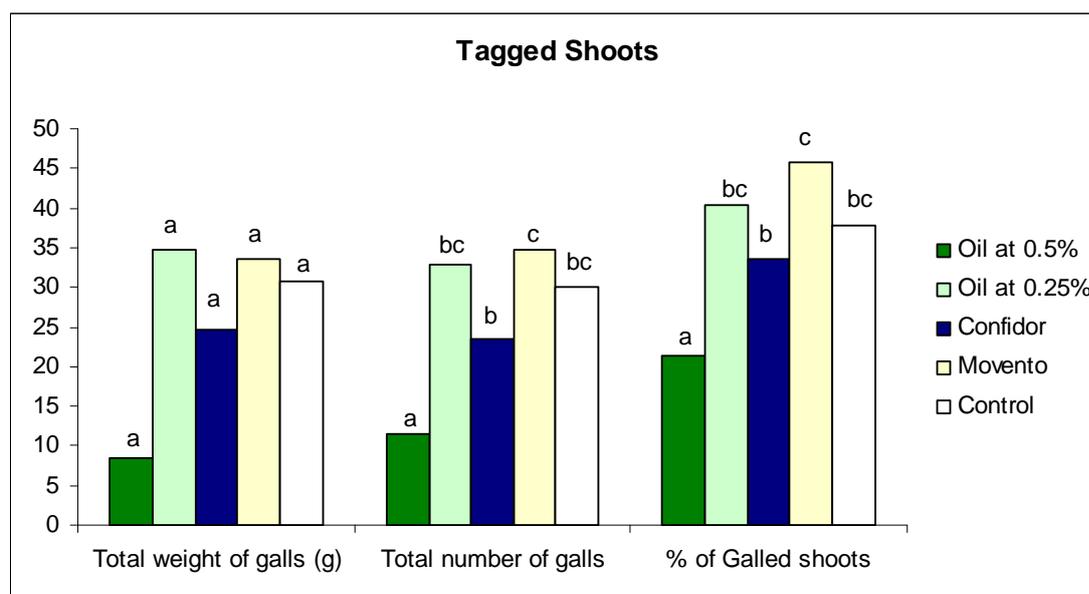
total gall weight measured. With frame sampling, a 50 x 50 cm frame was placed in a corner of the lower canopy of each tree, with corner position rotating clockwise at 90° intervals from tree to tree. All galls within the frame were removed and their lengths and diameters measured.

After the first Movento® application, three random samples of 1 kg of current-year shoots and foliage each were collected from Confidor®, Movento® and control plots at about 4-week intervals to assess the residue levels. The samples were placed in plastic zip bags and stored in a freezer before being sent to a laboratory of Bayer Crop Science for residue analysis.

Data from tagged shoots were analysed with respect to total gall weight, number of galls, and the proportion of galled shoots, and that from frame sampling to total gall weight and number of galls. Where significant treatment effects were detected ( $P < 0.05$ ), the treatment means were separated by Fisher's LSD tests. Proportional data were transformed by arcsine√x before analysis. Data from plots with missing shoots were corrected by the respective proportions of tagged shoots recovered to ensure equality of sample size.

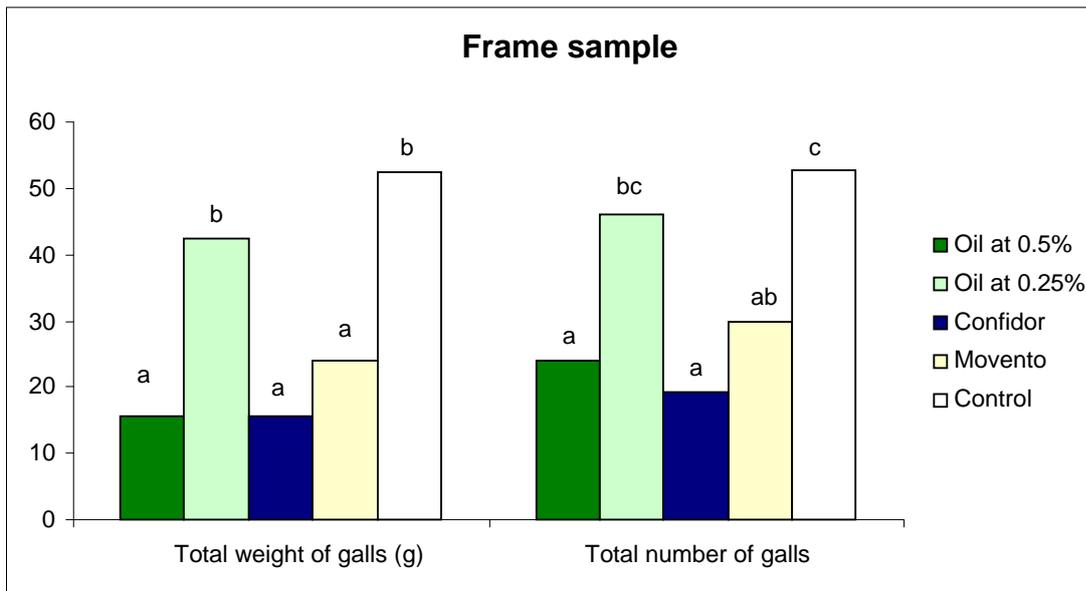
## Results

**Tagged shoots** Significant treatment effects were detected in the total number of galls ( $F = 3.80$ ;  $df = 4, 20$ ;  $P = 0.0127$ ) and the proportion of tagged shoots galled ( $F = 3.07$ ;  $df = 4, 20$ ;  $P = 0.0400$ ) but not in total gall weight ( $F = 2.63$ ;  $df = 4, 20$ ;  $P = 0.0649$ ). Where significant treatment effects were detected, only the high rate BioPest® can be statistically separated from the control (Fig. 1). On average, the BioPest® 0.5% treatment reduced total gall weight by 72%, total number of galls by 62%, and proportion of galled shoots by 43% in comparison to the control (Fig. 1)



**Fig. 1.** Total gall weight, number of galls, and proportions of galled shoots in data from tagged shoots in field trial 2011-2012. Bars in the same group sharing a common letter are not significantly different by LSD test at  $P = 0.05$ , following detections of significant treatment effects by ANOVA.

**Frame data** Significant treatment effects were detected in both gall weight ( $F = 4.20$ ;  $df = 4, 16$ ;  $P = 0.0163$ ) and number of galls ( $F = 3.06$ ;  $df = 4, 16$ ;  $P = 0.0476$ ). In comparison to the control, BioPest® 0.5%, Confidor Guard®, and Movento® reduced total gall weight by 70, 70, and 55% respectively, and number of galls by 54, 63, and 43% respectively (Fig. 2). The differences between each of the three treatments and the control were all significant ( $P < 0.05$ ), however, there were no significant differences within the three treatment (Fig. 2). The low rate BioPest® performed no better than the control.



**Fig. 2.** Total gall weight and number of galls in frame data in field trial 2011-2012. Bars in the same group sharing a common letter are not significantly different by LSD test at  $P = 0.05$  following detections of significant treatment effects by ANOVA.

**Residue data** Imidacloprid started to show up in Confidor Guard<sup>®</sup> treated trees four days after its application, peaked about one month later in late December, and then slowly decreased (Fig. 3). By the time of the last sample in mid-January, the residue level was still about 60% of its peak. In contrast, spirotetramat level decreased steadily during the period of the three residue samples and by mid-January it had become undetectable (Fig. 3). The second Movento application did not seem to have increased overall spirotetramat level in the foliage.

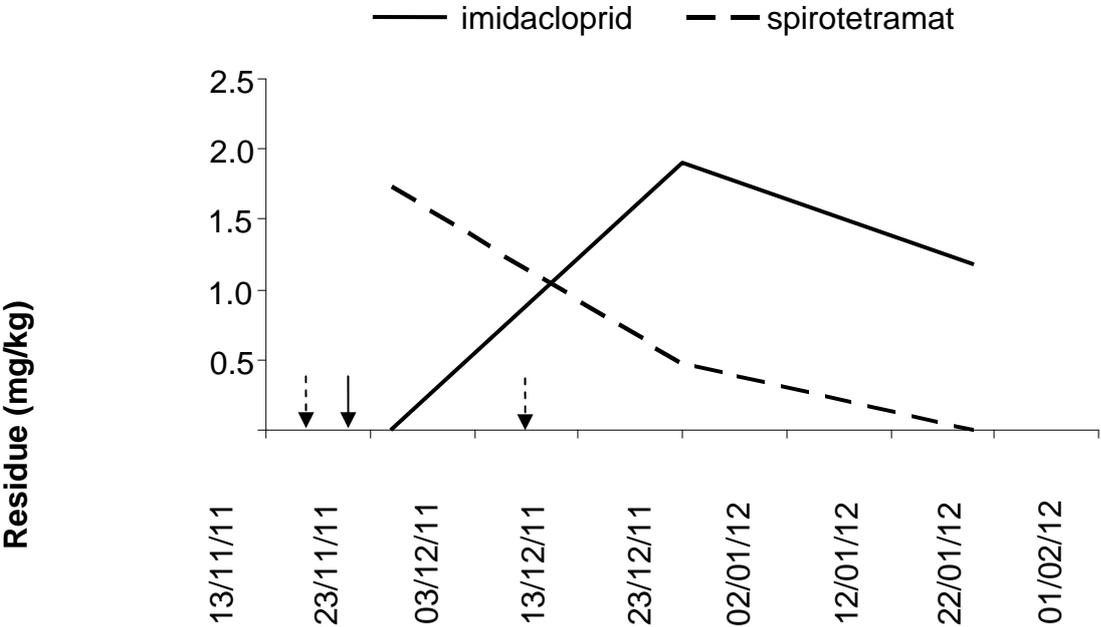
### Discussion

Trial 2010-2011 identified BioPest<sup>®</sup> 0.5% as a promising treatment against CGW. Results of this trial confirmed its effectiveness, with gall weight reduced by over 70% relative to the control. It was the only effective treatment revealed by data from tagged shoots. However, data from frame sampling showed Confidor Guard<sup>®</sup> and Movento<sup>®</sup> as similarly effective. The reason for the different results from the two data sources is unknown. Both sets of data were collected randomly, with no bias toward any particular treatments. The only noticeable difference of the two data sets is in the sampling height. CGW galls are concentrated in the lower canopy of citrus trees (Richard Bertalli, personal communication). With tagged shoots, while preference was given to selecting shoots in the lower canopy, sometimes there weren't enough shoots there and shoots from higher positions had to be selected. With frame sampling, however, the frames were always placed inside the lower canopy. Both Confidor Guard<sup>®</sup> and Movento<sup>®</sup> are systemic insecticides. If the two insecticides moved more to the lower canopy than the higher canopy after being taken up by the trees, then the better detections of the effects of the two chemicals in frame data than tagged shoots can be partially explained. Whatever the reason, it is important that in future trials, data should be collected by both shoot tagging and frame sampling and taken exclusively from the bottom canopy.

Both tagged shoots and frame data showed that BioPest<sup>®</sup> was not effective at 0.25%. While more data is needed to conclude on the lack of effectiveness of the low rate, we recommend future tests use only the 0.5% rate considering a PSO rate lower than 0.5% is unlikely to be accepted for red scale control.

The residue data suggested a steady decline of spirotetramat residue in young shoots and leaves after the first Movento<sup>®</sup> application. It is therefore important that Movento<sup>®</sup> applications be timed close to peak egg hatching. In a separate study, we have shown that most CGW eggs had hatched by late December in both 2011 and 2012. In this trial, the first application date of Movento<sup>®</sup> appeared to have been too early and better CGW control by this chemical may be achieved by later sprays, e.g. in early

and mid December. Residue data for Imidacloprid showed the chemical stayed in the plant for a longer period than spirotetramat, which is not surprising as imidacloprid is known to have a relatively long residue period. It is important to note, however, spirotetramat seemed to be picked up by the trees immediately after spray but there was a delay of at least four days before sufficient residues of imidacloprid showed in plants. The implication is that, unlike Movento®, Confidor Guard® can be sprayed well before peak egg hatching without losing its efficacy against CGW.



**Fig. 3.** Residue of the active ingredient of Confidor Guard® (imidacloprid) and Movento® (spirotetramat) in citrus foliage (mg/kg). Arrow shows the timing of the applications of the two chemicals (imidacloprid: solid arrow, spirotetramat: dashed arrows).

**Acknowledgement**

The study is part of a project funded by Horticulture Australia Ltd with voluntary contributions from the Murray Valley Citrus Board. Ms Karen Connolly helped with data collection. Mr Shane Smyth provided the study sites. Thanks also to Andrew Beattie from the University of Western Sydney for his technical advice.

**Appendix Two –**  
***Crop forecast booklet 2010/11***



**MURRAY VALLEY CITRUS BOARD**  
**Crop Forecast**  
**2010/11**

## MURRAY VALLEY CITRUS BOARD AREA

The Murray Valley Citrus Board (MVCB) provides service to approximately 448 citrus growers on both the NSW and Victorian sides of the Murray River from the SA border to Echuca/Moama and areas around Kyabram and Wangaratta.

These growers are serviced by some 44 Approved Receivers (packers), (9 major packers for 75% of fruit grown) 1 processor/packer and 8 processors.

Historically 50% of the Navel crop is exported and the balance goes to local markets and juice processing.

Approximately 40% of the ever decreasing Valencia crop is sold into the local and export fresh fruit markets, the balance is directed to juice processors.





## NAVEL CROP 2010/2011 SEASON

Early Season Navel Forecast 15,104 tonnes

Mid Season Navel Forecast 15,115 tonnes

Late Season Navel Forecast 31,418 tonnes

**Total Forecast Navel Crop 2010/2011 61,637 tonnes**

### Fruit Quality and Size

Based on fruit density counts, fruit size and growth rate measurements taken during January, February and March it is estimated that this season's total Navel crop will be 61,637 tonnes. Last year actual Navel production totalled 103,000 tonnes based on levies paid. While the decrease in tonnage is across the board in all Navels, early and late season Navels are showing the largest decrease of approximately 42%. This is due to lighter density counts on all Navels after last year's large crop. In addition fruitlet drop was exacerbated by the heat wave in early November.

Water restrictions have again played a role in the decrease in overall hectares under Navel production. There has been a 1.66% decrease in the bearing hectares under Navel production. However, there has been a 125% increase in non bearing hectares of Navels, indicating that older patches are being removed and replaced with young trees.

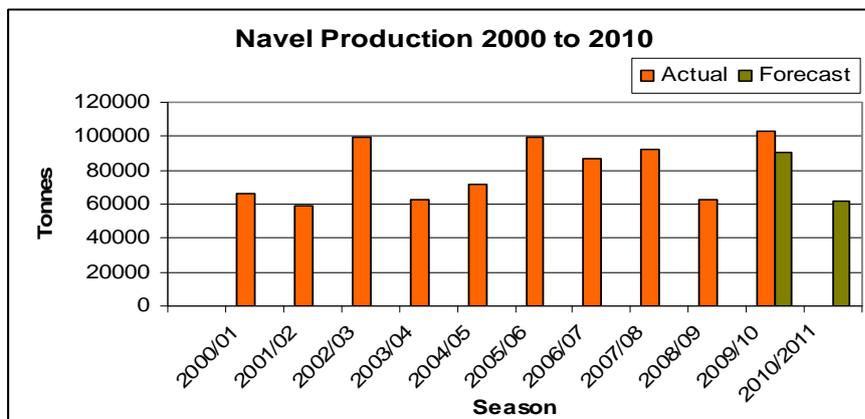
### Rind Quality

Assessment has been conducted during March to ascertain rind quality and packing potential using the Riversun quality parameters. This may vary as albedo, colour and late pest infestation cannot be factored in at this stage. This year in summary: pest damage on fruit is very low; sunburn blemish is limited; and wind damage is evident on all varieties.

### General Comments

Overall eating quality is excellent; however, fruit at the larger end of the scale is showing some rind coarseness, but has high juice levels and eats extremely well. The percentage of preferred size range noted from the crop forecast sites of fruit for export markets has increased on the previous season. Size is generally well above last season's growth rate and well above the long term average. The count ranges and percentage breakdowns have been included to illustrate the situation. Factors to consider that may affect the final stages of fruit growth are high salinity, extreme wet weather conditions and prolonged frost conditions.

## MURRAY VALLEY CITRUS BOARD - NAVEL PRODUCTION 2000-2010



## VALENCIA CROP 2010/2011 SEASON

**Total Forecast Valencia Crop 2010/2011                      16,400 tonnes**

(This is based on a harvest date of September/October 2010) It must be noted that the crop volume will increase as fruit size increases when harvested into late 2010 and early 2011.

### Fruit Quality and Size

Based on fruit density counts, fruit size and growth rate measurements taken during January, February and March it is estimated that this season's total Valencia crop will be 16,400 tonnes, at September harvest timing. This is a 39% decrease on last season's crop of 27,000 (forecast figure) tonnes. Approximately 96 % of 2009/10 Valencias have been harvested.

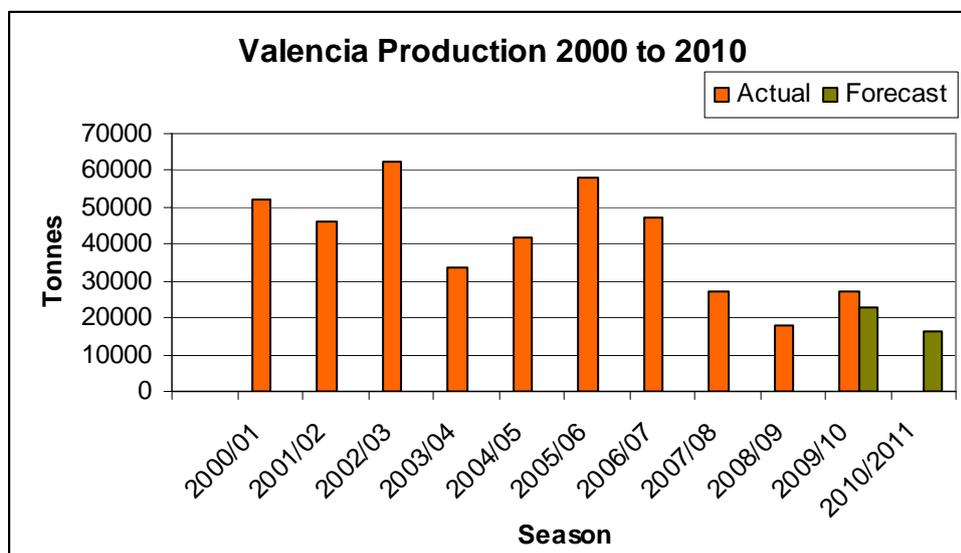
### Rind Quality

Assessments were conducted but it was felt that it may be misleading due to fruitlet size making it difficult to determine potential rind blemish. However, wind damage is likely to be visible.

### General Comments

Bearing hectares for Valencias have continued to decline by an estimated 7.3%; however there has been a large increase (48.5%) in non bearing hectares. The largest increase in non bearing hectares is in seedless Valencias.

## MURRAY VALLEY CITRUS BOARD - VALENCIA PRODUCTION 2000-2010



**2010 ESTIMATED FRUIT SIZE  
FOR NAVELS IN THE MURRAY VALLEY**

**Navelina – Early Season Navels**

**Count Range and Percentage**

**Variety: Navelina**

**Australian Count Ranges and Percentage Breakdown**

Estimated size ranges for May harvest.

Current Season figures are based on the condition that the average March to May growth rate is 6mm

Past Season figures are based on applying the ten year average growth rate to actual sizes measured in March

Count	150 & Smaller	138-113	100-88	80-72	64	56 & Larger
Season	64 mm & Smaller	Between 65-69 mm	Between 70-74 mm	Between 75-81 mm	Between 82-85mm	86 mm & Larger
2005	0.0%	9.2%	32.5%	44.2%	10.0%	4.2%
2006	7.2%	29.8%	29.4%	26.4%	5.1%	2.1%
2007	7.5%	18.9%	26.2%	23.5%	8.5%	15.3%
2008	2.0%	10.9%	25.4%	36.3%	13.7%	11.7%
2009	3.4%	14.9%	31.7%	39.6%	6.7%	3.7%
2010	0.0%	0.8%	5.5%	28.1%	23.4%	42.2%

**\* 78% of fruit is in the preferred sizes for Class 1 export fruit**

Note: Count Range and Percentages contain both clean and blemished fruit.

**Blemish Level by Count Range: Navelina**

	150 & Smaller	138-113	100-88	80-72	64	56 & Larger	US Sized	Total
Level	64 mm & Smaller	Between 65-69 mm	Between 70-74 mm	Between 75-81 mm	Between 82-85mm	86 mm & Larger		
<b>Pest</b>	0.0%	1.8%	1.2%	2.5%	2.0%	5.0%	3.5%	3.7%
<b>Wind</b>	0.0%	5.1%	22.6%	22.5%	21.1%	24.3%	19.6%	20.6%
<b>Defect</b>	0.0%	2.0%	9.5%	3.5%	3.5%	2.4%	4.1%	5.1%
<b>Clean</b>	0.0%	89.2%	66.7%	70.7%	72.2%	68.2%	72.8%	68.4%
<b>Phys</b>	0.0%	1.9%	0.0%	0.8%	1.2%	0.1%	0.9%	2.2%

**Blemish Severity by Count Range: Early Season Navel**

	150 & Smaller	138-113	100-88	80-72	64	56 & Larger	US Sized	Total
Severity	64 mm & Smaller	Between 65-69 mm	Between 70-74 mm	Between 75-81 mm	Between 82-85mm	86 mm & Larger		
<b>Major</b>	0.0%	6.9%	12.5%	10.3%	4.7%	15.5%	7.4%	5.9%
<b>Minor</b>	0.0%	3.9%	20.8%	19.0%	23.1%	17.3%	19.8%	25.7%
<b>None</b>	0.0%	89.2%	66.7%	70.7%	72.2%	67.2%	72.8%	68.4%

**2010 ESTIMATED FRUIT SIZE  
FOR NAVELS IN THE MURRAY VALLEY**

**Leng – Early Season Navels**

**Count Range and Percentage**

**Variety: Leng**

**Australian Count Ranges and Percentage Breakdown**

Estimated size ranges for June harvest.

Current Season figures are based on the condition that the average March to June growth rate is 10 mm

Past Season figures are based on applying the ten year average growth rate to actual sizes measured in March

Count	150 & Smaller	138-113	100-88	80-72	64	56 & Larger
Season	64 mm & Smaller	Between 65-69 mm	Between 70-74 mm	Between 75-81 mm	Between 82-85mm	86 mm & Larger
<b>2005</b>	17.0%	37.5%	30.4%	14.3%	0.6%	0.2%
<b>2006</b>	17.1%	35.3%	27.3%	15.5%	4.0%	0.9%
<b>2007</b>	7.0%	20.4%	33.4%	29.3%	7.3%	2.7%
<b>2008</b>	3.6%	13.2%	21.0%	38.5%	13.6%	10.0%
<b>2009</b>	7.1%	19.0%	26.7%	33.3%	9.0%	4.9%
<b>2010</b>	0.2%	0.6%	7.7%	36.9%	23.1%	30.8%

**\* 85% of fruit is in the preferred sizes for Class 1 export fruit**

Note: Count Range and Percentages contain both clean and blemished fruit.

**Blemish Level by Count Range: Leng**

	150 & Smaller	138-113	100-88	80-72	64	56 & Larger	US Sized	Total
Level	64 mm & Smaller	Between 65-69 mm	Between 70-74 mm	Between 75-81 mm	Between 82-85mm	86 mm & Larger		
<b>Pest</b>	0.0%	1.1%	0.9%	2.5%	3.1%	4.4%	0.9%	3.7%
<b>Wind</b>	15.9%	13.0%	19.5%	11.6%	17.9%	14.3%	15.3%	15.5%
<b>Defect</b>	0.0%	1.1%	3.9%	4.9%	5.7%	8.3%	2.4%	3.9%
<b>Clean</b>	84.1%	83.2%	73.6%	76.9%	73.3%	70.8%	77.0%	74.6%
<b>Phys</b>	0.0%	1.6%	2.1%	4.1%	0.0%	2.2%	4.4%	2.3 %

**Blemish Severity by Count Range: Leng**

	150 & Smaller	138-113	100-88	80-72	64	56 & Larger	US Sized	Total
Severity	64 mm & Smaller	Between 65-69 mm	Between 70-74 mm	Between 75-81 mm	Between 82-85mm	86 mm & Larger		
<b>Major</b>	8.0%	7.0%	19.0%	15.7%	15.8%	10.0%	13.7%	11.4%
<b>Minor</b>	7.9%	9.8%	6.4%	7.4%	10.9%	19.3%	9.3%	14.0%
<b>None</b>	84.1%	83.2%	74.6%	76.9%	73.8%	70.7%	77.0%	74.6%

**2010 ESTIMATED FRUIT SIZE  
FOR NAVELS IN THE MURRAY VALLEY**

**Washington – Mid Season Navels**

**Count Range and Percentage**

**Variety: Washington**

**Australian Count Ranges and Percentage Breakdown**

Estimated size ranges for June harvest.

Current Season figures are based on the condition that the average March to June growth rate is 11 mm

Past Season figures are based on applying the ten year average growth rate to actual sizes measured in March

Count	150 & Smaller	138-113	100-88	80-72	64	56 & Larger
Season	64 mm & Smaller	Between 65-69 mm	Between 70-74 mm	Between 75-81 mm	Between 82-85mm	86 mm & Larger
2004	10.0%	12.9%	25.8%	39.1%	8.3%	4.0%
2005	10.2%	28.0%	35.8%	22.7%	3.1%	0.4%
2006	7.2%	19.4%	35.2%	30.7%	5.3%	2.1%
2007	7.1%	13.9%	26.3%	35.6%	10.4%	6.7%
2008	4.0%	6.4%	13.1%	38.4%	19.1%	19.1%
2009	3.0%	12.1%	27.3%	32.3%	12.0%	10.3%
2010	0.3%	1.9%	4.9%	14.0%	15.7%	63.2%

**\* 80% of fruit is in the preferred sizes for Class 1 export fruit**

Note: Count Range and Percentages contain both clean and blemished fruit.

**Blemish Level by Count Range: Washington**

	150 & Smaller	138-113	100-88	80-72	64	56 & Larger	US Sized	Total
Level	64 mm & Smaller	Between 65-69 mm	Between 70-74 mm	Between 75-81 mm	Between 82-85mm	86 mm & Larger		
<b>Pest</b>	0.0%	3.7%	5.2%	3.6%	3.4%	0.5%	1.6%	2.1%
<b>Wind</b>	25.0%	18.5%	21.2%	12.0%	17.2%	16.3%	15.9%	22.8%
<b>Defect</b>	0.0%	5.3%	0.8%	3.7%	1.4%	2.5%	6.4%	0.0%
<b>Clean</b>	75.0%	70.5%	72.0%	77.5%	76.5%	76.2%	75.8%	73.7%
<b>Phys</b>	0.0%	2.0%	0.6%	3.2%	1.5%	4.5%	0.3%	1.4%

**Blemish Severity by Count Range: Washington**

	150 & Smaller	138-113	100-88	80-72	64	56 & Larger	US Sized	Total
Severity	64 mm & Smaller	Between 65-69 mm	Between 70-74 mm	Between 75-81 mm	Between 82-85mm	86 mm & Larger		
<b>Major</b>	20.5%	21.5%	20.9%	14.4%	14.5%	16.3%	16.4%	17.1%
<b>Minor</b>	4.5%	9.0%	6.4%	8.1%	9.0%	7.5%	7.7%	9.2%
<b>None</b>	75.0%	70.5%	72.7%	77.5%	76.5%	76.2%	75.9%	73.7%

**2010 ESTIMATED FRUIT SIZE  
FOR NAVELS IN THE MURRAY VALLEY**

**Late Lanes – Late Season Navels  
Count Range and Percentage**

**Variety: Lane**

**Australian Count Ranges and Percentage Breakdown**

Estimated size ranges for July harvest.

Current Season figures are based on the condition that the average March to September growth rate is 13 mm

Past Season figures are based on applying the ten year average growth rate to actual sizes measured in March

Count	150 & Smaller	138-113	100-88	80-72	64	56 & Larger
Season	64 mm & Smaller	Between 65-69 mm	Between 70-74 mm	Between 75-81 mm	Between 82-85mm	86 mm & Larger
2004	9.5%	13.3%	34.5%	36.4%	4.7%	1.6%
2005	1.7%	11.3%	31.0%	43.0%	8.9%	4.2%
2006	3.4%	13.7%	36.9%	38.0%	7.2%	0.8%
2007	1.8%	8.5%	25.6%	45.9%	11.8%	6.4%
2008	2.1%	6.1%	21.1%	44.3%	18.2%	8.2%
2009	8.5%	11.9%	33.1%	36.3%	6.9%	3.3%
2010	0.3%	0.8%	3.4%	12.3%	13.9%	69.3%

**\* 82% of fruit is in the preferred sizes for Class 1 export fruit**

Note: Count Range and Percentages contain both clean and blemished fruit.

**Blemish Level by Count Range: Lane**

	150 & Smaller	138-113	100-88	80-72	64	56 & Larger	US Sized	Total
Level	64 mm & Smaller	Between 65-69 mm	Between 70-74 mm	Between 75-81 mm	Between 82-85mm	86 mm & Larger		
<b>Pest</b>	0.0%	8.2%	0.5%	5.5%	3.2%	0.6%	7.7%	0.1%
<b>Wind</b>	0.0%	25.2%	16.4%	17.4%	15.9%	15.3%	19.6%	15.6%
<b>Defect</b>	0.0%	2.9%	7.8%	3.9%	2.5%	0.0%	1.7%	0.7%
<b>Clean</b>	0.0%	63.7%	72.5%	68.5%	74.2%	83.3%	68.2%	83.2%
<b>Phys</b>	0.0%	0.0%	2.8%	4.7%	4.2%	0.8%	2.8%	0.4%

**Blemish Severity by Count Range: Lane**

	150 & Smaller	138-113	100-88	80-72	64	56 & Larger	US Sized	Total
Severity	64 mm & Smaller	Between 65-69 mm	Between 70-74 mm	Between 75-81 mm	Between 82-85mm	86 mm & Larger		
<b>Major</b>	0.0%	23.8%	18.4%	23.9%	17.0%	5.8%	21.3%	15.7%
<b>Minor</b>	0.0%	12.5%	9.1%	7.6%	8.8%	10.9%	10.5%	1.1%
<b>None</b>	0.0%	63.7%	72.5%	68.5%	74.2%	83.3%	68.2%	83.2%

## MANDARIN CROP 2010 SEASON

**Forecast Mandarin Crop 2010**

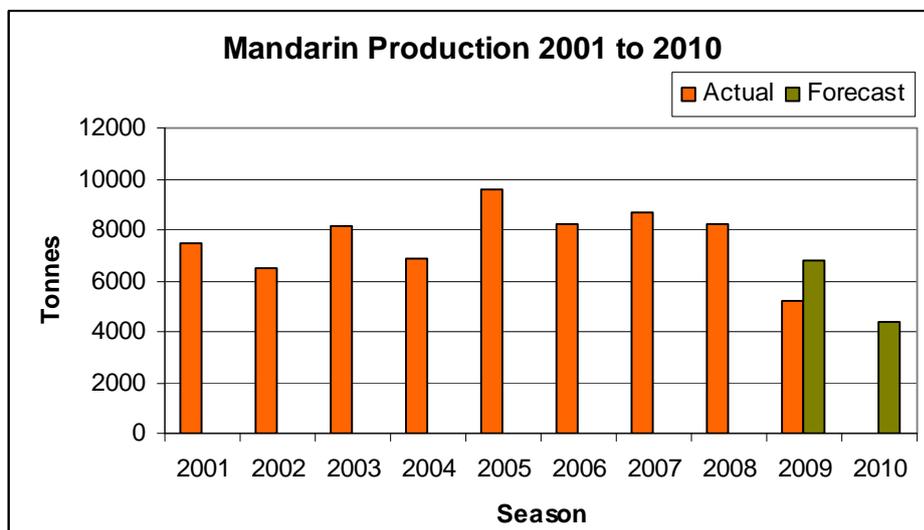
**3,688 tonnes**

### General Comments

Based on fruit density counts taken during January, it is estimated that this season's Mandarin crop will be 3,688 tonnes (excluding Afourers), at July harvest time. This year Afourer Mandarins have been removed from the Mandarin forecast due to increased plantings and their heavier density which skews the crop forecast. Afourer throughput figures will be collected this year to enable compilation of base data from which an Afourer forecast can be determined next season.

Bearing hectares for Mandarins have increased by 6.58%, and non-bearing hectares have increased by 16.3%. However total hectares have only increased by 0.55% indicating that older trees are being removed.

### MURRAY VALLEY CITRUS BOARD - MANDARIN PRODUCTION 2001-2010



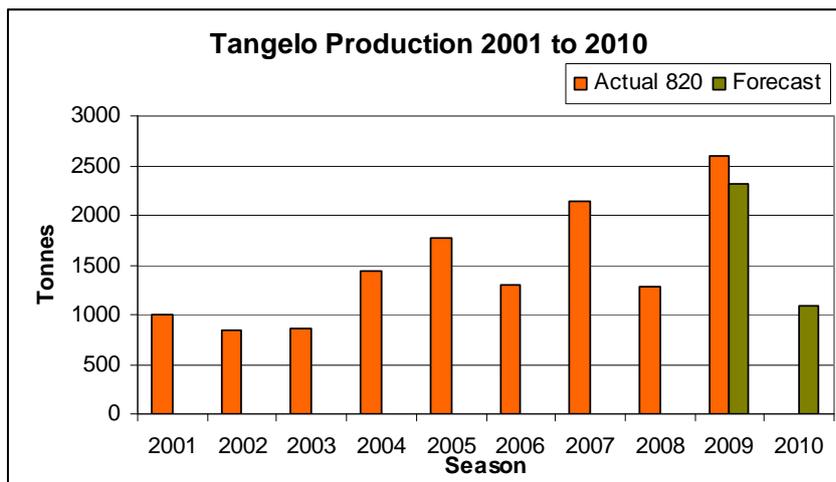
## TANGELO CROP 2010 SEASON

**Total Forecast Tangelo Crop 2010**                      **1,094 tonnes**

### General Comments

Based on fruit density counts taken during January, it is estimated that this season's total Tangelo crop will be 1,094 tonnes, at August harvest timing, a 58% decrease on last season's crop. Densities are well down on last year. Overall hectares of Tangelos have remained relatively stable with only a 1% increase on last year's hectares.

### MURRAY VALLEY CITRUS BOARD - TANGELO PRODUCTION 2001-2010



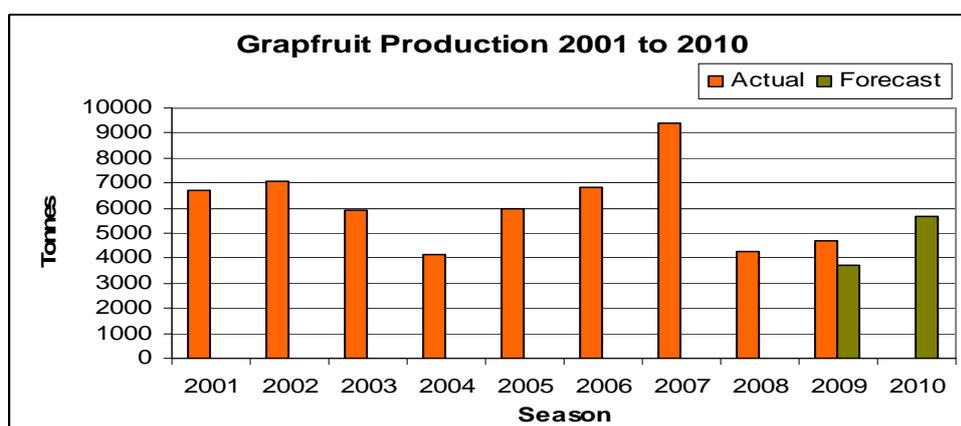
## GRAPEFRUIT CROP 2010/11 SEASON

**Total Forecast Grapefruit Crop 2010/11**                      **5,648 tonnes**

### General Comments

Based on fruit density counts taken during January, it is estimated that this season's total Grapefruit crop will be 5,486 tonnes, a 20% increase on last season's crop. Densities are slightly up on last year. Overall hectares of Grapefruit have decreased by 12.5%. However the decrease is due to a reduction in white grapefruit plantings as bearing red grapefruit plantings have increased from 36.49 ha to 40.69 ha

### MURRAY VALLEY CITRUS BOARD - GRAPEFRUIT PRODUCTION 2001-2010



## PLANTING STATISTICS - AS AT 31 JANUARY 2010

### Murray Valley Citrus Board Plantings Comparison 2009 to 2010 Survey

#### Planting Statistics as at 31 January 2010

Variety	Total Hectares Planted	Total Bearing Hectares	Total Non Bearing Hectares
2009 Navel - Early Season	978.14	913.43	64.71
2010 Navel - Early Season	949.92	876.14	73.77
2009 Navel - Mid Season	756.05	648.16	107.89
2010 Navel - Mid Season	730.58	730.58	730.58
2009 Navel - Late Season	2262.33	1995.56	266.77
2010 Navel - Late Season	2260.75	2075.93	184.82
2009 Navel - Misc. Season	71.87	71.59	0.28
2010 Navel - Misc. Season	59.52	58.51	1.01
<b>2009 Navel Total</b>	<b>4068.39</b>	<b>3628.74</b>	<b>439.65</b>
<b>2010 Navel Total</b>	<b>4000.76</b>	<b>3741.16</b>	<b>990.18</b>
<b>Change in Hectares</b>	<b>67.63</b>	<b>112.44</b>	<b>550.53</b>
<b>% Increase/Decrease</b>	<b>1.66</b>	<b>3.10</b>	<b>125.22</b>
2009 Valencia Seeded	1109.81	1098.03	11.78
2010 Valencia Seeded	1030.03	1017.25	12.77
2009 Valencia Seedless	15.51	12.17	3.34
2010 Valencia Seedless	21.44	11.76	9.68
<b>2009 Valencia Total</b>	<b>1125.32</b>	<b>1110.20</b>	<b>15.12</b>
<b>2010 Valencia Total</b>	<b>1051.47</b>	<b>1029.01</b>	<b>22.45</b>
<b>Change in Hectares</b>	<b>73.85</b>	<b>81.19</b>	<b>7.33</b>
<b>% Increase/Decrease</b>	<b>6.56</b>	<b>7.31</b>	<b>48.51</b>
2009 Mandarin - Early Season	408.26	316.42	91.83
2010 Mandarin - Early Season	412.05	305.60	106.45
2009 Mandarin - Mid Season	77.97	72.66	5.31
2010 Mandarin - Mid Season	72.02	65.29	6.73
2009 Mandarin - Late Season	55.84	52.98	2.86

2010 Mandarin - Late Season	50.22	46.26	3.96
2009 Mandarin - Misc. Season	195.12	13.60	181.52
2010 Mandarin - Misc. Season	251.40	41.02	210.38
<b>2009 Mandarin Total</b>	<b>737.19</b>	<b>455.66</b>	<b>281.52</b>
<b>2010 Mandarin Total</b>	<b>785.69</b>	<b>458.17</b>	<b>327.52</b>
<b>Change in Hectares</b>	<b>48.50</b>	<b>2.51</b>	<b>46.00</b>
<b>% Increase/Decrease</b>	<b>6.58</b>	<b>0.55</b>	<b>16.34</b>

## Murray Valley Citrus Board Plantings Comparison 2009 to 2010 Survey

Planting Statistics as at 31 January 2010

Variety	Total Hectares Planted	Total Bearing Hectares	Total Non Bearing Hectares
2009 Blood Orange	29.06	21.49	7.57
2010 Blood Orange	26.73	20.75	5.98
<b>Change in Hectares</b>	<b>2.33</b>	<b>0.74</b>	<b>1.59</b>
<b>% Increase/Decrease</b>	<b>8.02</b>	<b>3.44</b>	<b>21.02</b>
2009 Grapefruit - Red Fleshed	36.49	29.79	6.70
2010 Grapefruit - Red Fleshed	40.69	29.55	11.14
2009 Grapefruit - White Fleshed	154.52	148.85	5.66
2010 Grapefruit - White Fleshed	137.81	137.56	0.25
<b>2009 Grapefruit Total</b>	<b>191.01</b>	<b>178.64</b>	<b>12.36</b>
<b>2010 Grapefruit Total</b>	<b>178.50</b>	<b>167.11</b>	<b>11.39</b>
<b>Change in Hectares</b>	<b>12.51</b>	<b>11.53</b>	<b>0.97</b>
<b>% Increase/Decrease</b>	<b>6.55</b>	<b>6.46</b>	<b>7.85</b>
2009 Lemon	123.32	117.11	6.21
2010 Lemon	111.00	98.64	12.36
<b>Change in Hectares</b>	<b>12.32</b>	<b>18.47</b>	<b>6.15</b>
<b>% Increase/Decrease</b>	<b>9.99</b>	<b>15.77</b>	<b>99.03</b>
2009 Lime	4.22	3.05	1.17
2010 Lime	4.22	3.17	1.05
<b>Change in Hectares</b>	<b>0.00</b>	<b>0.12</b>	<b>0.12</b>
<b>% Increase/Decrease</b>	<b>0.00</b>	<b>3.93</b>	<b>10.26</b>
2009 Tangelo	90.47	82.77	7.70
2010 Tangelo	91.55	82.59	8.96
<b>Change in Hectares</b>	<b>1.08</b>	<b>0.18</b>	<b>1.26</b>
<b>% Increase/Decrease</b>	<b>1.19</b>	<b>0.21</b>	<b>16.36</b>
2009 Unspecified Varieties	51.24	38.29	12.95

2010 Unspecified Varieties	41.67	40.75	0.92
<b>Change in Hectares</b>	<b>9.57</b>	<b>2.46</b>	<b>12.03</b>
<b>% Increase/Decrease</b>	<b>18.68</b>	<b>6.40</b>	<b>92.89</b>
<b>2009 TOTAL PLANTINGS</b>	<b>6420.20</b>	<b>5635.96</b>	<b>784.24</b>
<b>2010 TOTAL PLANTINGS</b>	<b>6291.59</b>	<b>5544.53</b>	<b>747.06</b>
<b>Change in Hectares</b>	<b>128.61</b>	<b>91.43</b>	<b>37.18</b>
<b>% Increase/Decrease</b>	<b>2.00</b>	<b>1.62</b>	<b>4.74</b>

*Source: Murray Valley Citrus Board annual property registrations*

<b>Murray Valley Citrus Board Varietal Planting Statistics at 31 January 2010</b>			
<b>Variety</b>	<b>Total Hectares</b>	<b>Bearing Hectares</b>	<b>Non-Bearing Hectares</b>
<b>Early Season Navels</b>			
Atwood	25.68	10.90	14.79
Biggs Leng	1.63	1.63	0.00
Chislett M7	24.83	0.00	24.83
EarlyBird	0.15	0.15	0.00
Fisher	20.40	4.69	15.70
Fukumoto	12.67	10.98	1.69
Italian Navelina	0.77	0.77	0.00
Leng	434.58	414.49	20.08
Lloyd Leng	1.29	1.29	0.00
Navelina	354.76	348.88	5.88
Newhall	10.19	10.19	0.00
Pasin	6.05	2.81	3.24
Ryan	57.13	57.00	0.13
Thompson	36.91	36.66	0.25
Whitely	6.32	6.00	0.32
<b>Mid Season Navel</b>			
Bellamy	0.44	0.44	0.00
Cara Cara	40.46	14.20	26.26
Golden Nugget	0.54	0.54	0.00
Hockney	1.97	0.85	1.12
Navelate	0.92	0.92	0.00
Palmer	0.21	0.21	0.00
Washington	660.36	605.69	54.68
<b>Late Season Navels</b>			
Autumn Gold	61.91	58.49	3.42
Barnfield	190.60	184.93	5.67
Chislett	320.96	264.31	56.65

Christensen	3.35	3.35	0.00
Christmas	0.47	0.47	0.00
Clark	10.45	9.65	0.80
Edwards	2.36	2.36	0.00
Honey Gold	1.78	1.78	0.00
Hutton	0.81	0.81	0.00
Late Lane	1360.69	1245.70	114.99
Late Navel	24.86	24.86	0.00

### Murray Valley Citrus Board Varietal Planting Statistics at 31 January 2010

Variety	Total Hectares	Bearing Hectares	Non- Bearing Hectares
<b>Late Season Navels Continued</b>			
Pollock	12.19	12.19	0.00
Powell	106.57	105.65	0.92
Ravens Choice	4.71	4.71	0.00
Rhode	44.85	43.83	1.02
Scopelliti	6.38	6.38	0.00
Summer Gold	94.43	93.89	0.54
Taylor - Nav	0.83	0.83	0.00
Toomey	3.27	3.27	0.00
Wiffen	9.29	8.49	0.80
<b>Miscellaneous Navels</b>			
Cellaline	0.11	0.11	0.00
Follett	0.33	0.33	0.00
Hammet	1.19	1.19	0.00
Langdon	9.71	9.71	0.00
RedFlesh	1.01	0.00	1.01
Riverside	0.96	0.96	0.00
Rogue	0.32	0.32	0.00
Salisbury	1.86	1.86	0.00
Unspecified	44.03	44.03	0.00
<b>Seeded Valencias</b>			
Appleby	0.82	0.82	0.00
Benyenda - Lem	0.42	0.42	0.00
Berri	4.35	1.91	2.44
Casey	7.55	7.55	0.00
Hamlin	11.80	11.80	0.00
Keenan	1.90	1.90	0.00
Newton	33.14	33.14	0.00

Owen	0.15	0.15	0.00
ParsonBrown	2.33	2.33	0.00
Pera	0.10	0.10	0.00
Smith	9.32	9.32	0.00
Salustiana	2.31	1.39	0.92
Valencia	973.62	963.29	10.33

## Murray Valley Citrus Board Varietal Planting Statistics at 31 January 2010

Variety	Total Hectares	Bearing Hectares	Non- Bearing Hectares
<b>Seedless Valencias</b>			
Delta	7.76	6.60	1.16
McMahon Seedless	1.51	1.51	0.00
Midknight	2.10	0.46	1.64
Valencia Seedless	10.07	3.19	6.88
<b>Sour Oranges</b>			
Seville	21.04	21.04	0.00
Smooth Seville	1.02	1.02	0.00
<b>Mandarin Early Season</b>			
Clementine	0.55	0.55	0.00
Fallglo	0.29	0.29	0.00
Imperial	403.65	297.57	106.08
Miho	0.52	0.42	0.10
Nova	1.48	1.48	0.00
Satsuma	2.98	2.71	0.27
<b>Mandarin Mid Season</b>			
Amigo	2.07	2.07	0.00
Daisy	21.69	15.22	6.47
Ellendale	48.24	48.24	0.00
Fremont	0.26	0.00	0.26
Hickson	1.83	1.83	0.00
Mandarins	0.93	0.93	0.00
Topaz	4.62	1.63	2.99
<b>Mandarin Late Season</b>			
Avana Tordivo	0.81	0.81	0.00
Emperor	0.76	0.76	0.00
Kara	1.00	0.65	0.35
Murcott	40.74	40.12	0.62

Ortanique	2.30	2.30	0.00
<b>Mandarin Seedless</b>			
Afourer	250.47	150.09	100.38
<b>Tangelo</b>			
Minneola	38.77	35.51	3.26
Seminole	0.08	0.08	0.00
Tangelo	52.70	47.00	5.70

### **Murray Valley Citrus Board Varietal Planting Statistics at 31 January 2010**

Variety	Total Hectares	Bearing Hectares	Non- Bearing Hectares
<b>Grapefruit White Flesh</b>			
Grapefruit	39.73	39.73	0.00
Marsh	58.00	58.00	0.00
Oroblanco	1.83	1.83	0.00
Thompson	19.16	17.26	1.90
<b>Grapefruit Red Flesh</b>			
Flame	0.39	0.39	0.00
Red Grapefruit	0.74	0.74	0.00
Rio Red	3.12	1.71	1.41
Ruby	4.05	0.38	3.67
Ruby Red	7.08	6.02	1.06
RubyPink	0.30	0.30	0.00
Star Ruby	25.01	20.01	5.00
<b>Lemons</b>			
Eureka	19.67	19.62	0.05
Fino	0.20	0.20	0.00
Francoviolo	1.33	1.33	0.00
Lemons	38.70	38.70	0.00
Lisbon	48.26	35.95	12.31
Meyer	0.52	0.52	0.00
Verna	1.39	1.39	0.00
YenBen	0.50	0.50	0.00
<b>Blood Orange</b>			
Arnold Blood	13.62	10.62	3.00
Blood Oranges	12.91	9.93	2.98
Maltese	0.20	0.20	0.00
<b>Miscellaneous</b>			
BuddahHand	0.02	0.02	0.00

Feutrell	0.51	0.51	0.00
FingerLime	0.91	0.58	0.33
Limes	1.15	0.81	0.34
Unspecified	2.23	2.23	0.00
Pummelo	1.33	1.33	0.00
Tahitian	2.16	1.78	0.38

### Murray Valley Citrus Board Planting Statistics Rootstock Varieties as at 31 January 2010

Rootstock Category:	Total Trees:	Bearing Trees:	Non Bearing Trees:
Citrange	1822671.17	1541607.83	281063.33
Cleopatra	106869.83	59660.50	47209.33
Miscellaneous	172581.33	122292.33	50289.00
Own Roots	723.00	723.00	0.00
Rangpur Lime	148.00	148.00	0.00
Rough Lemon	37815.33	37815.33	0.00
Sour Orange	50.00	50.00	0.00
Sweet Orange	278890.67	274487.17	4403.50
Swingle	45961.50	38525.50	7436.00
Trifoliata	485664.00	429821.83	55842.17
Unknown	11494.83	3281.17	8213.67
Volkameriana	2643.33	1415.33	1228.00

*Report compiled: 15 April 2010 from planting survey completed 31 January 2010*

### Murray Valley Citrus Board Irrigation Methods Utilised as at 31 January 2010

Irrigation:	Total Ha:	Bearing Ha:	Non Bearing Ha:
Drip	2417.84	1896.17	521.66
Drip/Lowlevel	154.27	137.76	16.50
Drip/Overhead	303.84	275.63	28.21
Furrow	22.63	22.63	0.00
Lowlevel	1540.27	1432.32	107.96
Lowlevel/Overhead	174.03	171.82	2.21
Microjet	0.56	0.00	0.56
Microsprinkler	0.76	0.76	0.00
Overhead	1658.75	1607.42	51.32

*Report compiled: 15 April 2010 from planting survey completed 31 January 2010*

## **Murray Valley Citrus Board Planting Statistics 2010 Citrus Orchards by Size**

<b>Orchards in Group:</b>	<b>Percent Total Orchards:</b>	<b>Area Range:</b>
24	3.63%	Under .25 Ha
303	45.77%	.25 to 5
122	18.43%	5 to 10
138	20.85%	10 to 20
40	6.04%	20 to 30
14	2.11%	30 to 40
11	1.66%	40 to 50
3	0.45%	50 to 60
2	0.30%	60 to 70
1	0.15%	70 to 80
2	0.30%	80 to 90
0	0.00%	90 to 100
2	0.30%	Over 100

**Includes orchards with under 150 trees, and orchards from the Wangaratta area**

*Report compiled: 15 April 2010 from planting survey completed 31 January 2010*



## **CROP FORECASTING METHODOLOGY**

The Murray Valley area has been divided into 14 distinct geographical areas. From these areas a fixed percentage of sample trees of each variety are selected. There are 147 density sample sites and 83 size sample sites.

Apart from geographical factors, tree age, root stock etc are taken into account in selecting these sample sites, these sites are reviewed on an annual basis to maintain relevance .

At each site frame counts of fruit numbers, on each of three trees, are conducted on an annual basis. Comparison of the fruit numbers year to year is an intrinsic part of the method.

On each of the 83 measurement sites, 60 pieces of fruit are measured and tagged on each site. Throughout the growing season on a 28 day cycle starting from January, the growth rate of this tagged fruit is measured, for navels some 4,200 pieces. The final crop volume is adjusted to take into account any variation from the predicted growth rate.

Through regular visits to these sample sites we are also able to observe fruit condition, insect or tree damage, fruit breakdown, disease etc.

### **Blemish assessments**

The fruit used for sizing data is also examined and assessed for degree of blemish. This is carried out during March; with the rating having the ability to be correlated to the individual fruit size.

The fruit is assessed without removing it from the tree and obviously does not take into account harvest colour or blemishes. The basis of assessment is correlated to the Riversun Quality packing manual.

The tabled reports categorise the blemish into Pest, Wind, Fruit Defect, Clean, Physical and Colour to indicate the likely cause of blemish.

For further comment or enquiry regarding the 2010/2011 crop forecast, please contact Tony Bothroyd on mobile 0407 325 934.

DISCLAIMER No responsibility or guarantee is given or implied for any actions taken by individuals or groups as a result of information contained within this publication, and no liability will be accepted by the MVCB for any loss resulting from any such use

***Crop forecast booklet 2011/12***



**Murray Valley Citrus Board  
Crop Forecast  
2011/12**

## MURRAY VALLEY CITRUS BOARD AREA

The Murray Valley Citrus Board (MVCB) provides service to approximately 420 citrus growers on both the NSW and Victorian sides of the Murray River from the SA border to Echuca/Moama and areas around Kyabram and Wangaratta.

These growers are serviced by some 44 Approved Receivers (packers), (9 major packers for 75% of fruit grown), 1 processor/packer and 8 processors.

Historically 50% of the Navel crop is exported and the balance goes to local markets and juice processing.

Approximately 40% of the ever decreasing Valencia crop is sold into the local and export fresh fruit markets, the balance is directed to juice processors.



## NAVEL CROP 2011/2012 SEASON

Early Season Navel Forecast	21,484 tonnes
Mid Season Navel Forecast	20,169 tonnes
Late Season Navel Forecast	46,979 tonnes
<b>Total Forecast Navel Crop 2011/2012</b>	<b>88,632 tonnes</b>

### Fruit Quality and Size

Based on fruit density counts, fruit size and growth rate measurements taken during January, February and March it is estimated that this season's total Navel crop will be 88,632 tonnes. Last year actual Navel production totalled 62,778 tonnes based on levies paid. While the increase in tonnage is across the board in all Navels, late season Navels are showing the largest increase at 47%. This is due to heavier density counts on all Navels after last year's small crop.

Overall hectares under Navel production have slightly increased. There has been an increase of 56.89 hectares of bearing Navels. However, there has been a decrease in non bearing Navels of 56.75 hectares, indicating that replanting of older patches removed from the drought has declined.

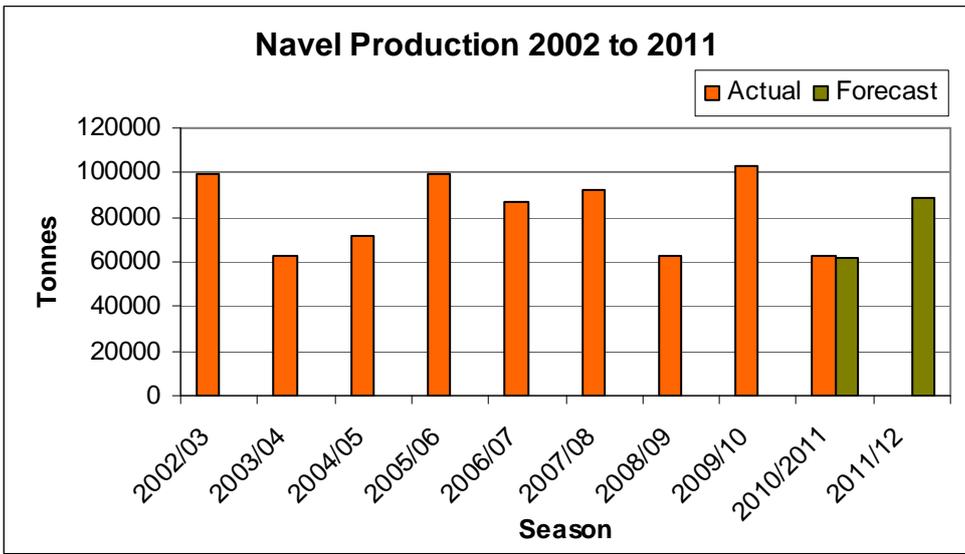
### Rind Quality

Assessment has been conducted during March to ascertain rind quality and packing potential using the Riversun quality parameters. This may vary as albedo, colour and late pest infestation cannot be factored in at this stage. This year in summary: pest damage on fruit is not substantial, however, there has been an increase in Californian Red Scale infestations; sunburn blemish is very limited; and wind damage is evident on all varieties.

### General Comments

Overall size is slightly smaller than average when compared to the long term growth rates with a range of sizes on the tree. Eating quality is excellent; and juice content is high. The count ranges and percentage breakdowns have been included to illustrate the situation. Factors to consider that may affect the final stages of fruit growth, extreme wet weather conditions and prolonged frost conditions.

## MURRAY VALLEY CITRUS BOARD - NAVEL PRODUCTION 2002-2011



## VALENCIA CROP 2011/2012 SEASON

**Total Forecast Valencia Crop 2011/2012**

**36,379 tonnes**

(This is based on a harvest date of September/October 2011) It must be noted that the crop volume will increase as fruit size increases when harvested into late 2011 and early 2012.

### Fruit Quality and Size

Based on fruit density counts, fruit size and growth rate measurements taken during January, February and March it is estimated that this season's total Valencia crop will be 36,379 tonnes, at September harvest timing. This is a 65% increase on last season's crop of 22,000 (figure harvest to date) tonnes. Approximately 96 % of 2010/11 Valencias have been harvested.

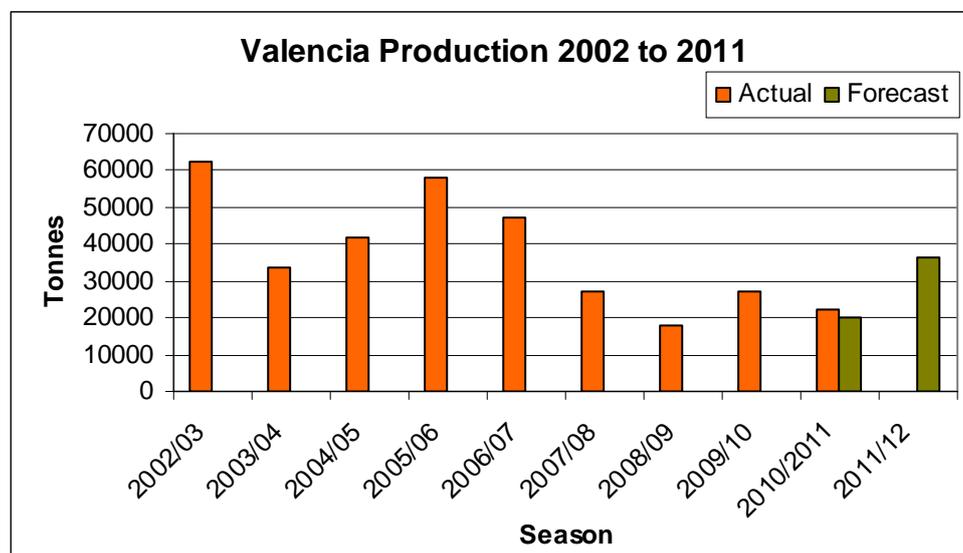
### Rind Quality

Assessments were conducted but it was felt that it may be misleading due to fruitlet size making it difficult to determine potential rind blemish. However, wind damage is likely to be visible.

### General Comments

Bearing and non-bearing hectares for Valencias has increased (10.56 Ha and 14.4Ha respectively), with seedless Valencias contributing to the majority of the increase.

## MURRAY VALLEY CITRUS BOARD - VALENCIA PRODUCTION 2002-2011



**2011 ESTIMATED FRUIT SIZE  
FOR NAVELS IN THE MURRAY VALLEY**

**Navelina – Early Season Navels**

**Count Range and Percentage**

**Variety: Navelina**

**Australian Count Ranges and Percentage Breakdown**

Estimated size ranges for May harvest.

Current Season figures are based on the condition that the average March to May growth rate is 6mm.

Past Season figures are based on applying the ten year average growth rate to actual sizes measured in March.

Count	150 & Smaller	138-113	100-88	80-72	64	56 & Larger
Season	64 mm & Smaller	Between 65-69 mm	Between 70-74 mm	Between 75-81 mm	Between 82-85mm	86 mm & Larger
<b>2006</b>	7.2%	29.8%	29.4%	26.4%	5.1%	2.1%
<b>2007</b>	7.5%	18.9%	26.2%	23.5%	8.5%	15.3%
<b>2008</b>	2.0%	10.9%	25.4%	36.3%	13.7%	11.7%
<b>2009</b>	3.4%	14.9%	31.7%	39.6%	6.7%	3.7%
<b>2010</b>	0.0%	0.8%	5.5%	28.1%	23.4%	42.2%
<b>2011</b>	9.1%	10.2%	25.1%	31.5%	15.6%	8.5%

**\* 75% of fruit is in the preferred sizes for Class 1 export fruit**

Note: Count Range and Percentages contain both clean and blemished fruit.

**Blemish Level by Count Range: Navelina**

	150 & Smaller	138-113	100-88	80-72	64	56 & Larger	US Sized	Total
Level	64 mm & Smaller	Between 65-69 mm	Between 70-74 mm	Between 75-81 mm	Between 82-85mm	86 mm & Larger		
<b>Pest</b>	0.0%	0.9%	5.0%	3.0%	1.8%	2.4%	1.7%	2.5%
<b>Wind</b>	14.3%	15.6%	10.1%	17.9%	14.3%	0.0%	15.4%	13.9%
<b>Defect</b>	0.0%	1.8%	0.8%	0.0%	0.0%	0.0%	0.9%	0.8%
<b>Clean</b>	85.7%	81.7%	84.0%	79.1%	83.9%	97.6%	82.1%	82.8%
<b>Phys</b>	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%

**Blemish Severity by Count Range: Early Season Navel**

	150 & Smaller	138-113	100-88	80-72	64	56 & Larger	US Sized	Total
Severity	64 mm & Smaller	Between 65-69 mm	Between 70-74 mm	Between 75-81 mm	Between 82-85mm	86 mm & Larger		
<b>Major</b>	10.7%	14.7%	11.8%	11.9%	14.3%	0.0%	11.1%	12.5%

<b>Minor</b>	3.6%	3.7%	4.2%	9.0%	0.0%	2.4%	6.8%	4.7
<b>None</b>	85.7%	81.7	84%	79.1%	85.7%	97.6%	82.1%	82.8

**2011 ESTIMATED FRUIT SIZE  
FOR NAVELS IN THE MURRAY VALLEY**

**Leng – Early Season Navels**

**Count Range and Percentage**

**Variety: Leng**

**Australian Count Ranges and Percentage Breakdown**

Estimated size ranges for June harvest.

Current Season figures are based on the condition that the average March to June growth rate is 10 mm.

Past Season figures are based on applying the ten year average growth rate to actual sizes measured in March.

Count	150 & Smaller	138-113	100-88	80-72	64	56 & Larger
Season	64 mm & Smaller	Between 65-69 mm	Between 70-74 mm	Between 75-81 mm	Between 82-85mm	86 mm & Larger
<b>2006</b>	17.1%	35.3%	27.3%	15.5%	4.0%	0.9%
<b>2007</b>	7.0%	20.4%	33.4%	29.3%	7.3%	2.7%
<b>2008</b>	3.6%	13.2%	21.0%	38.5%	13.6%	10.0%
<b>2009</b>	7.1%	19.0%	26.7%	33.3%	9.0%	4.9%
<b>2010</b>	0.2%	0.6%	7.7%	36.9%	23.1%	30.8%
<b>2011</b>	10.7%	22.0%	30.2%	27.7%	6.3%	3.1%

**\* 52% of fruit is in the preferred sizes for Class 1 export fruit**

Note: Count Range and Percentages contain both clean and blemished fruit.

**Blemish Level by Count Range: Leng**

	150 & Smaller	138-113	100-88	80-72	64	56 & Larger	US Sized	Total
Level	64 mm & Smaller	Between 65-69 mm	Between 70-74 mm	Between 75-81 mm	Between 82-85mm	86 mm & Larger		
<b>Pest</b>	0.0%	3.6%	1.2%	1.8%	0.0%	0.0%	1.0%	1.7%
<b>Wind</b>	4.0%	10.7%	13.0%	10.5%	2.1%	16.7%	10.0%	10.6%
<b>Defect</b>	0.0%	3.0%	2.0%	0.9%	4.2%	4.2%	1.8%	2.0%
<b>Clean</b>	96.0%	81.1%	83.8%	85.8%	93.8%	79.2%	85.6%	85.1%
<b>Phys</b>	0.0%	1.8%	0.0%	0.9%	0.0%	0.0%	1.5%	0.7%

**Blemish Severity by Count Range: Leng**

	150 & Smaller	138-113	100-88	80-72	64	56 & Larger	US Sized	Total
Severity	64 mm & Smaller	Between 65-69 mm	Between 70-74 mm	Between 75-81 mm	Between 82-85mm	86 mm & Larger		
<b>Major</b>	4.0%	14.3%	11.9%	11.4%	6.3%	16.7%	11.2%	11.5%
<b>Minor</b>	0.0%	3.0%	4.3%	2.7%	0.0%	4.2%	2.3%	3.0%
<b>None</b>	96.0%	82.7%	85.8%	85.8%	93.8%	79.2%	86.5%	85.4%

**2011 ESTIMATED FRUIT SIZE  
FOR NAVELS IN THE MURRAY VALLEY**

**Washington – Mid Season Navels**

**Count Range and Percentage**

**Variety: Washington**

**Australian Count Ranges and Percentage Breakdown**

Estimated size ranges for June harvest.

Current Season figures are based on the condition that the average March to June growth rate is 11 mm.

Past Season figures are based on applying the ten year average growth rate to actual sizes measured in March.

Count	150 & Smaller	138-113	100-88	80-72	64	56 & Larger
Season	64 mm & Smaller	Between 65-69 mm	Between 70-74 mm	Between 75-81 mm	Between 82-85mm	86 mm & Larger
2006	7.2%	19.4%	35.2%	30.7%	5.3%	2.1%
2007	7.1%	13.9%	26.3%	35.6%	10.4%	6.7%
2008	4.0%	6.4%	13.1%	38.4%	19.1%	19.1%
2009	3.0%	12.1%	27.3%	32.3%	12.0%	10.3%
2010	0.3%	1.9%	4.9%	14.0%	15.7%	63.2%
2011	6.6%	9.8%	26.3%	35.4%	10.8%	11.1%

**\* 75% of fruit is in the preferred sizes for Class 1 export fruit**

Note: Count Range and Percentages contain both clean and blemished fruit.

**Blemish Level by Count Range: Washington**

	150 & Smaller	138-113	100-88	80-72	64	56 & Larger	US Sized	Total
Level	64 mm & Smaller	Between 65-69 mm	Between 70-74 mm	Between 75-81 mm	Between 82-85mm	86 mm & Larger		
<b>Pest</b>	1.7%	2.5%	1.6%	0.9%	1.1%	3.6%	1.2%	1.6%
<b>Wind</b>	15.4%	8.7%	10.6%	9.5%	10.2%	14.5%	10.5%	10.4%
<b>Defect</b>	0.9%	0.7%	0.8%	1.4%	1.4%	1.8%	1.1%	1.0%
<b>Clean</b>	81.2%	87.6%	86.8%	87.6%	86.4%	78.2%	86.6%	86.4%
<b>Phys</b>	0.9%	0.4%	0.3%	0.7%	1.1%	1.8%	0.7%	0.6%

**Blemish Severity by Count Range: Washington**

	150 & Smaller	138-113	100-88	80-72	64	56 & Larger	US Sized	Total
Severity	64 mm & Smaller	Between 65-69 mm	Between 70-74 mm	Between 75-81 mm	Between 82-85mm	86 mm & Larger		
<b>Major</b>	16.2%	7.3%	9.1%	9.5%	5.7%	14.5%	9.0%	9.5%
<b>Minor</b>	1.7%	4.7%	4.1%	2.5%	8.0%	5.5%	4.0%	3.8%
<b>None</b>	82.1%	88.0%	86.8%	88.0%	86.4%	80.0%	87.0%	86.7%



**2011 ESTIMATED FRUIT SIZE  
FOR NAVELS IN THE MURRAY VALLEY**

**Late Lanes – Late Season Navels**

**Count Range and Percentage**

**Variety: Lane**

**Australian Count Ranges and Percentage Breakdown**

Estimated size ranges for July harvest.

Current Season figures are based on the condition that the average March to September growth rate is 13 mm.

Past Season figures are based on applying the ten year average growth rate to actual sizes measured in March.

Count	150 & Smaller	138-113	100-88	80-72	64	56 & Larger
Season	64 mm & Smaller	Between 65-69 mm	Between 70-74 mm	Between 75-81 mm	Between 82-85mm	86 mm & Larger
<b>2006</b>	3.4%	13.7%	36.9%	38.0%	7.2%	0.8%
<b>2007</b>	1.8%	8.5%	25.6%	45.9%	11.8%	6.4%
<b>2008</b>	2.1%	6.1%	21.1%	44.3%	18.2%	8.2%
<b>2009</b>	8.5%	11.9%	33.1%	36.3%	6.9%	3.3%
<b>2010</b>	0.3%	0.8%	3.4%	12.3%	13.9%	69.3%
<b>2011</b>	3.4%	4.7%	17.1%	45.4%	15.7%	13.7%

**\* 81% of fruit is in the preferred sizes for Class 1 export fruit**

Note: Count Range and Percentages contain both clean and blemished fruit.

**Blemish Level by Count Range: Lane**

	150 & Smaller	138-113	100-88	80-72	64	56 & Larger	US Sized	Total
Level	64 mm & Smaller	Between 65-69 mm	Between 70-74 mm	Between 75-81 mm	Between 82-85mm	86 mm & Larger		
<b>Pest</b>	0.0%	0.0%	0.8%	0.8%	1.1%	0.0%	0.8%	0.7%
<b>Wind</b>	25.0%	12.2%	14.4%	12.8%	6.6%	13.9%	11.9%	12.8%
<b>Defect</b>	0.0%	1.4%	0.8%	0.0%	0.0%	0.0%	0.0%	0.4%
<b>Clean</b>	75.0%	86.5%	84.0%	85.7%	91.2%	86.1%	86.8%	85.7%
<b>Phys</b>	0.0%	0.0%	0.0%	0.8%	1.1%	0.0%	0.5%	0.5%

**Blemish Severity by Count Range: Lane**

	150 & Smaller	138-113	100-88	80-72	64	56 & Larger	US Sized	Total
Severity	64 mm & Smaller	Between 65-69 mm	Between 70-74 mm	Between 75-81 mm	Between 82-85mm	86 mm & Larger		
<b>Major</b>	25.0%	13.5%	12.8%	9.9%	5.5%	13.9%	9.9%	11.0%
<b>Minor</b>	0.0%	0.0%	3.2%	4.4%	2.2%	0.0%	3.2%	3.2%
<b>None</b>	75.0%	86.5%	84.0%	85.7%	92.3%	86.1%	86.9%	85.8%

## MANDARIN CROP 2011 SEASON

**Forecast Mandarin Crop 2011**  
**Forecast Afourer Crop 2011**

**10,288 tonnes**  
**3,431 tonnes**

### General Comments

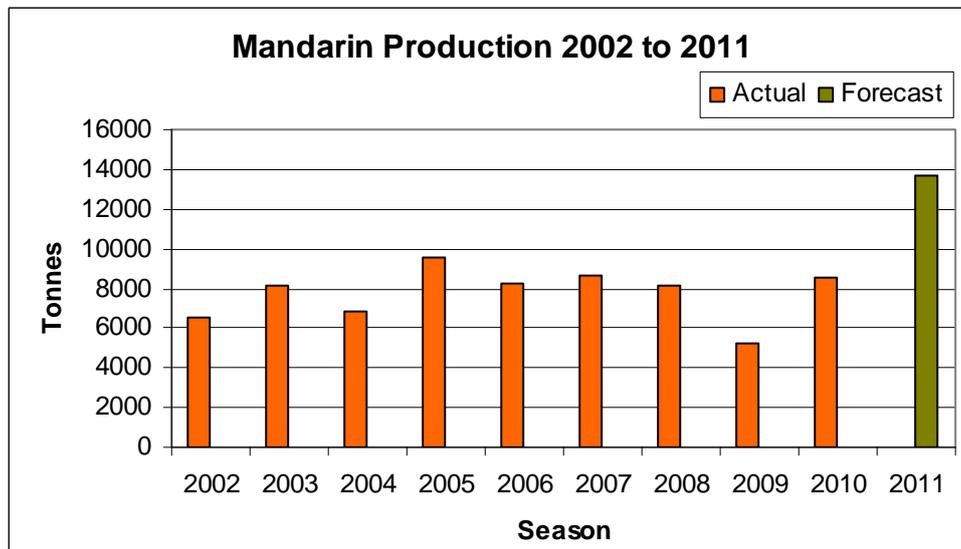
Based on fruit density counts taken during January, it is estimated that this season's Mandarin crop will be 10,288 tonnes (excluding Afourers), at July harvest time.

Bearing hectares for all Mandarin varieties have increased by 129.45Ha, and non-bearing hectares have decreased by 100.8. Therefore, total hectares have only increased by 28.65 hectares.

### Afourer Forecast

It is estimated that this year's Afourer Mandarin crop will be 3,431 tonnes. Afourers have been separated out from other Mandarin varieties due to increased plantings and their heavier crop density.

### MURRAY VALLEY CITRUS BOARD - MANDARIN PRODUCTION 2002-2011



## TANGELO CROP 2011 SEASON

**Total Forecast Tangelo Crop 2011**

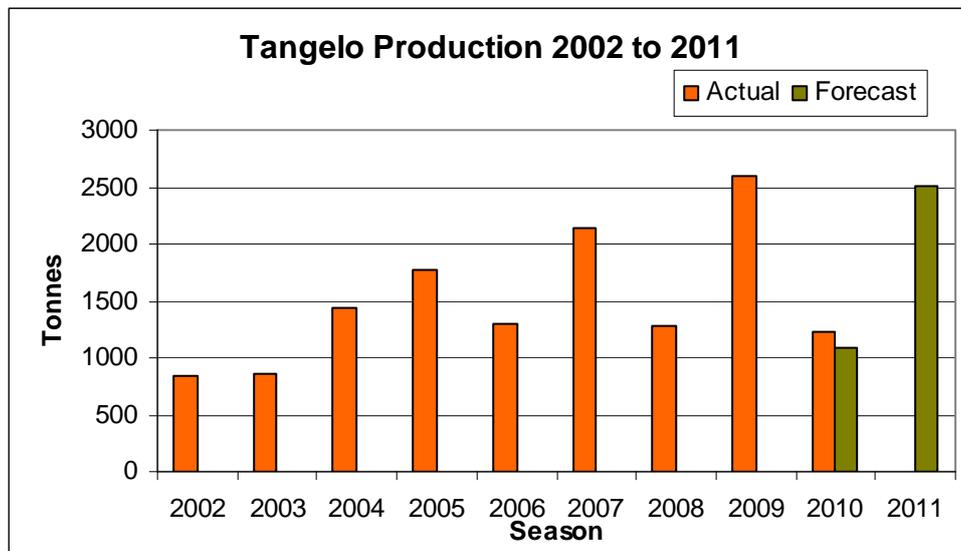
**2,507 tonnes**

### General Comments

Based on fruit density counts taken during January, it is estimated that this season's total Tangelo crop will be 2,507 tonnes, at August harvest timing, a 104% increase on last season's crop. Densities are well up on last year.

Continuing the trend in declining plantings, overall hectares of Tangelos have decreased by 8.44 hectares on last year's figures.

### MURRAY VALLEY CITRUS BOARD - TANGELO PRODUCTION 2002-2011



## GRAPEFRUIT CROP 2010/11 SEASON

**Total Forecast Grapefruit Crop 2010/11**

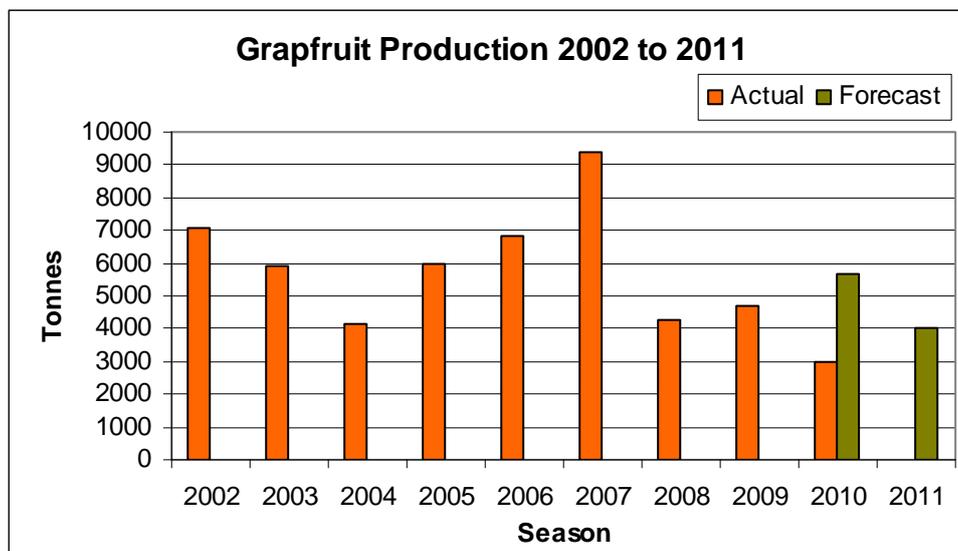
**4,054 tonnes**

### General Comments

Based on fruit density counts taken during January, it is estimated that this season's total Grapefruit crop will be 4,054 tonnes, a 28% decrease on last season's forecast figure. Densities are down on last year as are productive hectares.

Overall plantings of Grapefruit have slightly decreased (1.25Ha). However the decrease is due to a reduction in white grapefruit plantings as bearing red grapefruit plantings have increased from 29.55 Ha to 32.69 Ha.

### MURRAY VALLEY CITRUS BOARD - GRAPEFRUIT PRODUCTION 2002-2010



\* Note: Grapefruit are still being harvested so the 2010 actual figure is year to date.

### Total Crop Forecast 2011/12

Navels	88,632
Valencia	36,379
Mandarin	10,288
Afourer	3,431
Tangelo	2,507
Grapefruit	4,054
<b>Total</b>	<b>145,291</b>

## PLANTING STATISTICS - AS AT 31 DECEMBER 2010

<b>Murray Valley Citrus Board Plantings Comparison 2010 to 2011 Survey</b>			
<b>Planting Statistics as at 31 December 2010</b>			
<b>Variety</b>	<b>Total Hectares Planted</b>	<b>Total Bearing Hectares</b>	<b>Total Non Bearing Hectares</b>
2010 Navel - Early Season	949.91	876.14	73.77
2011 Navel - Early Season	956.80	876.96	79.84
2010 Navel - Mid Season	730.58	633.74	96.84
2011 Navel - Mid Season	730.51	650.41	80.10
2010 Navel - Late Season	2260.75	2075.93	184.82
2011 Navel - Late Season	2253.58	2115.62	137.96
2010 Navel - Misc. Season	59.52	58.51	1.01
2011 Navel - Misc. Season	60.01	58.22	1.79
<b>2010 Navel Total</b>	<b>4000.76</b>	<b>3644.32</b>	<b>356.44</b>
<b>2011 Navel Total</b>	<b>4000.90</b>	<b>3701.21</b>	<b>299.69</b>
<b>Change in Hectares</b>	<b>0.14</b>	<b>56.89</b>	<b>-56.75</b>
2010 Valencia Seeded	1030.02	1017.25	12.77
2011 Valencia Seeded	1038.06	1023.86	14.20
2010 Valencia Seedless	21.44	11.76	9.68
2011 Valencia Seedless	38.36	15.71	22.65
<b>2010 Valencia Total</b>	<b>1051.46</b>	<b>1029.01</b>	<b>22.45</b>
<b>2011 Valencia Total</b>	<b>1076.42</b>	<b>1039.57</b>	<b>36.85</b>
<b>Change in Hectares</b>	<b>24.96</b>	<b>10.56</b>	<b>14.40</b>
2010 Mandarin - Early Season	412.05	305.60	106.45
2011 Mandarin - Early Season	429.17	336.09	93.08
2010 Mandarin - Mid Season	72.02	65.29	6.73
2011 Mandarin - Mid Season	72.36	64.00	8.36
2010 Mandarin - Late Season	50.22	46.26	3.96
2011 Mandarin - Late Season	44.72	40.76	3.96
2010 Mandarin - Misc. Season	251.40	41.02	210.38
2011 Mandarin - Misc. Season	268.08	146.76	121.32
<b>2010 Mandarin Total</b>	<b>785.69</b>	<b>458.17</b>	<b>327.52</b>
<b>2011 Mandarin Total</b>	<b>814.33</b>	<b>587.61</b>	<b>226.72</b>
<b>Change in Hectares</b>	<b>28.64</b>	<b>129.44</b>	<b>-100.80</b>

## Murray Valley Citrus Board Plantings Comparison 2010 to 2011 Survey

Planting Statistics as at 31 December 2010

Variety	Total Hectares Planted	Total Bearing Hectares	Total Non Bearing Hectares
2010 Blood Orange	26.73	20.75	5.98
2011 Blood Orange	27.22	20.47	6.75
<b>Change in Hectares</b>	<b>0.49</b>	<b>-0.28</b>	<b>0.77</b>
2010 Grapefruit - Red Fleshed	40.69	29.55	11.14
2011 Grapefruit - Red Fleshed	41.09	32.69	8.40
2010 Grapefruit - White Fleshed	137.81	137.56	0.25
2011 Grapefruit - White Fleshed	136.15	135.90	0.25
<b>2010 Grapefruit Total</b>	<b>178.50</b>	<b>167.11</b>	<b>11.39</b>
<b>2011 Grapefruit Total</b>	<b>177.24</b>	<b>168.59</b>	<b>8.65</b>
<b>Change in Hectares</b>	<b>-1.26</b>	<b>1.48</b>	<b>-2.74</b>
2010 Lemon	111.00	98.64	12.36
2011 Lemon	113.22	97.69	15.53
<b>Change in Hectares</b>	<b>2.22</b>	<b>-0.95</b>	<b>3.17</b>
2010 Lime	4.22	3.17	1.05
2011 Lime	20.33	3.63	16.70
<b>Change in Hectares</b>	<b>16.11</b>	<b>0.46</b>	<b>15.65</b>
2010 Tangelo	91.55	82.59	8.96
2011 Tangelo	83.12	82.31	0.81
<b>Change in Hectares</b>	<b>-8.43</b>	<b>-0.28</b>	<b>-8.15</b>
2010 Unspecified Varieties	207.98	100.18	107.80
2011 Unspecified Varieties	253.36	154.55	98.81
<b>Change in Hectares</b>	<b>45.38</b>	<b>54.37</b>	<b>-8.99</b>
<b>2010 TOTAL PLANTINGS</b>	<b>6457.67</b>	<b>5603.95</b>	<b>853.72</b>
<b>2011 TOTAL PLANTINGS</b>	<b>6566.15</b>	<b>5855.63</b>	<b>710.52</b>
<b>Change in Hectares</b>	<b>108.49</b>	<b>251.68</b>	<b>-143.20</b>

*Source: Murray Valley Citrus Board annual property registrations*

**Murray Valley Citrus Board Varietal  
Planting Statistics at  
31 December 2010**

<b>Variety</b>	<b>Total Hectares</b>	<b>Bearing Hectares</b>	<b>Non- Bearing Hectares</b>
<b>Early Season Navels</b>			
Atwood	30.84	11.86	18.99
Biggs Leng	1.63	1.63	0.00
Chislett M7	49.92	1.53	48.39
EarlyBird	0.15	0.15	0.00
Fisher	25.43	18.07	7.35
Fukumoto	9.62	8.73	0.90
Italian Navelina	0.77	0.77	0.00
Leng	427.86	412.09	15.77
Lloyd Leng	1.30	1.30	0.00
Navelina	346.60	344.74	1.85
Newhall	6.89	6.89	0.00
Pasin	5.92	2.68	3.24
Ryan	56.71	56.58	0.13
Thompson	36.86	36.60	0.25
Whitely	6.32	6.01	0.32
<b>Mid Season Navel</b>			
Bellamy	0.44	0.44	0.00
Cara Cara	42.50	19.96	22.55
Golden Nugget	0.54	0.54	0.00
Hockney	1.93	1.93	0.00
Navelate	0.72	0.72	0.00
Palmer	0.21	0.21	0.00
Washington	653.32	614.75	38.57
<b>Late Season Navels</b>			
Autumn Gold	62.54	58.97	3.57
Barnfield	189.02	185.42	3.61
Chislett	324.03	282.74	41.29
Christensen	3.35	3.35	0.00
Christmas	0.47	0.47	0.00
Clark	10.46	10.15	0.30
Edwards	2.36	2.36	0.00
Honey Gold	1.78	1.78	0.00
Hutton	0.81	0.81	0.00

Late Lane	1355.86	1270.62	85.24
Late Navel	24.62	24.62	0.00
<b>Murray Valley Citrus Board Varietal Planting Statistics at 31 December 2010</b>			
<b>Variety</b>	<b>Total Hectares</b>	<b>Bearing Hectares</b>	<b>Non- Bearing Hectares</b>
<b>Late Season Navels Continued</b>			
Pollock	12.25	12.25	0.00
Powell	106.59	105.67	0.92
Ravens Choice	5.17	4.70	0.47
Rhode	44.90	42.97	1.93
Scopelliti	6.37	6.37	0.00
Summer Gold	89.61	88.98	0.63
Taylor - Nav	0.83	0.83	0.00
Toomey	3.27	3.27	0.00
Whiffen	9.29	9.29	0.00
<b>Miscellaneous Navels</b>			
Cellaline	0.11	0.11	0.00
Follett	0.33	0.33	0.00
Hammet	1.19	1.19	0.00
Langdon	9.72	9.72	0.00
Red Flesh	1.00	0.00	1.00
Riverside	1.75	0.96	0.79
Rogue	0.32	0.32	0.00
Salisbury	1.86	1.86	0.00
Unspecified	43.72	43.72	0.00
<b>Seeded Valencias</b>			
Appleby	0.82	0.82	0.00
Benyenda - Lem	0.43	0.43	0.00
Berri	4.35	4.35	0.00
Casey	7.57	7.57	0.00
Hamlin	10.93	10.93	0.00
Keenan	2.00	0.00	2.00
Newton	33.16	33.16	0.00
Owen	0.16	0.16	0.00
ParsonBrown	2.33	2.33	0.00
Pera	0.10	0.10	0.00
Smith	9.31	9.31	0.00
Salustiana	3.57	1.39	2.19
Valencia	981.53	969.32	12.20

## Murray Valley Citrus Board Varietal Planting Statistics at 31 December 2010

Variety	Total Hectares	Bearing Hectares	Non- Bearing Hectares
<b>Seedless Valencia</b>			
Delta	7.75	7.17	0.58
McMahon Seedless	4.95	1.52	3.43
Midknight	5.09	0.45	4.63
Valencia Seedless	20.57	6.57	14.00
<b>Sour Oranges</b>			
Seville	20.81	20.81	0.00
Smooth Seville	1.02	1.02	0.00
<b>Mandarin Early Season</b>			
Clementine	0.55	0.55	0.00
Fallglo	0.29	0.29	0.00
Imperial	424.59	331.88	92.71
Miho	0.52	0.42	0.10
Nova	1.63	1.63	0.00
Satsuma	1.09	0.82	0.27
<b>Mandarin Mid Season</b>			
Amigo	2.07	2.07	0.00
Daisy	24.54	16.93	7.61
Ellendale	45.24	45.24	0.00
Fremont	0.75	0.00	0.75
Hickson	1.83	1.83	0.00
Mandarins	6.30	2.88	3.42
Topaz	4.62	1.63	2.99
<b>Mandarin Late Season</b>			
Avana Tordivo	0.81	0.81	0.00
Emperor	0.62	0.62	0.00
Kara	0.94	0.59	0.35
Murcott	35.43	34.81	0.62
Ortanique	2.30	2.30	0.00
<b>Mandarin Seedless</b>			
Afourer	261.78	143.88	117.90
<b>Tangelo</b>			
Minneola	30.94	30.94	0.00
Seminole	0.08	0.08	0.00
Tangelo	52.09	51.29	0.81

**Murray Valley Citrus Board Varietal  
Planting Statistics at  
31 December 2010**

Variety	Total Hectares	Bearing Hectares	Non-Bearing Hectares
<b>Grapefruit White Flesh</b>			
Grapefruit	38.52	38.52	0.00
Marsh	58.00	58.00	0.00
Oroblanco	1.45	1.45	0.00
Thompson	17.68	15.78	1.90
<b>Grapefruit Red Flesh</b>			
Flame	0.39	0.39	0.00
Red Grapefruit	0.74	0.74	0.00
Rio Red	3.12	1.71	1.41
Ruby	4.04	0.38	3.67
Ruby Red	7.47	6.16	1.31
RubyPink	0.30	0.30	0.00
Star Ruby	25.02	23.00	2.02
<b>Lemons</b>			
Eureka	19.66	19.61	0.05
Fino	0.20	0.20	0.00
Francoviolo	1.33	1.33	0.00
Lemons	41.97	38.80	3.17
Lisbon	47.23	34.92	12.31
Meyer	0.52	0.52	0.00
Verna	1.39	1.39	0.00
YenBen	0.50	0.50	0.00
<b>Blood Orange</b>			
Arnold Blood	14.67	10.90	3.77
Blood Oranges	12.37	9.38	2.99
Maltese	0.19	0.19	0.00
<b>Miscellaneous</b>			
BuddahHand	0.02	0.02	0.00
Caffin	0.32	0.00	0.32
Feutrell	0.51	0.51	0.00
FingerLime	0.71	0.71	0.00
Limes	14.68	1.14	13.54
Unspecified	33.04	15.53	17.51
Pummelo	1.33	1.33	0.00
Tahitian	4.94	1.78	3.16
Miscellaneous	180.41	101.61	78.80

## Murray Valley Citrus Board Planting Statistics Rootstock Varieties as at 31 December 2010

Rootstock Category:	Total Ha:	Bearing Ha:	Non Bearing Ha:
Citrange	3796.08	3443.84	352.24
Cleopatra	214.29	178.66	35.63
Miscellaneous	65.15	59.52	5.63
Own Roots	1.99	1.99	0.00
Rangpur Lime	0.14	0.14	0.00
Rough Lemon	103.89	103.44	0.46
Sour Orange	0.31	0.31	0.00
Sweet Orange	760.21	750.99	9.22
Swingle	86.87	84.22	2.66
Trifoliata	941.75	851.84	89.92
Unknown	516.54	345.35	171.19
Volkameriana	2.38	2.38	0.00

*Report compiled: 10 April 2011 from planting survey completed 31 December 2010*

## Murray Valley Citrus Board Irrigation Methods Utilised as at 31 December 2010

Irrigation:	Total Ha:	Bearing Ha:	Non Bearing Ha:
Drip	2683.69	2249.45	434.24
Drip/Lowlevel	151.09	135.54	15.56
Drip/Overhead	296.72	273.28	23.44
Furrow	14.87	14.54	0.34
Lowlevel	1466.08	1362.27	103.81
Lowlevel/Overhead	266.98	238.30	28.68
Microjet	0.56	0.00	0.56
Microsprinkler	0.75	0.75	0.00
NS	2.20	0.00	2.20

*Report compiled: 10 April 2011 from planting survey completed 31 December 2010*

## Murray Valley Citrus Board Planting Statistics 2010 Citrus Orchards by Size

Orchards in Group:	Percent Total Orchards:	Area Range:
41	5.95%	Under .25 Ha
301	43.69%	.25 to 5
121	17.56%	5 to 10
146	21.19%	10 to 20
47	6.82%	20 to 30
16	2.32%	30 to 40
6	0.87%	40 to 50
2	0.29%	50 to 60
2	0.29%	60 to 70
3	0.44%	70 to 80
2	0.29%	80 to 90
1	0.15%	90 to 100
1	0.15%	Over 100

**Includes orchards with under 150 trees, and orchards from the Wangaratta area**

*Report compiled: 10 April 2011 from planting survey completed 31 December 2010*

## **CROP FORECASTING METHODOLOGY**

The Murray Valley area has been divided into 14 distinct geographical areas. From these areas a fixed percentage of sample trees of each variety are selected. There are 147 density sample sites and 83 size sample sites.

Apart from geographical factors, tree age, root stock etc are taken into account in selecting these sample sites, these sites are reviewed on an annual basis to maintain relevance.

At each site frame counts of fruit numbers, on each of three trees, are conducted on an annual basis. Comparison of the fruit numbers year to year is an intrinsic part of the method.

On each of the 83 measurement sites, 60 pieces of fruit are measured and tagged on each site. Throughout the growing season on a 28 day cycle starting from January, the growth rate of this tagged fruit is measured, for Navels some 4,200 pieces. The final crop volume is adjusted to take into account any variation from the predicted growth rate.

Through regular visits to these sample sites we are also able to observe fruit condition, insect or tree damage, fruit breakdown, disease etc.

### **Blemish assessments**

The fruit used for sizing data is also examined and assessed for degree of blemish. This is carried out during March; with the rating having the ability to be correlated to the individual fruit size.

The fruit is assessed without removing it from the tree and obviously does not take into account harvest colour or blemishes. The basis of assessment is correlated to the Riversun Quality packing manual.

The tabled reports categorise the blemish into Pest, Wind, Fruit Defect, Clean, Physical and Colour to indicate the likely cause of blemish.

For further comment or enquiry regarding the 2011/2012 crop forecast, please contact Tony Bothroyd on mobile 0407 325 934.

DISCLAIMER No responsibility or guarantee is given or implied for any actions taken by individuals or groups as a result of information contained within this publication, and no liability will be accepted by the MVCB for any loss resulting from any such use.

***Crop forecast booklet 2012/13***



**Murray Valley Citrus Board  
Crop Forecast  
2012/13**

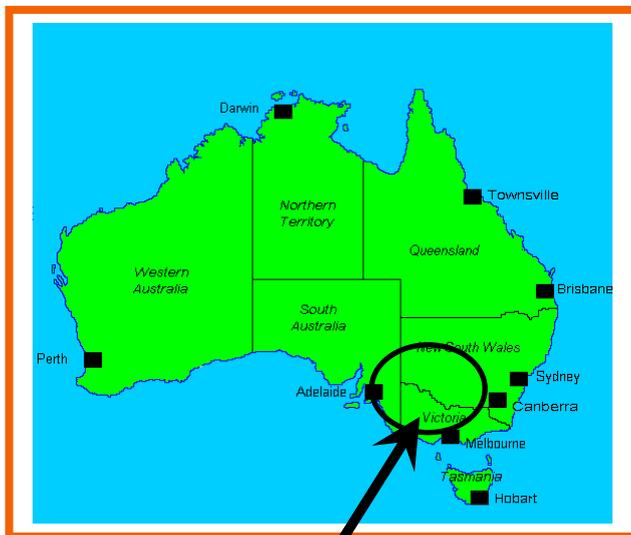
## MURRAY VALLEY CITRUS BOARD AREA

The Murray Valley Citrus Board (MVCB) provides service to approximately 379 citrus growers on both the NSW and Victorian sides of the Murray River from the SA border to Echuca/Moama and areas around Kyabram and Wangaratta.

These growers are serviced by some 39 Approved Receivers (packers), (8 major packers for 75% of fruit grown), 1 processor/packer and 9 processors.

Historically 50% of the Navel crop is exported and the balance goes to local markets and juice processing.

Approximately 40% of the ever decreasing Valencia crop is sold into the local and export fresh fruit markets, the balance is directed to juice processors.



## NAVEL CROP 2012/2013 SEASON

Early Season Navel Forecast	19,995 tonnes
Mid Season Navel Forecast	24,159 tonnes
Late Season Navel Forecast	40,053 tonnes
<b>Total Forecast Navel Crop 2012/2013</b>	<b>84,207 tonnes</b>

### Fruit Quality and Size

Based on fruit density counts, fruit size and growth rate measurements taken during January, February and March it is estimated that this season's total Navel crop will be 84,207 tonnes. Based on packer levy forms, last season's actual Navel production totalled 89,148 tonnes. While the decrease in tonnage is across the board in all Navels, late season Navels are showing the largest decrease at 15%. Density counts were lighter on all Navels, however early and late season Navels are showing a large decrease of 30% each, while the density of mid-season Navels has only decreased by 11%. Overall there is a decrease in the number of fruit on trees, but the size of this fruit is larger by 5 to 6 mm, therefore overall tonnage is only down by 6% on last season's tonnages.

Overall hectares under Navel production have increased slightly again. There has been an increase of 59.78 hectares of bearing Navels. However, there has been a decrease in non bearing Navels of 42.24 hectares, indicating that replanting of older patches removed from the drought has declined. Changes in varietal plantings from 2011 to 2012 are shown on page 12.

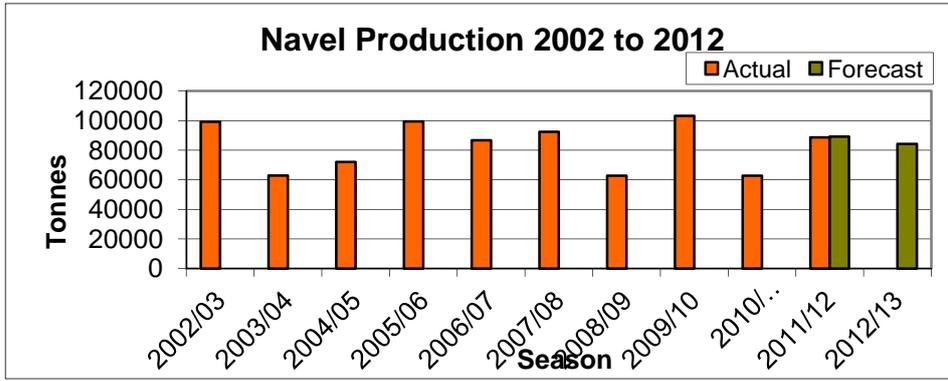
### Rind Quality

Assessment has been conducted during March to ascertain rind quality and packing potential using the Riversun quality parameters. This may vary as albedo, colour and late pest infestation cannot be factored in at this stage. This year in summary: pest damage on fruit is not substantial, however, there has been an increase in Katydid damage and Kelly's citrus thrip infestations; sunburn blemish is limited; and wind damage is evident on all varieties.

### General Comments

Overall size is larger than average when compared to the long term growth rates with a range of sizes on the tree. Eating quality is excellent; and juice content is high. The count ranges and percentage breakdowns have been included to illustrate the situation. Factors to consider that may affect the final stages of fruit growth are extreme wet weather conditions and prolonged frost conditions. The 2011 actual tonnage (see graph below) is based on packer levy returns and does not account for the unpicked fruit left on trees last season.

## MURRAY VALLEY CITRUS BOARD - NAVEL PRODUCTION 2002-2012



**2012 ESTIMATED FRUIT SIZE  
FOR NAVELS IN THE MURRAY VALLEY**

**Navelina – Early Season Navels**

**Count Range and Percentage**

**Variety: Navelina**

**Australian Count Ranges and Percentage Breakdown**

Estimated size ranges for May harvest.

Current Season figures are based on the condition that the average March to May growth rate is 4mm.

Past Season figures are based on applying the ten year average growth rate to actual sizes measured in March.

Count	150 & Smaller	138-113	100-88	80-72	64	56 & Larger
Season	64 mm & Smaller	Between 65-69 mm	Between 70-74 mm	Between 75-81 mm	Between 82-85mm	86 mm & Larger
<b>2007</b>	7.5%	18.9%	26.2%	23.5%	8.5%	15.3%
<b>2008</b>	2.0%	10.9%	25.4%	36.3%	13.7%	11.7%
<b>2009</b>	3.4%	14.9%	31.7%	39.6%	6.7%	3.7%
<b>2010</b>	0.0%	0.8%	5.5%	28.1%	23.4%	42.2%
<b>2011</b>	9.1%	10.2%	25.1%	31.5%	15.6%	8.5%
<b>2012</b>	1.5%	6.2%	22.6%	39.0%	19.0%	11.7%

**\* 82% of fruit is in the preferred sizes for Class 1 export fruit**

Note: Count Range and Percentages contain both clean and blemished fruit.

**Blemish Level by Count Range: Navelina**

	150 & Smaller	138-113	100-88	80-72	64	56 & Larger	US Sized	Total
Level	64 mm & Smaller	Between 65-69 mm	Between 70-74 mm	Between 75-81 mm	Between 82-85mm	86 mm & Larger		
<b>Pest</b>	0.0%	0.0%	1.2%	3.7%	4.8%	4.6%	3.7%	3.1%
<b>Wind</b>	16.7%	14.7%	21.2%	15.5%	12.9%	16.9%	17.0%	16.5%
<b>Defect</b>	0.0%	0.0%	1.2%	1.2%	1.6%	3.1%	1.9%	1.5%
<b>Clean</b>	83.3%	85.3%	76.5%	79.5%	80.6%	75.4%	77.5%	78.9%

**Blemish Severity by Count Range: Early Season Navel**

	150 & Smaller	138-113	100-88	80-72	64	56 & Larger	US Sized	Total
Severity	64 mm & Smaller	Between 65-69 mm	Between 70-74 mm	Between 75-81 mm	Between 82-85mm	86 mm & Larger		
<b>Major</b>	16.7%	5.9%	16.5%	15.5%	11.3%	23.1%	17.6%	15.5%
<b>Minor</b>	0.0%	8.8%	7.1%	5.0%	8.1%	1.5%	4.9%	5.6%

None	83.3%	85.3%	76.5%	79.5%	80.6%	75.4%	77.5%	78.9%
------	-------	-------	-------	-------	-------	-------	-------	-------

**2012 ESTIMATED FRUIT SIZE  
FOR NAVELS IN THE MURRAY VALLEY**

**Leng – Early Season Navels**

**Count Range and Percentage**

**Variety: Leng**

**Australian Count Ranges and Percentage Breakdown**

Estimated size ranges for June harvest.

Current Season figures are based on the condition that the average March to June growth rate is 10 mm.

Past Season figures are based on applying the ten year average growth rate to actual sizes measured in March.

Count	150 & Smaller	138-113	100-88	80-72	64	56 & Larger
Season	64 mm & Smaller	Between 65-69 mm	Between 70-74 mm	Between 75-81 mm	Between 82-85mm	86 mm & Larger
2007	7.0%	20.4%	33.4%	29.3%	7.3%	2.7%
2008	3.6%	13.2%	21.0%	38.5%	13.6%	10.0%
2009	7.1%	19.0%	26.7%	33.3%	9.0%	4.9%
2010	0.2%	0.6%	7.7%	36.9%	23.1%	30.8%
2011	10.7%	22.0%	30.2%	27.7%	6.3%	3.1%
2012	1.7%	8.4%	24.2%	37.9%	16.9%	10.9%

**\* 77% of fruit is in the preferred sizes for Class 1 export fruit**

Note: Count Range and Percentages contain both clean and blemished fruit.

**Blemish Level by Count Range: Leng**

	150 & Smaller	138-113	100-88	80-72	64	56 & Larger	US Sized	Total
Level	64 mm & Smaller	Between 65-69 mm	Between 70-74 mm	Between 75-81 mm	Between 82-85mm	86 mm & Larger		
<b>Pest</b>	5.9%	3.7%	3.8%	3.2%	2.4%	2.8%	3.0%	3.3%
<b>Wind</b>	5.9%	7.3%	9.3%	7.0%	8.5%	11.3%	8.1%	8.3%
<b>Defect</b>	5.9%	1.2%	0.4%	1.6%	2.4%	1.8%	1.8%	1.5%
<b>Clean</b>	82.4%	87.8%	86.4%	88.1%	86.7%	84.0%	87.2%	86.9%

**Blemish Severity by Count Range: Leng**

	150 & Smaller	138-113	100-88	80-72	64	56 & Larger	US Sized	Total
Severity	64 mm & Smaller	Between 65-69 mm	Between 70-74 mm	Between 75-81 mm	Between 82-85mm	86 mm & Larger		
<b>Major</b>	17.6%	7.3%	10.6%	8.4%	12.1%	14.2%	10.1%	10.2%
<b>Minor</b>	0.0%	4.9%	3.0%	3.5%	1.2%	1.9%	2.7%	2.9%
<b>None</b>	82.4%	87.8%	86.4%	88.1%	86.7%	84.0%	87.2%	86.9%

**2012 ESTIMATED FRUIT SIZE  
FOR NAVELS IN THE MURRAY VALLEY**

**Washington – Mid Season Navels**

**Count Range and Percentage**

**Variety: Washington**

**Australian Count Ranges and Percentage Breakdown**

Estimated size ranges for June harvest.

Current Season figures are based on the condition that the average March to June growth rate is 11 mm.

Past Season figures are based on applying the ten year average growth rate to actual sizes measured in March.

Count	150 & Smaller	138-113	100-88	80-72	64	56 & Larger
Season	64 mm & Smaller	Between 65-69 mm	Between 70-74 mm	Between 75-81 mm	Between 82-85mm	86 mm & Larger
<b>2007</b>	7.1%	13.9%	26.3%	35.6%	10.4%	6.7%
<b>2008</b>	4.0%	6.4%	13.1%	38.4%	19.1%	19.1%
<b>2009</b>	3.0%	12.1%	27.3%	32.3%	12.0%	10.3%
<b>2010</b>	0.3%	1.9%	4.9%	14.0%	15.7%	63.2%
<b>2011</b>	6.6%	9.8%	26.3%	35.4%	10.8%	11.1%
<b>2012</b>	3.1%	6.9%	13.3%	32.4%	31.2%	13.1%

**\* 86% of fruit is in the preferred sizes for Class 1 export fruit**

Note: Count Range and Percentages contain both clean and blemished fruit.

**Blemish Level by Count Range: Washington**

	150 & Smaller	138-113	100-88	80-72	64	56 & Larger	US Sized	Total
Level	64 mm & Smaller	Between 65-69 mm	Between 70-74 mm	Between 75-81 mm	Between 82-85mm	86 mm & Larger		
<b>Pest</b>	4.3%	6.7%	8.4%	5.4%	5.4%	2.0%	4.4%	5.0%
<b>Wind</b>	4.3%	10.5%	10.8%	12.3%	10.5%	8.3%	10.6%	10.3%
<b>Defect</b>	0.0%	0.0%	1.0%	0.8%	0.7%	0.8%	0.8%	0.7%
<b>Clean</b>	91.5%	82.9%	79.8%	81.5%	82.0%	88.9%	83.6%	83.7%

**Blemish Severity by Count Range: Washington**

	150 & Smaller	138-113	100-88	80-72	64	56 & Larger	US Sized	Total
Severity	64 mm & Smaller	Between 65-69 mm	Between 70-74 mm	Between 75-81 mm	Between 82-85mm	86 mm & Larger		
<b>Major</b>	2.1%	6.7%	10.3%	12.5%	12.3%	10.1%	11.7%	10.8%
<b>Minor</b>	6.4%	10.5%	9.9%	6.0%	4.8%	1.0%	4.2%	5.3%

None	91.5%	82.9%	79.8%	81.5%	82.0%	88.9%	83.6%	83.7%
------	-------	-------	-------	-------	-------	-------	-------	-------

**2012 ESTIMATED FRUIT SIZE  
FOR NAVELS IN THE MURRAY VALLEY**

**Late Lanes – Late Season Navels**

**Count Range and Percentage**

**Variety: Lane**

**Australian Count Ranges and Percentage Breakdown**

Estimated size ranges for July harvest.

Current Season figures are based on the condition that the average March to September growth rate is 13 mm.

Past Season figures are based on applying the ten year average growth rate to actual sizes measured in March.

Count	150 & Smaller	138-113	100-88	80-72	64	56 & Larger
Season	64 mm & Smaller	Between 65-69 mm	Between 70-74 mm	Between 75-81 mm	Between 82-85mm	86 mm & Larger
<b>2007</b>	1.8%	8.5%	25.6%	45.9%	11.8%	6.4%
<b>2008</b>	2.1%	6.1%	21.1%	44.3%	18.2%	8.2%
<b>2009</b>	8.5%	11.9%	33.1%	36.3%	6.9%	3.3%
<b>2010</b>	0.3%	0.8%	3.4%	12.3%	13.9%	69.3%
<b>2011</b>	3.4%	4.7%	17.1%	45.4%	15.7%	13.7%
<b>2012</b>	0.6%	4.2%	15.5%	35.1%	30.6%	14.0%

**\* 92% of fruit is in the preferred sizes for Class 1 export fruit**

Note: Count Range and Percentages contain both clean and blemished fruit.

**Blemish Level by Count Range: Lane**

	150 & Smaller	138-113	100-88	80-72	64	56 & Larger	US Sized	Total
Level	64 mm & Smaller	Between 65-69 mm	Between 70-74 mm	Between 75-81 mm	Between 82-85mm	86 mm & Larger		
<b>Pest</b>	0.0%	0.0%	6.7%	3.1%	4.1%	3.5%	3.6%	3.7%
<b>Wind</b>	14.3%	25.0%	16.2%	13.4%	8.9%	13.3%	12.3%	12.8%
<b>Defect</b>	0.0%	0.0%	0.0%	0.3%	0.0%	0.5%	0.3%	0.3%
<b>Clean</b>	85.7%	75.0%	77.1%	83.2%	87.1%	82.7%	83.7%	83.2%

**Blemish Severity by Count Range: Lane**

	150 & Smaller	138-113	100-88	80-72	64	56 & Larger	US Sized	Total
Severity	64 mm & Smaller	Between 65-69 mm	Between 70-74 mm	Between 75-81 mm	Between 82-85mm	86 mm & Larger		
<b>Major</b>	14.3%	16.7%	15.2%	8.4%	8.9%	12.5%	10.1%	10.8%
<b>Minor</b>	0.0%	8.3%	7.6%	8.4%	4.1%	4.8%	6.2%	6.0%
<b>None</b>	85.7%	75.0%	77.1%	83.2%	87.1%	82.7%	83.7%	83.2%

## VALENCIA CROP 2012/2013 SEASON

### Total Forecast Valencia Crop 2012/2013

29,412 tonnes

(This is based on a harvest date of September/October 2012. It must be noted that the crop volume will increase as fruit size increases when harvested into late 2012 and early 2013.

### Fruit Quality and Size

Based on fruit density counts, fruit size and growth rate measurements taken during January, February and March it is estimated that this season's total Valencia crop will be 29,412 tonnes at September harvest timing. This is a 19.15% decrease on last season's forecast crop of 36,379 tonnes. To date 27,388 tonnes of Valentias have been harvested (based on packer levy forms).

### Rind Quality

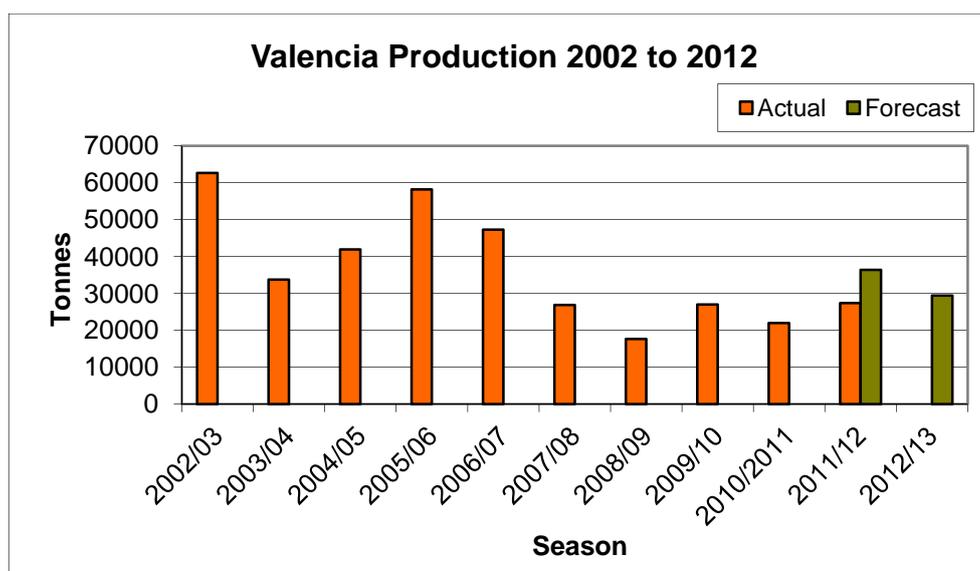
Assessments were conducted, but it was felt that it may be misleading due to fruitlet size making it difficult to determine potential rind blemish. However, wind damage is likely to be visible.

### General Comments

Total hectares of Valentias have increased from 1,076.42 Ha to 1,084 Ha. Seeded Valentias contributed to the majority of the increase. Changes in varietal plantings from 2011 to 2012 are shown on page 12.

The 2011 actual tonnage (see graph below) is based on packer levy forms and does not account for the unpicked fruit left on trees last season.

### MURRAY VALLEY CITRUS BOARD - VALENCIA PRODUCTION 2002-2012



## MANDARIN CROP 2012 SEASON

**Forecast Mandarin Crop 2012**

**7,688 tonnes**

**Forecast Afourer Crop 2012**

**5,217 tonnes**

### General Comments

Based on fruit density counts taken during January, it is estimated that this season's Mandarin crop will be 7,688 tonnes (excluding Afourers), at July harvest time. Densities are down 29% on last year.

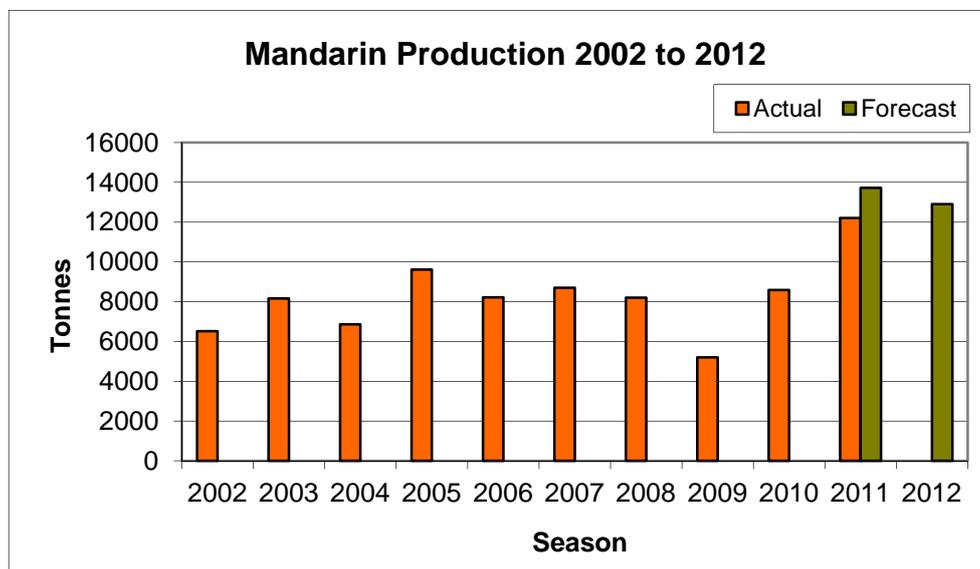
Bearing hectares for Mandarin varieties have increased again this year by 26.79Ha, and non-bearing hectares have increased by 13.38Ha. Therefore, total hectares have increased by 40.17Ha.

### Afourer Forecast

It is estimated that this year's Afourer Mandarin crop will be 5,217 tonnes. Afourers have been separated out from other Mandarin varieties due to increased plantings and their heavier crop density. Densities are down by 29% on last season, however bearing hectares have increased by 54%.

Changes in Mandarin varietal plantings from 2011 to 2012 are shown on page 12.

## MURRAY VALLEY CITRUS BOARD - MANDARIN PRODUCTION 2002-2012



## TANGELO CROP 2012 SEASON

**Total Forecast Tangelo Crop 2012 1,676 tonnes**

### General Comments

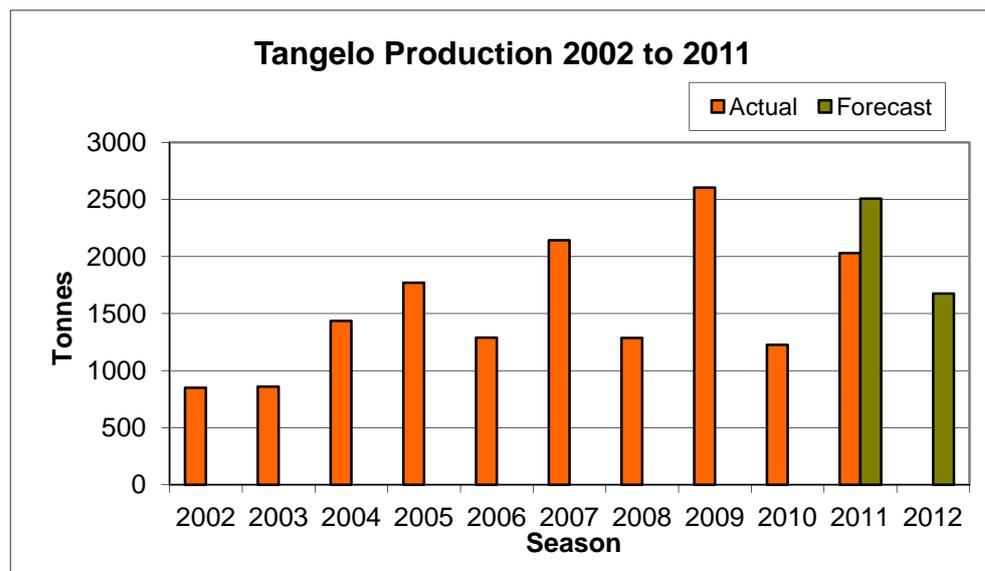
Based on fruit density counts taken during January, it is estimated that this season's total Tangelo crop will be 1,676 tonnes, at August harvest time. A 33% decrease on last season's crop. Densities are 60% down on last year.

Overall hectares of Tangelos have remained the same as last year, 69.3Ha .

Changes in Tangelo plantings from 2011 to 2012 are shown on page 13.

The 2011 actual tonnage (see graph below) is based on packer levy forms and does not account for the unpicked fruit left on trees last season.

### MURRAY VALLEY CITRUS BOARD - TANGELO PRODUCTION 2002-2012



## GRAPEFRUIT CROP 2012/13 SEASON

**Total Forecast Grapefruit Crop 2012/13**

**5,100 tonnes**

### General Comments

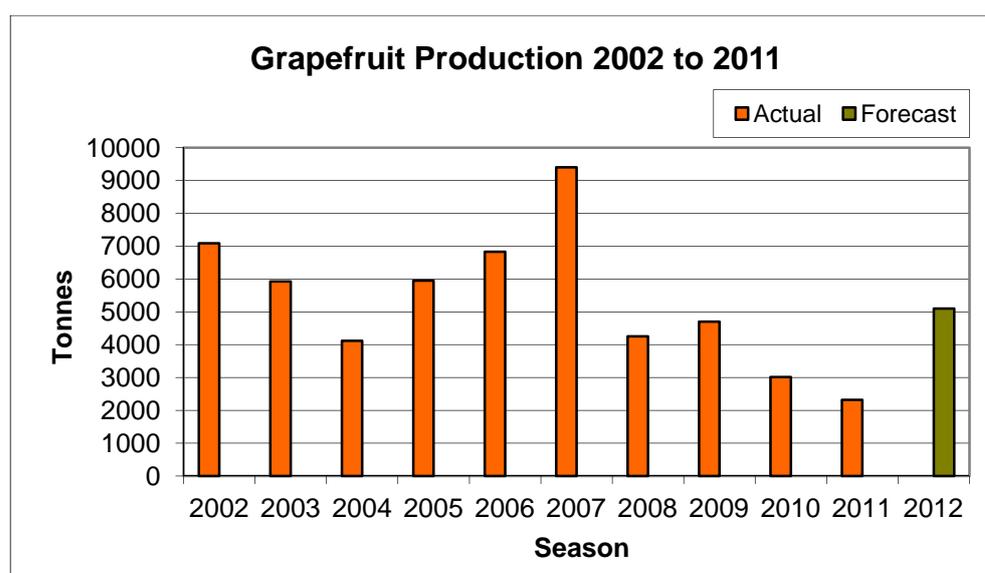
Based on fruit density counts taken during January, it is estimated that this season's total Grapefruit crop will be 5,100 tonnes, a 26% increase on last season's forecast figure. Densities are well up on last year.

Overall plantings of Grapefruit have slightly increased (5.06Ha). The increase is due to slight increases in red and yellow fleshed grapefruit.

Changes in Grapefruit plantings from 2011 to 2012 are shown on page 13.

### MURRAY VALLEY CITRUS BOARD - GRAPEFRUIT PRODUCTION 2002-2011

\* Note: Grapefruit are still being harvested so the 2012/13 actual figure is year to date.



### Total Crop Forecast 2012/13

Navels	84,207 tonnes
Valencia	29,412 tonnes
Mandarin	7,688 tonnes
Afourer	5,217 tonnes
Tangelo	1,676 tonnes
Grapefruit	5,100 tonnes
<b>Total</b>	<b>133,300 tonnes</b>

## PLANTING STATISTICS - AS AT 31 DECEMBER 2011

<b>Murray Valley Citrus Board Plantings Comparison 2011 to 2012 Survey</b>			
Planting Statistics as at 31 December 2011			
Variety	Total Hectares Planted	Total Bearing Hectares	Total Non Bearing Hectares
2011 Navel - Early Season	956.80	876.96	79.84
2012 Navel – Early Season	963.2	865.1	98.1
2011 Navel - Mid Season	730.51	650.41	80.10
2012 Navel – Mid Season	760.0	664.1	95.8
2011 Navel - Late Season	2253.58	2115.62	137.96
2012 Navel – Late Season	2233.6	2115.1	118.4
2011 Navel - Misc. Season	60.01	58.22	1.79
2012 Navel – Misc. Season	61.5	59.8	1.8
<b>2011 Navel Total</b>	<b>4000.76</b>	<b>3644.32</b>	<b>356.44</b>
<b>2012 Navel Total</b>	<b>4018.3</b>	<b>3704.1</b>	<b>314.2</b>
<b>Change in Hectares</b>	<b>17.54</b>	<b>59.78</b>	<b>-42.24</b>
2011 Valencia Seeded	1038.06	1023.86	14.20
2012 Valencia Seeded	1044.9	1024.0	20.9
2011 Valencia Seedless	38.36	15.71	22.65
2012 Valencia Seedless	39.1	17.6	21.5
<b>2011 Valencia Total</b>	<b>1076.42</b>	<b>1039.57</b>	<b>36.85</b>
<b>2012 Valencia Total</b>	<b>1084.0</b>	<b>1041.6</b>	<b>42.4</b>
<b>Change in Hectares</b>	<b>7.58</b>	<b>2.03</b>	<b>5.55</b>
2011 Mandarin - Early Season	429.17	336.09	93.08
2012 Mandarin - Early Season	449.1	354.8	94.3
2011 Mandarin - Mid Season	72.36	64.00	8.36
2012 Mandarin - Mid Season	62.4	52.1	10.3
2011 Mandarin - Late Season	44.72	40.76	3.96
2012 Mandarin - Late Season	35.8	34.4	1.4
2011 Mandarin - Misc. Season	268.08	146.76	121.32
2011 Mandarin - Misc. Season	307.2	<b>173.1</b>	<b>134.1</b>
<b>2011 Mandarin Total</b>	<b>814.33</b>	<b>587.61</b>	<b>226.72</b>
<b>2012 Mandarin Total</b>	<b>854.5</b>	<b>614.4</b>	<b>240.1</b>
<b>Change in Hectares</b>	<b>40.17</b>	<b>26.79</b>	<b>13.38</b>

## Murray Valley Citrus Board Plantings Comparison 2011 to 2012 Survey

Planting Statistics as at 31 December 2011

Variety	Total Hectares Planted	Total Bearing Hectares	Total Non Bearing Hectares
2011 Blood Orange	27.22	20.47	6.75
2012 Blood Orange	27.40	23.3	4.10
<b>Change in Hectares</b>	<b>0.18</b>	<b>2.83</b>	<b>-2.65</b>
2011 Grapefruit - Red Fleshed	41.09	32.69	8.40
2012 Grapefruit - Red Fleshed	44.60	33.5	11.1
2011 Grapefruit - White Fleshed	136.15	135.90	0.25
2012 Grapefruit - White Fleshed	137.7	135.60	2.1
<b>2011 Grapefruit Total</b>	<b>177.24</b>	<b>168.59</b>	<b>8.65</b>
<b>2012 Grapefruit Total</b>	<b>182.3</b>	<b>169.1</b>	<b>13.2</b>
<b>Change in Hectares</b>	<b>5.06</b>	<b>-0.51</b>	<b>-4.55</b>
2011 Lemon	113.22	97.69	15.53
2012 Lemon	111.45	99.60	11.85
2011 Seedless Lemons	0.00	0.00	0.00
2012 Seedless Lemons	6.75	0.00	6.75
<b>2011 Lemon Total</b>	<b>113.22</b>	<b>97.69</b>	<b>15.53</b>
<b>2012 Lemon Total</b>	<b>118.20</b>	<b>99.6</b>	<b>18.6</b>
<b>Change in Hectares</b>	<b>4.98</b>	<b>1.91</b>	<b>3.07</b>
2011 Lime	20.33	3.63	16.70
2012 Lime	20.00	3.7	16.3
<b>Change in Hectares</b>	<b>-0.33</b>	<b>0.07</b>	<b>-0.40</b>
2011 Tangelo	69.3	68.9	0.4
2012 Tangelo	69.3	68.9	0.4
<b>Change in Hectares</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
2011 Unspecified Varieties	253.36	154.55	98.81
2012 Unspecified Varieties	273.6	145.9	127.7
<b>Change in Hectares</b>	<b>20.24</b>	<b>-8.65</b>	<b>28.89</b>
<b>2011 TOTAL PLANTINGS</b>	<b>6566.15</b>	<b>5855.63</b>	<b>710.52</b>
<b>2012 TOTAL PLANTINGS</b>	<b>6682.7</b>	<b>5903.1</b>	<b>779.60</b>
<b>Change in Hectares</b>	<b>116.55</b>	<b>47.47</b>	<b>69.08</b>

*Source: Murray Valley Citrus Board annual property registrations*

## Murray Valley Citrus Board Varietal Planting Statistics at 31 December 2011

Variety	Total Hectares	Bearing Hectares	Non-Bearing Hectares
<b>Early Season Navels</b>			
Atwood	30.74	13.79	16.95
Biggs Leng	1.63	1.63	0.00
Chislett M7	78.18	6.34	71.84
EarlyBird	0.15	0.15	0.00
Fisher	25.04	18.93	6.11
Fukumoto	10.28	10.28	0.00
Italian Navelina	0.77	0.77	0.00
Leng	406.73	392.15	14.57
Lloyd Leng	1.25	1.25	0.00
Navelina	325.17	322.54	2.64
Newhall	5.33	5.33	0.00
Nucellar	22.01	22.01	0.00
Pasin	5.62	3.02	2.60
Ryan	57.06	57.06	0.00
Thompson	36.87	36.62	0.25
Whitely	6.32	6.01	0.32
<b>Mid Season Navel</b>			
Bellamy	0.20	0.20	0.00
Cara Cara	46.62	21.19	25.43
Golden Nugget	0.54	0.54	0.00
Hockney	1.93	1.93	0.00
Navelate	0.86	0.86	0.00
Palmer	0.78	0.78	0.00
Washington	654.78	624.82	29.96
<b>Late Season Navels</b>			
Autumn Gold	60.05	57.41	2.64
Barnfield	189.27	186.73	2.55
Chislett	329.81	296.66	33.15
Christensen	3.38	3.38	0.00
Christmas	0.47	0.47	0.00
Clark	8.33	8.33	0.00
Doug Clark	2.15	2.15	0.00
Edwards	2.36	2.36	0.00
Honey Gold	1.78	1.78	0.00
Hutton	0.81	0.81	0.00
Late Lane	1339.37	1263.36	76.01

## Murray Valley Citrus Board Varietal Planting Statistics at 31 December 2011

Variety	Total Hectares	Bearing Hectares	Non-Bearing Hectares
<b>Late Season Navels Continued</b>			
Pollock	12.15	12.15	0.00
Powell	107.30	106.44	0.87
Ravens Choice	5.19	4.72	0.47
Rohde	46.32	43.64	2.68
Scopelliti	5.91	5.91	0.00
Summer Gold	86.95	86.86	0.09
Taylor - Nav	0.83	0.83	0.00
Toomey	3.27	3.27	0.00
Wiffen	7.61	7.61	0.00
<b>Miscellaneous Navels</b>			
Follett	0.33	0.33	0.00
Hammet	1.19	1.19	0.00
Langdon	9.72	9.72	0.00
Red Flesh	1.00	0.00	1.00
Riverside	1.75	1.75	0.00
Salisbury	1.86	1.86	0.00
Unspecified	45.66	44.00	1.66
<b>Seeded Valencias</b>			
Appleby	0.82	0.82	0.00
Benyenda	0.43	0.43	0.00
Berri	4.35	4.35	0.00
Casey	7.58	7.58	0.00
Hamlin	10.07	10.07	0.00
Keenan	2.00	0.00	2.00
Newton	33.30	33.30	0.00
Owen	0.16	0.16	0.00
Parson Brown	2.33	2.33	0.00
Pera	0.10	0.10	0.00
Smith	9.32	9.32	0.00
Salustiana	3.68	1.52	2.16
Valencia	985.17	966.30	18.87

## Murray Valley Citrus Board Varietal Planting Statistics at 31 December 2011

Variety	Total Hectares	Bearing Hectares	Non-Bearing Hectares
<b>Seedless Valencia</b>			
Delta	10.05	7.13	2.92
McMahon Seedless	4.95	1.52	3.43
Midnight	3.44	0.45	2.99
Valencia Seedless	20.62	8.47	12.15
<b>Sour Oranges</b>			
Seville	16.04	16.04	0.00
Smooth Seville	1.02	1.02	0.00
<b>Mandarin Early Season</b>			
Caffin	0.27	0.00	0.27
Clementine	0.58	0.58	0.00
Fallglo	0.58	0.58	0.00
Imperial	440.17	349.44	90.73
Miho	0.83	0.83	0.00
Satsuma/Okitsu	1.25	1.25	0.00
<b>Mandarin Mid Season</b>			
Amigo	4.03	1.63	2.40
Daisy	25.05	19.23	5.81
Dekopon/Sumo	3.64	0.00	0.00
Ellendale	30.43	30.43	0.00
Feutrell	0.53	0.53	0.00
Fremont	0.75	0.00	0.75
Gold Nuggett	23.50	0.00	23.50
Hickson	1.83	1.83	0.00
Mandarins	6.30	2.88	3.42
Merbein Gold	1.56	0.62	0.94
Topaz	4.57	4.57	0.00
<b>Mandarin Late Season</b>			
Avana Tordivo	0.81	0.81	0.00
Emperor	0.56	0.56	0.00
Kara	0.89	0.89	0.00
Mandalate	0.82	0.00	0.82
Murcott	25.87	25.25	0.62
Ortanique	2.30	2.30	0.00
<b>Mandarin Seedless</b>			
Afourer	300.89	170.19	130.70

## Murray Valley Citrus Board Varietal Planting Statistics at 31 December 2011

Variety	Total Hectares	Bearing Hectares	Non-Bearing Hectares
<b>Tangelo</b>			
Minneola	33.00	33.00	0.00
Seminole	0.08	0.08	0.00
Tangelo	36.20	35.84	0.37
<b>Grapefruit White Flesh</b>			
Grapefruit	34.29	34.29	0.00
Marsh	62.52	61.89	0.63
Oroblanco	1.45	1.45	0.00
Thomson	17.64	17.64	0.00
<b>Grapefruit Red Flesh</b>			
Flame	0.39	0.39	0.00
Rio Red	3.86	2.45	1.41
Ruby	0.38	0.38	0.00
Ruby Red	7.49	6.67	0.82
Ruby Pink	0.30	0.30	0.00
Star Ruby	32.14	23.30	8.84
<b>Lemons</b>			
Eureka	19.72	19.72	0.00
Fino	0.20	0.20	0.00
Francovielo	1.33	1.33	0.00
Lemons	37.10	33.93	3.17
Lisbon	50.26	41.54	8.72
Meyer	0.52	0.52	0.00
Seedless Lemon	6.75	0.00	6.75
Verna	1.39	1.39	0.00
YenBen	0.47	0.47	0.00
<b>Blood Orange</b>			
Arnold Blood	14.76	13.78	0.98
Blood Oranges	12.46	9.29	3.17
Maltese	0.19	0.19	0.00

## Murray Valley Citrus Board Varietal Planting Statistics at 31 December 2011

Miscellaneous Citrus			
BuddahHand	0.03	0.03	0.00
Citrus Budwood	1.81	1.81	0.00
Citrus Mix	11.20	10.65	0.54
Common Orange	1.25	0.68	0.56
FingerLime	0.74	0.74	0.00
Limes	14.36	0.33	14.02
Pummelo	2.55	1.33	1.22
Tahitian	4.94	2.66	2.29
Miscellaneous	260.61	133.46	127.15

## Murray Valley Citrus Board Planting Statistics Rootstock Varieties as at 31 December 2011

Rootstock Category:	Total Ha:	Bearing Ha:	Non Bearing Ha:
Citrangle	3914.07	3489.20	424.87
Cleopatra	218.55	183.93	34.62
Miscellaneous	64.32	57.61	6.71
Non-Citrus	608.26	394.10	214.16
Own Roots	3.16	3.16	0.00
Rangpur Lime	0.14	0.14	0.00
Rough Lemon	104.57	104.11	0.46
Sour Orange	0.31	0.31	0.00
Sweet Orange	748.96	738.83	10.13
Swingle	83.62	80.61	3.01
Trifoliata	931.37	847.45	83.92
Volkameriana	3.65	3.65	0.00

*Report compiled: 1 April 2012 from planting survey completed 31 December 2011*

## Murray Valley Citrus Board Irrigation Methods Utilised as at 31 December 2011

Method	Total Ha	Bearing HA	Non Bearing Ha
Drip	2862.87	2312.20	550.68
Drip/Lowlevel	156.33	142.46	13.87
Drip/Overhead	341.28	303.19	38.09
Furrow	9.60	9.37	0.23
Lowlevel	1427.32	1338.80	88.52
LowLevel/Drip	5.37	0.00	5.37
Lowlevel/Overhead	287.86	272.40	15.46
Microjet	4.34	0.24	4.10
Microsprinkler	0.75	0.75	0.00
Overhead	1572.79	1523.68	49.10

*Report compiled: 1 April 2012 from planting survey completed 31 December 2011*

## Murray Valley Citrus Board Planting Statistics Citrus Orchards by Size 31 December 2011

Orchards in Group:	Percent Total Orchards:	Area Range:
46	6.57%	Under .25 Ha
303	43.29%	.25 to 5
123	17.57%	5 to 10
146	20.86%	10 to 20
46	6.57%	20 to 30
19	2.71%	30 to 40
6	0.86%	40 to 50
3	0.43%	50 to 60
2	0.29%	60 to 70
2	0.29%	70 to 80
2	0.29%	80 to 90
1	0.14%	90 to 100
1	0.14%	Over 100

**Includes orchards with under 150 trees, and orchards from the Wangaratta area**

*Report compiled: 1 April 2012 from planting survey completed 31 December 2011*

## **CROP FORECASTING METHODOLOGY**

The Murray Valley area has been divided into 14 distinct geographical areas. From these areas a fixed percentage of sample trees of each variety are selected. There are 147 density sample sites and 83 size sample sites.

Apart from geographical factors, tree age, root stock etc are taken into account in selecting these sample sites, these sites are reviewed on an annual basis to maintain relevance.

At each site frame counts of fruit numbers, on each of three trees, are conducted on an annual basis. Comparison of the fruit numbers year to year is an intrinsic part of the method.

On each of the 83 measurement sites, 60 pieces of fruit are measured and tagged on each site. Throughout the growing season on a 28 day cycle starting from January, the growth rate of this tagged fruit is measured, for Navels some 4,200 pieces. The final crop volume is adjusted to take into account any variation from the predicted growth rate.

Through regular visits to these sample sites we are also able to observe fruit condition, insect or tree damage, fruit breakdown, disease etc.

### **Blemish assessments**

The fruit used for sizing data is also examined and assessed for degree of blemish. This is carried out during March; with the rating having the ability to be correlated to the individual fruit size.

The fruit is assessed without removing it from the tree and obviously does not take into account harvest colour or blemishes. The basis of assessment is correlated to the Riversun Quality packing manual.

The tabled reports categorise the blemish into Pest, Wind, Fruit Defect, Clean, Physical and Colour to indicate the likely cause of blemish.

For further comment or enquiry regarding the 2012/2013 crop forecast, please contact Tony Bothroyd on mobile 0407 325 934.

DISCLAIMER No responsibility or guarantee is given or implied for any actions taken by individuals or groups as a result of information contained within this publication, and no liability will be accepted by the MVCB for any loss resulting from any such use.

## Appendix Three

### ***MVCB website links***

#### **Weather Forecast**

##### **Elders Ltd Weather Site**

Monitors conditions and forecasts in detail for most Australian areas.

[www.eldersweather.com](http://www.eldersweather.com)

##### **The Commonwealth Bureau of Meteorology**

Bureau of Meteorology web homepage provides the Australian community with access to weather forecasts.

[www.bom.gov.au](http://www.bom.gov.au)

[Warnings - Victoria](#)

[Mallee four day outlook](#)

##### **Wunderground**

Monitors conditions and forecasts for over 60,000 U.S. and international cities, providing free, real-time online weather information to millions of Web users around the world.

[www.wunderground.com](http://www.wunderground.com)

[Current temperatures -Victoria](#)

[Current temperatures - NSW](#)

##### **The Climatedogs**

An animation series that looks at how four global climate processes shape Victoria's climate.

<http://new.dpi.vic.gov.au/agriculture/farming-management/climate/understanding-weather-and-climate>

#### **Water**

##### **Lower Murray Water**

Lower Murray Water supplies urban water and wastewater services to townships along the Murray River in Victoria, from Kerang to Mildura.

[www.srwa.org.au](http://www.srwa.org.au)

##### **Murray Darling Basin Authority**

The Murray Darling Basin Authority is the executive arm of the Murray-Darling Basin Ministerial Council and is responsible for managing the River Murray and the Menindee Lakes system of the lower Darling River.

[www.mdba.gov.au](http://www.mdba.gov.au)

##### **Golburn-Murray Water**

Golburn-Murray Water manages water storage, delivery and drainage systems involving 70% of Victoria's stored water.

[www.g-mwater.com.au](http://www.g-mwater.com.au)

##### **Western Murray Water**

Western Murray Water provides information on allocations and water ordering for NSW irrigators.

[www.westernmurray.com.au](http://www.westernmurray.com.au)

#### **Pest and Disease**

##### **Fruit Fly Information**

Tri-State Fruit Fly program providing information on restrictions and fruit fly exclusion zones.

[www.fruitfly.net.au](http://www.fruitfly.net.au)

##### **Bugs for Bugs**

Bugs for Bugs provides information on pests and integrated pest management.

[www.bugsforbugs.com.au](http://www.bugsforbugs.com.au)

## **Biological Services**

Biological Services produces and supplies insect and mite predators and parasites to control a range of pests, mostly in horticultural crops.

[www.biologicalservices.com.au](http://www.biologicalservices.com.au)

## **Citrus Orchard Biosecurity Plan**

Biosecurity planning provides a mechanism for the citrus industry, government and other relevant stakeholders to assess current biosecurity practices and future biosecurity needs. Biosecurity planning identifies procedures that can be put in place to reduce the chance of pests reaching our borders or minimise the impact if a pest incursion occurs.

[www.planthealthaustralia.com.au/go/phau/biosecurity/citrus](http://www.planthealthaustralia.com.au/go/phau/biosecurity/citrus)

## **Pests and Disease Image Library (PaDIL)**

High quality images and information tools designed for Biosecurity and Biodiversity.

[www.padil.gov.au/](http://www.padil.gov.au/)

## **Market Access**

### **Domestic Quarantine and Market Access Working Group (DQMAWG)**

DQMAWG working group progresses specific areas of its activities through 3 sub groups;

Certification services working group

Domestic fruit fly working group

Quarantine domestice working group

[www.domesticquarantine.org.au/](http://www.domesticquarantine.org.au/)

### **Technical Market Access Proposals**

Biosecurity Australia undertakes risk analyses (including Import Risk Analysis and reviews of existing policy) to identify any quarantine risks

[www.daff.gov.au/ba/about/work\\_program](http://www.daff.gov.au/ba/about/work_program)

### **Horticulture Australia (HAL)**

Information for packers regarding export licensing

[www.horticulture.com.au/areas\\_of\\_investment/export\\_licensing/exporter.asp](http://www.horticulture.com.au/areas_of_investment/export_licensing/exporter.asp)

## **Seasonal Harvest Employment**

### **Seasonal Work Australia (SWA)**

SWA, a job-search website that links job-seekers directly to seasonal and casual work opportunities around Australia. The site actively targets working-travellers including overseas backpackers but receives many enquiries from within Australia from other job-seekers looking for employment in harvest and other farm work.

[www.seasonalwork.com.au](http://www.seasonalwork.com.au)

### **MADEC**

MADEC can direct job-seekers to seasonal and casual employment in harvest and other farm work.

[www.madec.edu.au/employment/harvest-labour-services](http://www.madec.edu.au/employment/harvest-labour-services)

## **Other Citrus Organisations**

### **Citrus Australia Limited**

Citrus Australia Ltd (CA) is the peak body of the national citrus growers. Its aim is to promote the common interests and the financial and environmental sustainability of all Australian citrus growers.

[www.citrusaustralia.com.au](http://www.citrusaustralia.com.au)

### **Auscitrus**

Auscitrus is the trading name of the Australian Citrus Propagation Association Incorporated (ACP), a national "not for profit" industry organisation comprising of citrus growers and nurserymen from each State. Auscitrus is responsible for supply of citrus budwood and seed in Australia, and operates under a Deed of Licence with NSW Department of Primary Industries at research institutes at Dareton, Camden and Gosford.

[www.auscitrus.com.au](http://www.auscitrus.com.au)

### **Riverina Citrus**

Riverina Citrus is governed under the Agricultural Industry Services Act, and is a continuation of the MIA Citrus Fruit Promotion Marketing Committee and the MIA Citrus Fruit Promotion Marketing Order 1998 made under the Marketing of Primary Products Act 1983.

[www.riverinacitrus.com.au](http://www.riverinacitrus.com.au)

### **FCOJ**

To help individual futures and options traders spot trends and develop charts in relation to the FCOJ (Frozen Concentrated Orange Juice) markets, particularly in Brazil.

[www.ino.com](http://www.ino.com)

### **Australian Fruit Juice Association**

The Australian Fruit Juice Association (AFJA) is a non-profit organisation representing the processing, converting and packaging industry which produces brands of fruit juice, fruit drinks and fruit cordials for consumption in Australia and overseas.

[www.afja.com.au](http://www.afja.com.au)

### **Plant Health Australia**

Plant Health Australia is the national coordinator of the government-industry partnership for plant biosecurity in Australia. As a not-for-profit company, we service the needs of Members and independently advocate on behalf of the national plant biosecurity system.

[www.planthealthaustralia.com.au](http://www.planthealthaustralia.com.au)

## **Federal and State Departments of Agriculture**

### **Department of Primary Industries - Victoria**

State Government Departments - the Department of Primary Industries (DPI) and the Department of Sustainability and Environment (DSE) - have replaced the Department of Natural Resources and Environment (DNRE), representing the interests of the State's horticultural and agricultural industries.

[www.dpi.vic.gov.au](http://www.dpi.vic.gov.au)

### **South Australian Research and Development Institute**

South Australian Research and Development Institute (SARDI) conducts research and development to enhance growth of primary industries, sustain natural resources and improve food quality and safety for the people of South Australia.

[www.sardi.sa.gov.au](http://www.sardi.sa.gov.au)

### **Queensland Department of Primary Industries**

QDPI, Queensland's Government body representing research and interests of the state's horticultural and agricultural industries.

[www.dpi.qld.gov.au](http://www.dpi.qld.gov.au)

### **Department Industry and Investment - NSW**

NSW Department of Primary Industries (DPI) is a State Government Department, for agricultural research, advisory services, education and regulation and providing practical farm production solutions for profitable agriculture.

[www.agric.nsw.gov.au](http://www.agric.nsw.gov.au)

### **Primary Industries and Resources of South Australia**

Primary Industries and Resources of South Australia (PIRSA) is the South Australian State Government agency. Committed to sustainable and responsible development across the primary resources sector.

[www.pir.sa.gov.au](http://www.pir.sa.gov.au)

### **Australian Quarantine Inspection Service (AQIS)**

AQIS is Australia's first line of defence, protecting our unique environment against exotic pests and diseases. AQIS inspects incoming luggage, cargo, mail, animals and plants and their products, and provide inspection and certification for a range of exports.

[www.daff.gov.au/aqis](http://www.daff.gov.au/aqis)

## **Other Industry Organisations**

### **Horticulture Australia Limited**

Horticulture Australia Ltd (HAL) provides capabilities in strategic planning, program management, market analysis, research and development, domestic and export promotion, and industry and product development.

[www.horticulture.com.au](http://www.horticulture.com.au)

### **Plant Health Australia**

Plant Health Australia (PHA) completed the National Citrus Industry Biosecurity Plan in April 2004 to help protect the Australian citrus industry from emergency plant pests. The plan is consistent with PHA's Industry Biosecurity Planning Guidelines and will be reviewed annually.

[www.planthealthaustralia.com.au](http://www.planthealthaustralia.com.au)

### **Victorian Farmers Federation**

As the largest farmer organisation in Australia, the Victorian Farmers Federation has around 21,000 members and offers a wide variety of information for growers.

[www.vff.org.au](http://www.vff.org.au)

## **Wholesale Fruit and Vegetable Markets**

### **Melbourne Markets**

Wholesale fresh fruit and vegetable market place - Melbourne

[www.melbournemarkets.com.au](http://www.melbournemarkets.com.au)

### **Sydney Market Reports**

Wholesale and retail fresh fruit and vegetable market place - Sydney

[www.sydneymarkets.com.au](http://www.sydneymarkets.com.au)

### **Market Fresh**

Australian guide to fresh fruit and vegetables including market reports, recipes and information for children.

[www.marketfresh.com.au](http://www.marketfresh.com.au)

## **Other Industry Information**

### **National Agricultural Monitoring System (NAMS)**

The National Agricultural Monitoring System (NAMS) contains a range of climatic and production information, for dryland/broadacre and irrigated industries, for over 600 regions throughout Australia.

[www.nams.gov.au](http://www.nams.gov.au)

### **Product and Grocery Industry Code of Conduct**

Promoting fair trading practices and building better business relationships. The Produce and Grocery Industry Code of Conduct is a voluntary Code providing the principles of best practice for all industry participants in the produce and grocery industry supply chain. The Code also provides access to a dispute resolution procedure for any individuals or groups seeking to resolve a trading dispute.

[www.produceandgrocerycode.com.au](http://www.produceandgrocerycode.com.au)

## **Industry Information Sources**

### **AGFACTS**

Information on pests, diseases, sprays and other useful fact sheets for citrus growers.

[www.agric.nsw.gov.au](http://www.agric.nsw.gov.au)

### **Waterlink**

Waterlink is designed to provide direct links to information factsheets and up-to-date information on events regarding management of low water allocations for the horticultural industry.

[www.riverlink.gov.au/waterlink](http://www.riverlink.gov.au/waterlink)

### **ABC Rural News**

Rural news from the ABC network, providing current and archived news snippets for the horticultural and agricultural industries.

[www.abc.net.au](http://www.abc.net.au)

#### **Registered Food Safety Auditors**

To assist growers with a choice of external auditors in relation to their SQF requirements.

[www.health.vic.gov.au](http://www.health.vic.gov.au)

#### **The Ultimate Citrus Page**

Index of links to web pages involving the Florida Citrus Industry and other citrus web sites around the world.

[www.ultimatecitrus.com](http://www.ultimatecitrus.com)

#### **Other Rural Links - Australian and Overseas**

Index of Australian and overseas rural links, both horticultural and agricultural, listed by topic through the ABC network site.

[www.abc.net.au](http://www.abc.net.au)

#### **Citrus Trial Reporting Scheme**

The Citrus Trial Reporting System (CTRS) contains details of the current citrus trials underway in Australia.

[www.interworx.com.au](http://www.interworx.com.au)

#### **AgLinks**

Listings for Australian-based agricultural businesses or organisations.

[www.aglinks.com.au](http://www.aglinks.com.au)

#### **Aagnet**

Comprehensive search lists of Australian agriculture related organisations and businesses, also links by topic.

[www.aagnet.com.au](http://www.aagnet.com.au)

#### **Port of Melbourne - Supply Chain Model**

The Model maps the import and export processes at the Port, demonstrating how and where stakeholders in the chain interact, the transactions which take place and the technology used. By increasing awareness and understanding of the Port of Melbourne supply chain, the Model can assist industry to improve business decision making and identify areas for efficiency gains across the import and export processes.

[www.doi.vic.gov.au](http://www.doi.vic.gov.au)

#### **Members of Parliament Representing Growers in Mildura/Sunraysia Region**

(VIC) Peter Crisp, Member for Mildura [www.petercrisp.net.au](http://www.petercrisp.net.au)

(NSW) John Williams, Member for Murray-Darling [www.johnwilliams.com.au](http://www.johnwilliams.com.au)

John Forrest, Federal Member for Mallee [www.jforrest.com](http://www.jforrest.com)

# Appendix Four

## *Evaluation*



An industry  
perspective

# EVALUATION REPORT

**CT09044**

*“Helping Murray Valley Citrus growers thrive in an ever changing environment  
by addressing regional and national issues”.*

**2010 - 2013**

A collaborative project between:



# Contents

# Page

EXECUTIVE SUMMARY .....	111
INTRODUCTION.....	112
About Murray Valley Citrus Board	112
Cittgroups	112
METHODS .....	114
FINDINGS	117
QUESTIONNAIRE - RESPONDANTS REGULAR CITTGROUP 'ATTENDEES'	120
QUESTIONNAIRE - RESPONDANTS NON REGULAR CITTGROUP 'ATTENDEES'	124
SUMMARY OF OUTCOMES .....	127
APPENDIX 1	129
Workshop Links .....	129
APPENDIX 2 .....	130
Summary of Workshop Evaluations	130

## **EXECUTIVE SUMMARY**

The evaluation of the Murray Valley Citrus Industry Development Officer (IDO) and Horticulture Australia Limited (HAL) project examined an industry perspective of the overall effectiveness of the Project in communication from the IDO and MVCB about industry challenges, the effectiveness of the IDO and adoption of practice change within the industry following activities conducted by the organisation.

This evaluation report responds to a brief from the Murray Valley Citrus Board (MVCB) to evaluate the Horticulture Australia Limited funded project *CT09044* entitled “*Helping Murray Valley Citrus growers thrive in an ever changing environment by addressing regional and national issues*”.

A Final Report is required to be submitted to Horticulture Australia Limited as part of the Project Key Milestones for reporting. All previously submitted milestone reports have covered the range of activities undertaken by the IDO and Board over the three year project (including but not limited to: communication tools, technical work, scientific and market research projects, conduct of grower networking opportunities, reports, tours etc.).

The evaluation was conducted through examination of historical data such as milestone reports, evaluations documented by the IDO following CITTgroup workshops and grower activities and the responses to a verbal questionnaire completed by 12 growers.

Growers participated in the process willingly. One grower insisted his wife participate in the interview process, another nominated his wife to respond on his behalf and another preferred his farm manager to be interviewed instead of himself due to the Managers interaction with MVC. Participants were informed their responses would be confidential unless they specifically requested a comment be attributed to them.

In terms of quantitative data to assess the outcomes of the project, the HAL milestone reports indicate that primary requirements were met.

Although the interviews were conducted over the telephone, it became apparent that there is a clear distinction in grower attitudes; in particular to their outlook on the future of the industry in general and to training they perceived they personally require.

At the completion of the 12 interviews it was clearly evident that growers who had participated in CITTgroups experienced a refreshed outlook, understood the value of structured forms of networking/information transfer and genuinely valued the support and encouragement from other growers- “*especially when the chips are down*”.

The majority of those interviewed substantiated that the IDO role and the Project has been valued by industry. Primarily Murray Valley citrus growers perceived the information transfer effective in addressing *locally based* agronomy/growing practice and biosecurity issues and that CITTgroup events are required more so by growers owning smaller sized properties and or new growers to the industry.

## **INTRODUCTION**

### **About Murray Valley Citrus Board**

The Murray Valley Citrus Board is a Statutory Body established by the Murray Valley Citrus Acts 1989 of Victoria and New South Wales. In June 2004, the Board was reconstituted under the Agricultural Industry Development Act (1990) of Victoria.

#### **Mission**

*Leading the Murray Valley citrus industry to sustained profitability through communication, research, extension, market information, promotion and environmental responsibility.*

Vision Success in Citrus Values:

- Ethical, accountable and professional behaviour.
- Cost efficient and effective services to growers and industry partners.
- Leadership in market development, product development and change.
- Partnership in the network of service providers to all sectors of the industry.
- Cultivation of strategic partnerships.
- Recognition of the need to be flexible in response to market opportunities.
- Striving to understand and meet client needs.
- Respects the value of our staff and rewards team performance.
- Encouragement of environmental responsibility and sustainable production.
- Support of safe food production.
- Promotion of professional development of all Board members and staff.

#### **Citrus in the Murray Valley**

Citrus production in the Murray Valley stretches from the South Australian/Victorian border south east through the highly productive areas of Sunraysia, Mid Murray (Swan Hill) to the area surrounding Wangaratta. Broadly speaking it covers the distance of more than 600 kilometres along the Murray River. There are approximately 30 registered Approved Receivers (packers and processors), and a number of merchants in the Murray Valley area. Merchants handling fresh citrus are predominantly located in the capital city markets whilst the packers and processors are generally located in the production area.

#### **Cittgroups**

Operating independently to an extent, CITTgroups aim to monitor local and overseas technology, exchange individual ideas and experiences, and often initiate and record practical trials designed to improve citrus yields and quality. This information is passed on to growers, ensuring that they are up to date with the latest in information and technology from around the world. It also offers growers the chance to get together with other citrus farmers to share their varied experience and knowledge.

CITTgroups were first introduced to citrus growers in Australia in the Riverland district of South Australia and have expanded throughout Australia with Regional Co-ordinators in all major citrus growing regions. The basis of the groups is the interchange of ideas between growers to discuss production techniques, pest management control, marketing and other industry topics. A self-help concept, CITTgroups have proven to be very effective in generating and disseminating information to small groups of growers. Groups of growers meet informally on a regular basis on a different grower's property or selected venues for field discussions or information technology presentations. Workshops and Study Tours are also conducted as CITTgroup activities. Sponsors and guest speakers are invited to contribute to the CITTgroups and pass on timely and up to date information.

By attending receive the latest in citrus industry technology. These techniques can assist grow the best possible product. Improvements in you management practices, fruit quality and consistency will mean better returns in the long run. The Murray Valley Regional CITTgroup Co-ordinator is in constant contact with the regions citrus growers and researchers, and is highly qualified to co-ordinate the transfer of the latest technology into practical solutions for growers.

CITTgroups are funded through Murray Valley Citrus Board levies and Horticulture Australia Limited. Murray Valley CITTgroups are supported by the Murray Valley Citrus Board and sponsored by agribusiness bodies.

### Topics

Topics for CITTgroups are wide and varied and are dependent largely on the sponsor or guest speaker for the CITTgroup. Topics previously discussed include:

- irrigation techniques/drought workshops
- disease & pest control
- spraying & chemical control
- pruning
- irrigation
- weed control
- packing & transporting
- soil checks
- fertilizing
- grafting
- planting & transplanting
- benchmarking
- tours of other growing regions

# METHODS

## Evaluation Purpose

- *What does this evaluation strive to achieve?*

Examine an industry's perspective of the overall effectiveness (outcomes and outputs) of the Project in addressing specific industry challenges, the effectiveness of the IDO's role and adoption of practice change.

- *What is the purpose of this evaluation?*

As stated in the Executive Summary- HAL requirement of the Project completion.

- *How will findings from the evaluation be used?*

Provided to HAL, to the Board of MVC and to the IDO to provide feedback about her role and individual effectiveness.

## Stakeholders

- *Who are the stakeholders for this evaluation?*

HAL, MVCB, 12 growers: 6 regular participants of CITT groups, 6 who do not regularly attend

- *How were growers engaged when implementing the evaluation?*

Growers were asked to complete workshop evaluation sheets at the completion of each activity (results summarized in Appendix 2)

12 growers were interviewed via telephone by the external consultant.

**Stakeholders**

*MV growers who:*

- *attended CITT groups*
- *did not attend regularly*

**Table 1. Summary of the sample of growers who participated in the questionnaires**

Stakeholder Number & Location	Stakeholder Property Size	Produces Oranges	Produces Mandarins	Produces Lemons/Limes/Tangelo	Produces Grapefruit
1 Coomealla	13.62	13.62			
2 Red Cliffs	6.11		6.11		
3 Mourquong	33.70	25.82	1.51	0.12	5.60
4 Ellerslie	59.54	47.22	9.72	0.22	2.38
5 Buronga	16.29	11.27	5.02		
6 Ellerslie	25.54	23.97	0.83	0.73	
7 Coomealla	176.63	146.41	13.30	7.56	9.37
8 Nangiloc	71.58	69.18	2.41		
9 Mourquong	39.75	29.38	5.58	4.79	
10 Nangiloc	39.75	29.38	5.58	4.79	
11 Ellerslie	77.59	63.15	12.58	1.34	0.51
12 Colignan	114.10	83.25	21.59	4.88	4.38
<b>Total hectares</b> <i>Approx 10% sample of the MV plantings</i>	<b>674.2</b>	542.65	84.23	24.43	22.24
<b>Total MV hectares</b>	<b>6693.67</b>	<b>5446.1</b>	<b>857.76</b>	<b>209.61</b>	<b>180.2</b>

## EVALUATION DESIGN

### Evaluation Questions

- CITTgroup Workshop Evaluation (Appendix 2) as designed, collated by the IDO
- Two questionnaires used as a template for telephone interviews by the consultant to independently ascertain industry's perspectives.
  - a. Questionnaire - Respondent 'Regular Attendees'
  - b. Questionnaire - Respondent 'Non- Regular Attendees'

*"I pick the eyes out of topics and attend the ones I think are worthy going to"*

## DATA COLLECTION

### Data Collection Methods

- *What methods will be used to collect or acquire the data?*
  - Document review MVCB/HAL Project application
  - Participants' evaluation forms from CITT groups
  - HAL Project Milestones
  - Questionnaire responses- 12 growers
- *Will a sample be used? If so, how will the sample be selected?*

*"..it's about being able to manage in the future"*

Growers were selected for interview based on diversity of geographic location, size of property, past history in attendance at CITTgroups and crop mix.

## DATA ANALYSIS AND INTERPRETATION

*“what do we do differently next year?”*

### Indicators and Standards

- *What are some measurable or observable elements that can indicate level of performance of what is being evaluated?*
- *What constitutes “success”?*

**Table 2. Indicators and Success**

Example of Evaluation Question or Activity conducted by IDO	Indicators (What Constitutes “Success”?)
<ol style="list-style-type: none"> <li>1. What have you implemented/changed?</li> <li>2. Gather &amp; disseminate information on best practices &amp; use of supportive technologies by               <ul style="list-style-type: none"> <li>▪ attending appropriate field days, conferences &amp; industry stakeholders’ meetings,</li> <li>▪ participating in appropriate international &amp; Australian conferences &amp; study tour</li> </ul> </li> <li>3. Organise 10 CITTgroup events annually, plus additional workshops, seminars &amp; information sessions as seasonal circumstances dictate</li> <li>4. Facilitate Best Practice Field Walk</li> </ol>	<ul style="list-style-type: none"> <li>• new practice adoption and grower promotion of the benefits within own networks</li> <li>• wider use of new practices by producers</li> <li>• sustainability</li> <li>• profitability</li> <li>• resilience</li> <li>• market reputation</li> <li>• improved morale/outlook</li> <li>• attendance at CITTgroups</li> <li>• Feedback from CITTgroups</li> <li>• Industry aware new technology</li> <li>• Better alignment of forecasts with deliveries</li> <li>• Producers receive relevant up-to-date information regularly</li> <li>• Producers aware of new management practices</li> </ul>

# FINDINGS

## Document Review

The Milestone Reports for the Project provided a summary of outcomes and evidence of implementation of a range of agreed communication and information transfer activities.

*“It is difficult for the IDO role to keep pace with consultants as they are working globally”*

## Evidence of communication with growers and information transfer methods

*Excerpt from MVCB Milestone #3*

**Organise 10 CITTgroup events annually, plus additional workshops, seminars and information sessions as seasonal circumstances dictate.**

The following CITTgroups and workshops were facilitated by the MVIDO

- March 24 – Horticulture Industry Shared Compliance Program – New Industrial Award Information Session
- March 31, April 1, 6 and 7 – Citrus Nutrition Technical Workshop – 10 participants.
- April 19 – Quality Control Course for Packing Shed Staff – 25 participants. Each participant was also given a quality control manual and AQIS workplans for China, Korea, Thailand, Taiwan and USA.
- April 29– New Fungicides for Packing Sheds
- May 5 – Water Policy Information Session
- June 1 & 2 – Flower suppression field walks Colignan and Mourquong
- 16 June - Pruning Workshop – 15 Participants
- 17 & 18 June – In field pruning sessions with Dr. Andy Krajewski – 23 participants
- 23 June – Pruning Workshop – 16 Participants
- 29 June – Weather Workshop in conjunction with Vic DPI and other IDOs
- 15 July – Merbein Gold Fruit Tasting and production information
- 21 July – Pruning Bus Trip, visits to David Stevens, Richard Bertalli, Col Nankivell and Sevenfields – 21 Participants
- 22 July - Pruning Workshop - 22 participants
- 27 July - Field Trials Workshop – 25 Participants
- 11 August – Citrus Varieties Show & Tell
- 12 August – Pruning Workshop Barham – 10 Participants
- 30 August – Rafael Martinez Nutrition Presentation -
- 15 September – Red Scale Management and IPM - Nangiloc & Dareton – 44 participants
- 13 October – Advanced Fertigation (S. Falivene) and Spain Tour (T. Filippi), Dareton and Nangiloc – 20 participants
- 1 June – Flower Suppression Workshop – Colignan – 41 participants
- 2 June – Flower Suppression Workshop – Mourquong – 52 participants
- 16 June – Pruning Workshop – 15 participants
- 17 June – Dr Andy Krajewski Pruning Workshop – 18 participants
- 21 July – Pruning Bus Trip, visits to David Stevens, Richard Bertalli, Col Nankivell and Sevenfields – 21 Participants
- 22 July - Pruning Workshop - 22 participants
- 12 August – Pruning Workshop Barham – 10 Participants
- 10 November – Fruit Thinning and Fruit Sizing Field Walk – 30 participants

*Excerpt from MVC Milestone #5*

**Organise 10 CITTgroup events annually, plus additional workshops, seminars and information sessions as seasonal circumstances dictate.**

The following CITTgroups and workshops were facilitated by the MVIDO during 2011

- 8 March - March Crop Monitors Training Course – 13 participants
- 16 March – Drought Monitoring Project Results Workshop – Mark Skewes, SARDI
- 13 April - Ellerslie Fruit Fly Meeting – 17 participants
- 19 April – Quality Control Course for Packing Shed Staff – 13 participants
- 20 April – Nangiloc/Colignan Fruit Fly Meeting – 26 participants
- 20 April – Pre-Season Meeting – Mildura – 20 participants
- 11 May – Field Trials Farm Walk South – 45 participants
- 8 June – Field Trials Farm Walk Mourquong/Gol Gol – 27 participants
- 16 June – Field Trials Farm Walk Ellerslie – 17 Participants
- 29 June – Citrus Field Day – Varieties walk and fruit tasting, update of rootstock project, nutrition and irrigation trial on Atwood, – 47 Participants
- 4 & 5 August – Andy Krajewski Pruning Courses – 23 participants
- 31 August – Strategic Cost Savings on Farm – 38 participants
- 13 October – Citrus Gall Wasp and Fullers Rose Weevil Management – 23 participants

## **Distribute Weekly Citrus Board News and Market Report during the major harvest period**

### Weekly Citrus Board News

23 November – MDBA Update/ Pest Focus  
30 November – MDBA Technical Briefing  
7 December – FRW Management/Fruit Fly Detections  
14 December – Fruit Fly Detection/New SARDI Fruit Fly Researcher Appointed  
21 December – Prepare Orchards for Korea Export Protocol  
11 January – Change to NZ Fruit Fly Protocol/Summer Copper Application  
18 January – NSW Flood Affected Farmers/Fruit Fly Outbreak at Robinvale  
25 January – Management Strategies to Improve Fruit Size/Citrus Export Forum  
1 February – Fruit Fly Outbreaks and Detections/ GA summer spray  
8 February – Fruit Fly Notification/Change to MVCB Office Hours  
15 February – Fruit Fly Outbreak Notifications/Locus Update  
22 February – All weather citrus harvesting/Bridal creeper management  
1 March – Recording Herbicides a Must/Tissue Sampling  
8 March – Horticulture Industry Inundation Assessment Form/Spur Throated Locusts  
15 March – Drought Monitoring Project Workshop  
22 March - Exception Circumstances Workshop  
29 March - AQIS Pre-season meeting  
5 April - Citrus Industry Fruit Fly Outbreak Fruit Movement Requirements  
7 April – Sunraysia IDO meeting  
14 April – ICA56 audit process with Vic DPI  
15 April – Farm and Packing Shed visits with Chinese Delegation  
19 April – Orchard visits with Dr Nerida Donovan re Australian Citrus Dieback  
3 May – Afourer Growers meeting  
4 May – Citrus Life Cycle Analysis with Vic DPI  
4 May – Farm visit and presentation to Pakistani visitors  
9 May CAL R&D meeting  
10 May – Malaysia teleconference  
11 – Field Trials Farm Walk  
12 – Train Sandalwood Ridge staff in fruit maturity standards  
16 May – Graeme O’Neil re crop forecast article in Sunraysia Daily  
17 May – Packer visits for Infocitrus with Nathan Hancock  
19 May – Consult meeting crop forecast presentation  
24/25 May – Mildura Field Days  
26 May – Market Access Seminar  
6 June – Bob Sandery (Costi’s citrus consultant)  
6 June – Julie Haslette, Citrus Industry R & D consultation  
8 June – Field Trials Farm Walk Mourquong/Gol Gol  
14 June – MVCB Facilitates Japanese Inspector Visit  
21 June – School’s First Citrus Promotion at Docklands  
28 June - Citrus Research Field Walk/Season Update  
5 July – Research Field Walk Well Attended  
12 July – Fruit Fly Fine for Local Woman  
19 July – Label Changes for the Use of Azinphos-Methyl/Avoid Picking Small Fruit  
29 July – MVCB Funds Citrus Promotion in Melbourne Markets  
2 August – AQIS Potential Industrial Action  
9 August - Neglected Lands and Landholder Responsibility  
16 August – Mulch Trial Participants/Market Best Practice  
23 August – Strategic Cost Savings Cirtgroup/Fruit Fly Detections  
30 August – Growers Needed for On-Farm Trials/Agricultural and Rural Restructuring Gender Perspectives  
6 September – Qfly Work in Sunraysia  
13 September – Current Management Focus/Citrus Exports to Japan  
30 September – Taste of Melbourne/MVCB Promotions  
27 September – Tour of the Murray/Collingwood Brownlow Dinner  
4 October – Citrus Gall Wasp and Korean Export Protocol Cirtgroup  
18 October – Advanced Irrigation Course & Mildura Show  
25 October – Pest Focus and Qfly Update  
8 November - Queensland Fruit Fly Chemical Availability  
15 November – IDO Visit to Pakistan  
22 November - Potassium and Urea Trials & Qfly Chemical Update  
29 November - QFF Outbreaks – Grower Action Required

### Market Reports

Up to date market information from Sydney, Melbourne and Brisbane has been distributed weekly to growers and packers during the Navel Season from May through to December.

### **Articles in Citrep Magazine**

- Integrated Pest Management
- Fruit Movement Under Queensland Fruit Fly Outbreak Conditions
- Crop Forecast 2011/12
- On Farm Field Trials Farm Walks
- Krajewski Pruning Course
- Pakistan Trip Report

- Fuller's Rose Weevil Orchard Protocols and CITTgroup
- 

#### Media Interviews

Mildura ABC Radio – Spur Throated Locusts

Mildura ABC Radio – Island Fly

Win TV re Strategic Cost Savings Farm Walk

Win TV Interview re Fuller's Rose Weevil and Citrus Gall Wasp Farm Walk

#### On the Grapevine Articles

December – Early GA Spray

January – Summer Rain and Fungal Infections

February – Leaf Tissue Sampling

March – Committing Fruit for Export

April - Citrus export markets in pickers hands

May – Oleocellosis risk management

June – Ralex window closing

July – Citrus Pruning with Dr Andy Krajewski

August – Citrus Benefits from Compost

---

### **CITTgroup evaluation scores for individual events and event themes attached Appendix 2.**

- 554 attended 46 activities held over the life of the Project
- of those who completed an evaluation form 395 or 71 % were at least satisfied with the training/workshop they attended
- 43% very satisfied
- 27% satisfied
- due to these statistics comparative analysis using only satisfied and very satisfied figures have been highlighted

## QUESTIONNAIRE – RESPONDANTS REGULAR CITTGROUP ‘ATTENDEES’

	Question	Response
1	<p>MVCB has made me aware that you have attended CITTgroup workshops in the past.</p> <p>What benefits has it offered you? eg</p> <ul style="list-style-type: none"> <li>• assists make cost effective decisions</li> <li>• drives change on farm</li> <li>• other</li> </ul>	<ul style="list-style-type: none"> <li>• Meetings are good, always something can be taken home, every meeting I have been too helps me manage my farm, it also introduces me to others, networking is good as it exposes me to other ideas or even similar ideas to mine making me think about the way I do things</li> <li>• We see things on farm visits, keeps us informed on the latest technology, local issues dealt with using the assistance of the IDO, build relationships with other growers, we need someone to bring the science to growers</li> <li>• As far as the technical stuff Australia is still 5 or so years behind; this is NOT a criticism of Mary in the IDO role, there is a general lack of science in this industry, what is new in Australia is old in other parts of the world.</li> <li>• It is always a challenge to choose topics that people are interested in and Mary is always coming up with things on a regional basis such as Fruit Fly and Fleabane- it is good to organise the delivery of information as a group.</li> <li>• As a generalisation the flow of effective information in the industry is slow and out of date- I want to clarify this is NOT a criticism of Mary and her role.</li> <li>• I have gained by visiting other properties, we can see what other farmers are doing and either take on their practices or not as it applies to our farm. We get to see positive and negative things which helps in our information and decision making</li> <li>• The workshops and farm visits keeps us informed with latest technology and local issues can be addressed by the IDO, workshoping with other growers gives us ideas and then the IDO can do something about it or the property owner</li> <li>• by being together in these workshops it helps build relationships with other growers and that is what our industry needs</li> <li>• Networking is very useful , workshops provide affirmation of current processes and we can incorporate ideas in our current program</li> <li>• Introduction of technology, social networking especially in tough times as we have had in the past, industry just would not get together in these numbers without the IDO</li> <li>• We have the science behind certain things explained like</li> <li>• Dealing with pests, the immediate action taken in any crisis, the reliability of information is good</li> <li>• the IDO will come up with ideas, she is good at that, what we can't do alone the CITT group can do</li> <li>• I like the questionnaire at the end of the sessions, we get a chance to provide suggestions /our ideas for future</li> </ul>

		<p>meetings, they tailor things to our needs and advertise the CITT groups/growers</p> <ul style="list-style-type: none"> <li>• Provides information such as Spray application, mechanical pruning tools, how to save trees in drought conditions, science behind yellowing when urea turned to starch- we learned not to panic, why this was happening and what to expect</li> </ul>
2	Please provide at least one example of a change in practice or something you have implemented since attending one or the workshops?	<ul style="list-style-type: none"> <li>• I have been to a few and I think I do pruning differently now. Going to other farms is good, you see different trees, ground, irrigation methods and you just keep all of these ideas in the back of your head for the future.</li> <li>• I can't say that I have changed my perspective but the CITT groups are a good source of information. Say for instance the Gall Wasp session, this increased my knowledge but I have not changed anything as yet as I do not have it.</li> <li>• Pruning more and the process of hand thinning in mandarins. Learnt about new chemicals.</li> <li>• New chemicals, good to be in a group providing alternative options and not get the information from a chemical company</li> <li>• Gall wasp was found in the region over 15 years ago but nothing was really raised or discussed when it was found in a certain growing precinct the IDO and MVC were supportive of running workshops and researching information</li> <li>• Strategies in oil spraying, chemical ground treatment</li> <li>• Frosts- working through them given the information we have been given; we are better informed</li> </ul>
3	Describe the results/outcomes you have seen on farm or in the business since the above was introduced?	<ul style="list-style-type: none"> <li>• Overall my tree health is better I would say</li> <li>• Put it this way I am now a disciple!</li> <li>• Many situations where new ideas have been reaffirmed , information of gall wasp is a good example</li> <li>• We had to learn to live with gall wasp, understand it was not a death sentence, not panic and due to the support we now understand management better, in fact the native predator which was researched and given to us is now established in Orchards and breeding naturally.</li> <li>• It is about being able to manage in the future, what do we do differently next year, say with frosts we work around it, all growers will have a different perspective</li> </ul>
4	<p>The IDO provides information in various forms (email, workshops, newsletters, farm visits).</p> <p>Where do you view the IDO on a scale of information delivery to you? First, last point of call?</p> <p>Why?</p>	<ul style="list-style-type: none"> <li>• As far as organising meetings for industry Mary is up the top of the scale.</li> <li>• While Mary is not my first point of call technical information (I use John Chavarria) in terms of information transfer to industry for regional issues Mary is high up on the scale.</li> <li>• Many use chemical resellers and this is not a good practice due to their self-interest. The topics Mary organises provides a more balanced approach, particularly when you information provided about MRLS' –this issue will arise more in the future.</li> <li>• Mary is at the top of the pile, this is as much as pat on the back for her and MVCB</li> <li>• Highly valued, I call her early</li> </ul>

		<ul style="list-style-type: none"> <li>• Can't employ consultants many family farmers cannot afford the money for consultants</li> <li>• I go to Mary first, she has a feel for what is happening and if she can't tell you an answer she will find out, she will source contacts and information for you</li> </ul>
5	<p>Do you see a need for the IDO role for industry? What about CITT groups? Explain</p>	<ul style="list-style-type: none"> <li>• Definitely we need an IDO, yes we have used consultants but not their advice into practice, we have used information as an information base only and not a management tool, we look at options</li> <li>• Absolutely, the role serves a need for community as citrus growers; the workshops expose us to many ideas.</li> <li>• There is no one else left in industry any more, IDO is not the principal source of information but good at networking, topical issues such as fruit fly and fleabane weeds.</li> <li>• We need someone to bring science to our industry</li> <li>• Absolutely, I talk to Mary about once a month or more</li> <li>• Privateers are too expensive, many of us are not big enough to afford them</li> <li>• no way we would have this service as a national body, not the same attention and support, local people know the problems and are good at information sharing, why do you think we get 35-70 turn up at workshops</li> <li>• We need an IDO and CITT groups as we can't go to the state government any more for extension services.</li> <li>• MFC does provide services to its growers but the IDO is definitely needed</li> <li>• There are many experienced growers out their nearing retirement we need new blood and there is always something to learn, I once though I knew it all but it is not the same as it once was, we MUST keep up with it</li> <li>• the IDO is good at bringing people together from other agencies such as Pam Strange DPI, Alison McGregor, financial counsellors; no one else is doing this, it helps, Mary does this well we listen and draw on the experience of other s</li> <li>• The role is what we want, she is up to date, IDO can deal with things as it happens, the role is not structured the IDO can just go with issues at the time they occur</li> </ul>
6	<p>Would you like to provide any feedback on the role?</p>	<ul style="list-style-type: none"> <li>• Mary is good at her job, she is the right person for the job, industry needs this position, what I have seen and heard her do she does well. The IDO has had things thrown at her and she has coped.</li> <li>• Mary is approachable and valued</li> <li>• We need her, it is good to get local, current information</li> <li>• Accessible,</li> <li>• We need her</li> </ul>

		<ul style="list-style-type: none"> <li>• MVC and Mary are really fabulous</li> <li>• Can ring and talk to her any time, same day service, I have rang elsewhere I and I am still waiting for a reply</li> <li>• A credit to Mary, she took on the challenge of pre-warning growers about gall wasp and communal diseases</li> <li>• Working well, issues dealt with as they come up</li> <li>• Growers must contact her (Mary) early to report issues and communicate</li> </ul>
7	Do you read the newsletter? Feedback	<ul style="list-style-type: none"> <li>• all commented Yes.</li> <li>• Yeah I always read that.</li> <li>• First class notification of diary dates,</li> <li>• It provides notice well ahead, yes I read most of the time,</li> <li>• I look at the Sunraysia Daily too</li> </ul>

### Comments

- Unfortunately the IDO position is tangled in industry politics, funding is a game- quite a strange thing
- Maybe it is time to rebadge the role but effectively there is a need and the person will do the same role; growers have lost their other government sources of information such as DPI VIC/NSW, these agronomy type services have wound back and not everyone can afford to pay professional services- the position should continue; possibly Biosecurity focussed
- When there was upheaval in the industry we were really hoping the Board and Mary would not go.

## QUESTIONNAIRE – RESPONDANTS NON REGULAR CITTGROUP ‘ATTENDEES’

	Question	Response
1	<p><b>Are you aware of CITT groups?</b></p> <p><b>If no:</b></p> <ul style="list-style-type: none"> <li>• <b>How could the IDO better inform you of activities?</b></li> <li>• <b>What communication tools could be used?</b></li> </ul> <p><b>If yes:</b></p> <ul style="list-style-type: none"> <li>• <b>reasons who you do not attend eg</b> <ul style="list-style-type: none"> <li>- <b>topics</b></li> <li>- <b>timing</b></li> <li>- <b>speakers</b></li> <li>- <b>get info elsewhere</b></li> <li>- <b>other</b></li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Yes I am aware, I pay levies but I don't attend these things, I have been operating for 32 years and what I don't know about the industry now I don't need to know</li> <li>• How can you fix the industry now, we have had two terrible years, high Australian dollar has affected exports and fruit has been dumped on the domestic market dropping prices.</li> <li>• I do everything on the farm I am the marketer, the spray guy, the picker, pruner and everything else, I just don't have time to attend the workshops.</li> <li>• I am a very busy person generally</li> <li>• What can MVC do?; there are just too many trees in the ground I blame the managed investment schemes for this</li> <li>• I am aware but it is only timing, we have mixed farming and citrus is not the sole priority</li> <li>• We talk to other farmers mainly, in fact we talk to everyone to help us with our growing practices</li> <li>• Yes I am aware but my wife and I are busy with a young family and I can go days without looking at the computer, it is just so hard to get away</li> <li>• I know there are a lot of growers but I am from the old school and really appreciate a telephone call, I am busy, we do get text messages about key dates</li> <li>• I know about them and pick which ones I attend but frankly the topics they run I have dealt with years ago, they are too basic, mostly for small growers, or growers with a casual approach</li> <li>• Topics and speakers are too far behind the rest of the world, generally we have implemented things 2 years prior</li> <li>• I will only pick the eyes out of the topics and only those worthy of going to will I attend but there has not been many I would have gained from</li> <li>• Timing is quite good, having something at breakfast nice and early means we can attend and still get in a day's work</li> <li>• I am infrequent in attendance, the reason being some topics I think I will not get a lot out of it, I don;t always know everything so I pick ones I want to go to</li> <li>• I currently use consultants but I still analyse information they give me and I see if it is practical to apply to my application, then make my business decision to get the best cost effectiveness</li> <li>• I employ separate consultants to do a fertiliser program, I have had them for many years and I am happy with the work especially tree health</li> </ul>
2	<p><b>Do you see a need for the IDO role for industry? What about CITT groups? Explain</b></p>	<ul style="list-style-type: none"> <li>• I can't really comment but I know we don't utilise the services like we really should</li> <li>• Smaller growers would benefit</li> <li>• Bigger growers have ability to get resources from elsewhere</li> </ul>

		<ul style="list-style-type: none"> <li>• I do not see the Board as a leading edge organisation</li> <li>• Proper role of an IDO is pushing new technology to industry, convey information on a regular basis to growers</li> <li>• There is a need but I see inefficiencies in the business, maybe time to move on- both Citrus Australia and MVCB have roles in the industry</li> <li>• 80% of the fruit is grown from 20% of growers and 80% are not in a position to get technology transfer or be better informed and pay for up to date information</li> <li>• Yeah we do need and IDO for our industry regardless whether it is Mary or not</li> <li>• CITT groups do some good work</li> <li>• It is difficult for the IDO role to keep pace with consultants as they are working globally- Some workshops are not well patronised and that should speak for itself</li> <li>• In my personal opinion an IDO should be someone actively visiting the growers and convey their issues- be in touch with growers, reach out to them on farm; due to the hours growers work they need to visit us</li> <li>• CITTgroups programs I have been to have set the information we need out and been very good</li> <li>• the work that person does (Mary) to pull together information and groups is good, it is just not all programs suit me but other smaller growers will gets things out of workshops</li> <li>• there is a need as there are new growers, younger growers and growers at all different growing stages of their careers</li> </ul>
3	<p><b>Would you like to provide any feedback on the role?</b></p>	<ul style="list-style-type: none"> <li>• she does her role well</li> <li>• I like Mary but how can you fix the industry's problems?</li> <li>• no not really</li> <li>• Mary is quite good at what she does, always good at feedback, she is knowledgeable about the industry, easy to talk to</li> <li>• I enjoy talking to Mary she knows about our industry and the problems we face</li> <li>• Very honestly I am no big fan of the Board as a group, sometimes we feel alone out there. We have had two hard years in a row and many of us are finding it hard I expect the MVCB to lobby the Government more, I don't want help on the property but I wish they all could do more for us as an industry; things are a bit hard and difficult at the moment.</li> <li>• Mary does her job well</li> <li>• The MVCB do not always pass on information growers have to follow up on things like pest and diseases</li> <li>• The positions she runs this at is geographic good, having things at different places is good</li> <li>• She does her role well, she is not really a specialist in any particular field but she gets the right people in the right spot to deliver the information</li> </ul>
4	<p><b>Do you read the newsletter? Feedback</b></p>	<ul style="list-style-type: none"> <li>• Yes I do read and the information in the Sunraysia Daily. I look at it first, copy what I need to and give to my staff to read.</li> <li>• Yeah I have a quick squiz and always forward around here particularly when there are topics relevant to us.</li> </ul>

		<ul style="list-style-type: none"><li>• Yes I do</li><li>• I scan through</li><li>• Not a lot of information in the newsletter apart from Fruit Fly (FF- we could do without)</li><li>• Oh yeah</li></ul>
--	--	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

**Other comments**

- I am computer illiterate
- the Board does some good work but crop forecasting is expensive to do when some growers are already doing this; information from the Board is too late for our good decision making needs to be earlier to assist us with our planning; could be better via growers assistance in crop forecasting- identify a suitable plots on farms, do density counts, tag and then get growers involved from there, collate all data, graph and plot against existing data and distribute to industry.

## **SUMMARY OF OUTCOMES**

While the overall success of the Project (as judged by the Stakeholders interviewed) indicates that the broader information transfer worked well for most, a specific focus for larger size growers on “leading edge”, “new information about technology”, “global trends” was perceived not to be achieved as well by this group.

Notably there were two distinct farming types of those interviewed:

1. smaller properties, family farms where industry networking and skills sharing has proven exceptionally beneficial in delivering on farm or industry wide communication. These growers articulated the benefits of increasing their professional development through the variety of training organised by MVCB and generally saw the glass ‘half full’ rather than half empty. It would appear they have experienced a paradigm shift due to attendance at CITTgroup activities-*“I thought I knew it all but I don’t, and the support gained via networking- “especially when the chips are down”.*
2. larger properties with farm managers or growers with a formal tertiary education who actively seek leading edge technology and scientific information available on the global market. They regularly engage consultants/agronomists to assist with their decision making regarding cultural practices. Most from this group of farmers believe they have an ‘edge’ and did not wish to share their level of technological information with the rest of industry. Their use of consultants to seek alternative information and or offer on farm services such as fertiliser programs and insect monitoring is seen as a cost of running the business, not a luxury.

More noticeably with the larger growers there appeared to be an element with a glass ‘half empty’ paradigm - *“I have been in the industry 32 years and what I don’t know I don’t need to know; how can you fix the industry?”, “high Australian dollar has affected exports and fruit has been dumped on the domestic market dropping prices”.*

At the completion of the 12 interviews it was clearly evident that growers who had participated in CITTgroups experienced a refreshed outlook, understood the value of organised forms of networking/information transfer and genuinely valued the support from other growers; *“especially when the chips are down”.*

The social component was mentioned by several growers but not due to the frivolity of activities but rather to the direct benefit to the mental health of growers and their families. Following difficult seasons the benefit should not be understated from peer support via CITTgroup activities such as breakfasts and just knowing the MVCB is there to seek information from.

In summary the two prime reasons given for maintaining the IDO role and facilitation of information across the industry in the Murray Valley included:

1. The gradual decline in Government extension services coupled with the cost inhibitive problem growers with smaller 'family farms' face in paying for external consultancy, was echoed many interviewed.
2. An aging industry with many growers at retirement age and the "new blood" requiring up to date skills and knowledge. This group was seen as an ongoing industry priority especially for, networking opportunities to introduce them to other growers and to ensure information exchange between MVC and industry generally.

In conclusion of those interviewed comments reinforced the fact that even though some may not be 'regular attendees' of CITTgroup activities they gained valuable outcomes from an association with MVCB and the IDO through information exchange and awareness of local issues.

All read the newsletter and/or Sunraysia Daily information " *yeah I read it and the paper; I scan through and see what is applicable to me*" and agreed it provided them with options for training and information; they then had the ability to " *pick the eyes*" out of the activities they wished to participate in.

## APPENDIX 1

### *Workshop Links*

[Huanglongbing \(HLB\) Newsletter September 2012](#)

[Citrus Gall Wasp Emergence Article MVCB](#)

[Citrus Gall Wasp Article MVCB March 2012](#)

[BOM Mildura DPI Talk June 2010.ppt](#)

[Dale Grey Mildura June 2010.ppt](#)



## APPENDIX 2

### Summary of Workshop Evaluations

<b>CITT Group evaluation scores for individual events and event themes</b>					
<b>Event/Theme</b>	<b>Date</b>	<b>Total Attendance</b>	<b>Very Satisfied</b>	<b>Satisfied</b>	<b>Not Sure</b>
<b>Drought</b>					
Drought Monitoring Workshop	20 March 2012	8	4	1	1
Murray River Update	5 May 2010	92	20	25	
<b>Pest and Diseases</b>					
Crop Monitors Course	22 March 2010	15	6	2	
Spring Locust Cocontrol	19 August 2010	19	8	8	
Red Scale	15 September 2010	32	23	9	
Crop Monitors Course	22 March 2011	14	6	5	
Ellerslie Fruit Fly Control	13 April 2011	15	7	4	
Citrus Gall Wasp and Fuller's Rose Weevil Workshop	11 October 2011	32	18	11	1
Copper Application for Disease Control	24 February 2012	14	7	6	
Crop Monitors Course	28 March 2012	16	7	5	
Queensland Fruit Fly Meeting Mildura	21 August 2012	22	10	8	1
Queensland Fruit Fly Meeting Boundary Bend	22 August 2012	8	5	3	
Huanglongbing in Florida	13 September 2012	8	3	2	
Copper Application	13 October 2012	11	5	2	
Citrus Gall Wasp and	31 October	41	20	15	

Fuller's Rose Weevil Workshop	2012				
<b>New Varieties</b>					
Varieties Display	11 August 2010	20	9	6	
<b>Agronomy</b>					
Leaf Analysis Farm Walk	3 & 4 March 2010	25	14	9	
Crop Regulation Using GA3	1 & 2 June 2010	48	14	10	3
Pruning and Crop Regulation	16/17 & 23 June 2010	54	35	8	4
Field Trials Workshop	3 August 2010	27	14	8	1
Martinez Nutrition	20 August 2010	12	0	6	
Ethrel& Corasil Field Walk	10 November 2010	21	7	6	2
Potassium Field Trials	11 May 2011	45	8	8	5
Ralex/Corasil/Pruning Trials	8 June 2011				
Citrus Research Field Walk	29 June 2011	43	11	2	1
Pruning Bus Trip	21 July 2011	18	8	2	1
Dr Krajewski Pruning Course	4 August 2011	37	15	8	
Strategic Cost Savings On-Farm	31 August 2011	36	6	18	2
Advanced Fertigation	13 October 2011	12	4	4	
Koalin Clay Field Trials	4 April 2012	23	14	3	
Hand Thinning Farm Walk	31 May 2012	38	10	3	
Field Trials Farm Walk	18 June 2011	43	0	9	1
Winter Yellows Farm Walk	25 July 2012	34	6	10	
<b>Packing and Marketing</b>					

Quality Control Course	19 April 2010	24	4	11	1
Postharvest Roadshow	29 April 2010	16	7	4	
Citrus Export Workshop	19 September 2010	17	6	5	1
DNE End of Season Review	8 December 2010	24	10	7	2
ICA56	11 March 2011	15	6	5	1
Quality Control Course	19 April 2011	14	7	7	
Korean Export Protocol	11 October 2011	18	10	8	
<b>Miscellaneous</b>					
Gate to Plate Bus Tour	9 – 12 March 2010	8	5	1	1
New Horticulture Industrial Awards	24 March 2010	14	10	12	
Exceptional Circumstances	24 March 2011	52	35	14	
Pre-Season Meeting	20 April 2011	24	11	7	
Citrus Pre-season Meeting	12 April 2012	20	7	6	1
Smart Phone Use in Horticulture	6 June 2012	12	4	4	3
<b>TOTAL</b>		<b>554</b>	<b>242</b>	<b>153</b>	



### **Acknowledgements:**

**12 Murray Valley citrus growers**  
who remain unidentified to ensure  
confidentiality

**HAL**

**MVCB**

- Hugh Flett (CEO MVCB)
- Mary Cannard (IDO MVCB)

Evaluation and report prepared by:

**Allison McTaggart**

**Principal Consultant**

**Allison McTaggart and Associates**

### **Copyright**

Copyright of this report resides with the owners MVC and HAL. Permission for any further use of this material must be obtained from the original copyright owners

### **Disclaimer**

Allison McTaggart and Associates has prepared this document using due care to ensure that the content addresses issues raised by industry. This document is not to be taken as advice. Such you require any advice on a specific response, please do not hesitate to contact Allison McTaggart and Associates.