

Horticulture Innovation Australia

Final Report

**An industry, markets and business
development program for the Western
Australian citrus value chain**

Bronwyn Walsh
Agriculture Produce Commission

Project Number: CT11005

CT11005

This project has been funded by Horticulture Innovation Australia Limited with co-investment from Agriculture Produce Commission and funds from the Australian Government.

Horticulture Innovation Australia Limited (Hort Innovation) makes no representations and expressly disclaims all warranties (to the extent permitted by law) about the accuracy, completeness, or currency of information in *An industry, markets and business development program for the Western Australian citrus value chain*.

Reliance on any information provided by Hort Innovation is entirely at your own risk. Hort Innovation is not responsible for, and will not be liable for, any loss, damage, claim, expense, cost (including legal costs) or other liability arising in any way (including from Hort Innovation or any other person's negligence or otherwise) from your use or non-use of *An industry, markets and business development program for the Western Australian citrus value chain*, or from reliance on information contained in the material or that Hort Innovation provides to you by any other means.

ISBN 0 7341 3480 0

Published and distributed by:
Horticulture Innovation Australia Limited
Level 8, 1 Chifley Square
Sydney NSW 2000
Tel: (02) 8295 2300
Fax: (02) 8295 2399

Contents

Summary	3
Keywords	4
Introduction	5
Methodology	6
Outputs	9
Outcomes	10
Evaluation and Discussion	15
Recommendations	16
Scientific Refereed Publications	17
IP/Commercialisation	17
References	18
Acknowledgements	19
Appendices	20

Summary

The Western Australia (WA) Citrus Value Chain Coordinator (VCC) project supported the implementation of national citrus projects in WA and conducted regionally specific activities. This included working towards the following key components of the WA Citrus Industry Strategic Plan:

- **Market information:** Improve the flow of information through all levels of the supply chain to enable the orderly marketing of produce and increase WA share of the local market.
- **Domestic market development:** Facilitate the strategic development of the WA domestic market.
- **Production:** Increase the sustainability and profitability of WA citrus growers through improvements in production techniques and access to new varieties and technologies.
- **Export market development:** Develop a long-term export market strategy to support the increased volumes of citrus produced in WA.
- **Communication:** Maintain effective and strong communication networks within the local industry and further develop networks and communication with the national and international industry.

Project activities included at least 44 season updates, 18 field days, 12 magazine articles, 19 newsletters, 8 website pages, 1 video, 6 export or industry workshops, 4 packshed teleconferences, a draft regional response plan, a market report, season reviews, first export to China and new project development plus numerous formal and informal meetings and conversations with growers, industry associations, value chain members and national citrus industry members.

The end of project evaluation found that growers and market agents understand the offer of the WA citrus industry to some extent. Growers valued the VCC project communication and extension activities and they are effective mechanisms to work with growers. Other communication and extension mechanisms were used for engaging market agents.

The evaluation also found that most of the growers were aware of the WA internal maturity standards and Australian Citrus Quality Standards and harvest only when fruit have reached these standards. It was also evident that a number of the market agents are aware of these standards and value the information this provides them in terms of managing market quality and volumes.

The majority of growers involved in the evaluation were also aware of the practice of crop forecasting using a counting frame. Most growers used more informal methods (e.g. observation) or relied on past experience. Generally market agents were aware of crop forecasting and were **satisfied with 'ball-park'** figures for forecasted volumes.

There is increasing evidence that market agents and major retailers of WA citrus products are engaged and offered information on the WA citrus season through the VCC project. There is also evidence that market agents have improved market awareness of expected harvest timings and quality and this is assisting with ordering and promotion campaigns.

Evidence suggests that there have been enhancements in industry relationships, cohesion and efficiency across the citrus value chain over the past three years, important elements necessary for building a

sustainable industry. It has also meant faster resolution of market issues and greater availability of resources and information for the WA citrus industry. In the last year there is some evidence of increased consumption of WA citrus fruit.

Recommendations for the VCC project Stage 2 project are to incorporate a communication strategy to further develop communication with the market and post-farmgate members of the value chain. Partnering with other organisations and companies will also expand the capacity to meet the needs of growers identified at the end of season wrap-ups and within the strategic plan. Many of the activities within the current project continue in the next project to build on the momentum and realise the medium term outcomes for industry of improving fruit quality and consumer confidence in the product. Feedback from the export market has identified new issues in fruit quality related to specific market preferences. Similarly improving the first grade packout will also be a focus based on market feedback. Measuring progress and the capacity to meet market demand has highlighted the need to benchmark yields and potentially costs of production to assist with decision making.

Keywords

Citrus, market development, industry development, value chain, WA, export, communication

Introduction

The Western Australia (WA) Citrus Value Chain Coordinator (VCC) project aligned with the WA Citrus Industry Strategic Plan 2010 – 2020. The project also aimed to support the implementation of national citrus projects in WA and regionally specific activities. This included working towards the following key components of the WA Citrus Industry Strategic Plan:

- **Market information:** Improve the flow of information through all levels of the supply chain to enable the orderly marketing of produce and increase WA share of the local market.
- **Domestic market development:** Facilitate the strategic development of the WA domestic market.
- **Production:** Increase the sustainability and profitability of WA citrus growers through improvements in production techniques and access to new varieties and technologies.
- **Export market development:** Develop a long-term export market strategy to support the increased volumes of citrus produced in WA.
- **Communication:** Maintain effective and strong communication networks within the local industry and further develop networks and communication with the national and international industry.

The VCC project also contributed to linkages between citrus projects and initiatives across Australia and undertook opportunities for professional development in relation to value chain thinking and tools.

There were four key outcomes expected for the Project:

- Greatly enhanced WA industry cohesion and efficiency through a national category approach to market development
- Better relationships with industry bodies and government agencies, resulting in faster resolution of market issues and greater availability of resources and information for the WA citrus industry
- Improved communications throughout the citrus value chain with resultant improvements in efficacies being demonstrated
- Increased consumption of local fruit on the domestic market based on providing a higher proportion of fruit at optimum maturity.

Linked to the above outcomes were three project targets:

- 90% of growers (by production area) aware of Australian Citrus Quality Standards and harvesting only once fruit have reached and/or exceeded these standards
- 70% of growers participating in crop forecasting activities
- 90% of market agents and major retailers of WA citrus products are engaged and offered information on the WA citrus season – improving market awareness of expected harvest timings and quality and assisting with ordering and promotion campaigns.

Methodology

The role of the WA VCC was to deliver regional specific programs and support the implementation of national programs in WA needed to support the overall success of both national and regional initiatives. The activities by the WA VCC, that delivered on key focus areas within the WA Citrus Industry Strategic Plan 2010 – 2020 and fit National industry R&D priorities, are listed below. Most activities were conducted on an annual basis with feedback mechanisms in place to allow for continuous improvement each year. Feedback mechanisms included feedback sheets, data analysis, post-season reviews and project review.

1. Market Information: Improve the flow of information through all levels of the supply chain to enable the orderly marketing of produce and increase WA share of the local market.

- Promote and support crop forecasting in WA to provide information on expected yields and timing of harvest.
- Communicate crop forecasts (yields and harvest timing) to the WA citrus value chain.
- Facilitate improved communication throughout the value chain.
- Communicate findings of the National Plantings Database to the WA citrus value chain.
- Assist Citrus Australia with the implementation of InfoCitrus in WA to enable clear tracking of fruit from packing sheds to market.

2. Domestic Market Development: Facilitate the strategic development of the WA domestic market

- Monitor and report maturity testing results to growers through the season.
- Keep informed and involved with decision-making on the Citrus Australia national quality standards and keep WA growers and Fruit West informed on changes to the national standards.
- Act as a link to the Citrus Australia Domestic Market committee and the domestic marketing campaign and keep growers informed of changes.

3. Production: Increase the sustainability and profitability of WA citrus growers through improvements in production techniques and access to new varieties and technologies.

- Facilitate grower adoption of biosecurity practices through raising awareness of on-farm biosecurity programs for WA regional plan and National biosecurity.
- Keep WA growers informed of new variety and rootstock evaluation and development work conducted both locally and nation. Increase awareness of production input costs and opportunities for increased efficiencies with growers and supply chain.

4. Export Market Development: Develop a long-term export market strategy to support the increased volumes of citrus produced in WA.

- Support businesses that are planning to export
- Communicate citrus export market opportunities.
- Provide a link to the market access and export activities of Citrus Australia, to highlight specific WA issues to Plant Health Australia and other regulatory bodies.

5. Communication: Maintain effective and strong communication networks within the local industry and further develop networks and communication with the national and international industry.

- Use a formal communication plan addressing all stages of the supply chain and other relevant stakeholders, on behalf of the WA citrus industry.
- Strengthen and maintain a citrus industry network to facilitate the regular exchange of industry information.
- Deliver a market driven but grower determined calendar of topics to be addressed in a program of field days, in collaboration with the technology officer in the WA Citrus Improvement group.
- Communicate regularly with Citrus Australia and other stakeholders to ensure alignment opportunities are identified and national initiatives are engaged and facilitated within WA.

Linkages

The project linked and engaged with the following Citrus Australia projects:

1. Delivering robust citrus market information for a more competitive industry (CT13037).
2. Australian Quality Standards Program - Stage 2 (CT12004).

And other interstate projects

1. Driving citrus exports through improved market access (CT12005).
2. The national marketing program for citrus.
3. Driving citrus industry success through a coordinated market development program – Stage 2 (CT13022).
4. The enhancement of citrus value chains production in Pakistan and Australia through improved orchard management practices (HORT/2010/002).
5. Evaluating new citrus varieties (CT09003).

The project linked and engaged with Department of Agriculture and Food WA (DAFWA) projects related to biosecurity, export market access and export market development. This project also worked closely with growers and industry representatives.

Project Monitoring

Annual operating plans (AOP) were developed each year and the VCC submitted reports against the AOP for review by the project steering committee.

Adjustments to the project were made as determined necessary from the reviews. For example a change in staff in the role of VCC between 2011 and 2012 meant an adjustment to plans for timing project activities. Activities such as a workshop were held past the project end date to suit timing within the WA citrus season and speaker availability in consultation with industry.

Progress against outcomes of the project was measured through an industry survey in 2014.

Project Management

The VCC was employed by DAFWA and reported directly to the APC as the primary service provider to Horticulture Australia Limited. There was a change in VCC in 2012 when Bronwyn Walsh was employed after Helen Ramsay vacated the position in 2011.

The VCC position was managed by a steering committee formed by the APC. Steering committee members were:

- Executive Manager of Fruit West (until 2014)
- Chair of WA Citrus
- Project Manager of DAFWA Temperate Fruit Project within which this project sits in DAFWA
- Manager of Market Information and Quality of Citrus Australia

The Manager of Market Information and Quality from Citrus Australia provided national input to the steering committee to ensure ongoing coordination and collaboration with the National citrus industry.

In mid-2014 **use of the name 'Fruit West' to represent the Pome, Stone and Citrus producer committee** of the Agricultural Produce Commission (APC) ceased. The Citrus Leadership Group within the committee is now called the Citrus Sub-committee. The Sub-committee is responsible for allocation and reporting against the Fee for Service collected from WA citrus growers.

WA Citrus is an incorporated industry body representing the WA citrus growers. It is one of the service providers delivering to the Fee for Service collected by the APC. It was formerly known as the WA Citrus Improvement Group (WACIG).

Outputs

The annual outputs for the life of the project are listed below. More detail is provided in the table of Communication activities (Appendix1).

- Monthly Season Updates for WA in the National Season Update e-Newsletter
- Articles in quarterly Fruit West or Citrus Australia magazine, eg
 - Citrus varieties to match the market
 - Sweet, juicy and tangy citrus How will your fruit taste this season
- Monthly Citrus Update in the Fruit West Newsletter and WACitrus eNewsletter
- Reporting of maturity testing
- Four industry field days, eg
 - Sustainable citrus – a focus on water, quality and climate change
 - Quality and biosecurity – what market is looking for, how to test your fruit and citrus gall wasp
- Season reviews
- Quarterly reports to WA Citrus, Fruit West/APC and DAFWA
- WA citrus export interest group workshops/visits
- WA citrus packers teleconference
- DAFWA website content on citrus
- Reports to Steering Committee
- Milestone reports to HIA
- Attended interstate industry events held by Citrus Australia and Horticulture Australia (Feb, Oct 2013, May, Aug, Nov 2014, Mar, Nov 2015).
- Coordinated workshop at CitrusTech Forum, Mar 2015

In addition the citrus value chain coordinator employed by the project

- attended an international conference for Australia Pacific Extension Network in New Zealand on a HAL/APEN scholarship for professional development, networking and global trend awareness (Aug 2013) and International Horticulture Congress in Brisbane (Aug 2014) for the latest global citrus production research and development activities and some value chain and extension activities in agriculture.
- attended Asia FruitLogistica in Hong Kong and visited China market, supported by Vegetables WA and WA Citrus, September 2015
- supported sensory evaluation research conducted with Fruit West and Citrus Australia (Jul 2013).
- attended value chain and negotiation training.
- supported development of the WA citrus promotion activities by providing industry and value chain information (Jul, Oct 2013, 2014, 2015).
- developed and submitted proposal for new project Stage 2 (Nov 2013, Jul 2015).
- supported WA industry during transition of their industry structure, including revisiting strategic plan, transitioning to eNewsletter and industry database (Mar 2013 - ongoing).

Outcomes

An end of project evaluation in 2014 measured progress against the four key long term outcomes:

1. Increased consumption of local fruit on the domestic market based on providing a higher proportion of fruit at optimum maturity.
2. Greatly enhanced WA industry cohesion and efficiency through a national category approach to market development
3. Better relationships with industry bodies and government agencies, resulting in faster resolution of market issues and greater availability of resources and information for the WA citrus industry
4. Improved communications throughout the citrus value chain with resultant improvements in efficacies being demonstrated

Linked to the above outcomes were three project targets:

- 90% of growers aware of Australian Citrus Quality Standards and harvesting only once fruit have reached and/or exceeded these standards
- 70% of growers participating in crop forecasting activities
- 90% of market agents and major retailers of WA citrus products are engaged and offered information on the WA citrus season – improving market awareness of expected harvest timings and quality and assisting with ordering and promotion campaigns.

Extracts from the project evaluation report¹ related to these outcomes are described in the following:

1. Potential influence on consumption

Although evidence suggests there has been little change to the volume of consumption of WA fruit in the domestic market over the past three years, incremental value chain improvements are likely to influence domestic fruit consumption over time, such as via improvements in industry cohesion and efficiency and there are more effective relationships and communication between industry partners. It may be some time before these improvements are reflected in the market but these improvements suggest a positive step in the right direction.

2. Improved industry cohesion

It is evident that the WA citrus industry has become more cohesive since 2011 and the VCC project has contributed to this. However, it is difficult to isolate the contribution of the project in light of other factors. Even so, many growers and agency/industry interviewees felt that the VCC project had played an important role in facilitating these improvements.

I think there have been improvements [in industry cohesion] for sure, even though we started from a pretty good base. (Agency/industry group)

[Industry cohesion] is fantastic. You couldn't fault it. It's difficult to say [if it's because of the VCC project]... I guess [the VCC project] has just contributed to it. It helps to continue with that feeling that we're all trying to do the same thing. (Grower)

¹ Full evaluation report is in the Appendices

An independent body from the marketers who is trying to bring cohesion to the industry through the growers approach, I think is a good thing. (Market agent)

Changes in industry composition from small family orchards to large enterprises provide challenges for industry cohesion and efficiency. Some growers felt this shift in industry composition has meant that there is a greater focus on providing services and support to the major growers and the needs of the smaller orchards are now being overlooked. Others have recognised this challenge but feel that the VCC has assisted in ensuring that industry cohesion has been maintained.

3. Improved communication and relationships across the industry

There was evidence that communication across the industry has improved and there are more open and trusting relationships as a result although there have been improvements in industry communication and stronger relationships across the industry, there is still further progress to be made. A market agent interviewee described how communication has improved over recent years and growers and market agents are having more honest dialogue about the volume of fruit and time of maturity which has led to a win-win situation.

It's taken a long time to develop trust, but at the end of the day you need trust between the merchant and the grower so that you can go forward. We've actually got better results this year by waiting an extra week [to market the fruit] and the price has stayed up. (Market agent)

Sometimes [growers] are nervous to provide [crop yield] information because they feel that it gets used against the industry to drive the price down. But usually it's quite the reverse, because if we know where the peaks of volume are, we know when we need to plan promotional activity to take care of the volume. What tends to happen now is that we don't understand it, we end up not planning the promotions at the right times and then when the fruit is available in good volume we haven't planned around it... Then there's a reaction in price and chasing demand to fill the volume. They end up driving the price down whether it's in the markets or the system or wherever it is. Then they end up probably worse off. If we understood the [crop yield] information more, we would know what sorts of volumes that are coming through. We would plan around it and make sure that we've got the right activity in place to take care of the volume. (Market agent)

Some people indicated the VCC also plays an important role in facilitating communication between different stakeholders in the industry.

It is difficult to attribute all changes to the VCC project. A number of interviewees mentioned that communication had improved. However it is not clear the extent to which these changes were influenced by the project. In contrast, some interviewees felt that the VCC project was instrumental in influencing improvement in communication across the industry.

4. Improved industry efficiency

Industry efficiency is described as having operational processes in place for the early identification of issues and fast implementation of resolutions and actions. In other words, less time is wasted in establishing problems and there is no duplication of effort when resolving issues. Having industry efficiency is the result of having good industry cohesion, effective communication and positive relationships between industry partners.

The evaluation found improvements in industry efficiency in the WA citrus value chain as a result of the

VCC project. Some of the interviewees felt the work of the VCC was important in improving overall industry efficiency.

Yes, definitely, without a doubt [industry efficiency has improved]. To have somebody there who's constantly putting all the ducks in a line and making sure that things are done on time. (Grower)

There were a number of cases described by interviewees where improved communication along the value chain had led to improvements in industry efficiency. For example, last year yield forecasting focused on total navels and the major varieties of mandarins. The supermarket chains were in the process of purchasing mandarins from interstate, unaware that a large volume of WA Hicksons were about to enter the market. Once the situation of a potential over supply became apparent, negotiation between buyers and market agents reached an arrangement for the sale of WA Hicksons into the domestic market without much impact on price.

As a result of good industry cohesion and effective communication the situation was well managed and important lessons learnt. There are now more varieties covered in yield forecasting from the VCC project. In addition, this information is now incorporated into the pre-season interviews and there is greater dialogue between market agents and growers on changing consumer demands. There is recognition that growers need several years to change to new varieties and advanced warning is important to ensure a smooth transition.

There were some interviewees who suggested that industry efficiency could be improved. This suggests that although there has been some success in improving industry efficiency, there is still some development required.

Awareness and adoption of practices

Findings from the evaluation related to the project adoption targets are summarized as follows:

Quality standards

Market agents value information about standards and standard test results across WA. There was a high level of understanding and use of both the WA internal maturity standards and the ACQS for citrus quality by growers. Many of those interviewed indicated that they understood and utilised the quality standards when harvesting.

As I said, the effort that's being put in at the beginning; maturity testing and the publishing of those results and just making a lot of noise about them is the greatest thing that's happened to the citrus industry. (Market agent)

These supported results from the testing program that show the number of tests used to time harvest had steadily increased since 2011 (Figure 1) as growers became more aware of the program and its value.

We were going to do the free testing but I've gone ahead and bought my own burettes and pipettes and all the gear. I thought bugger that, we will do our own. (Grower)

Most growers interviewed and surveyed reported that they determined their harvest timing primarily on maturity test results, followed by what the crop looks like then weather conditions.

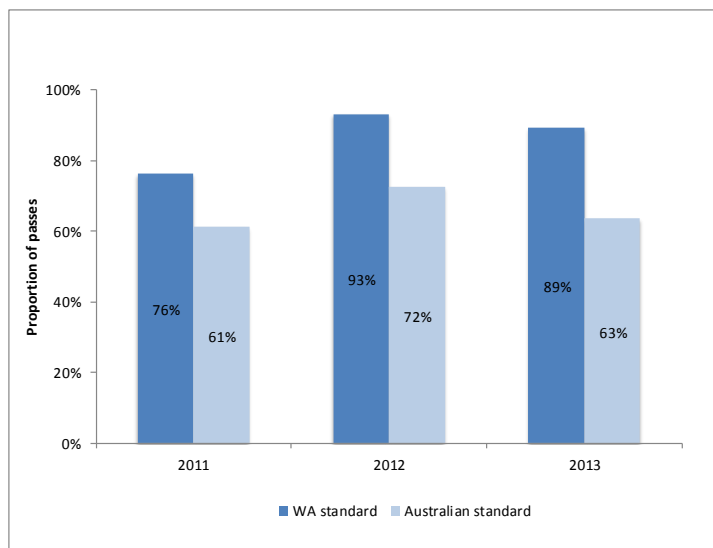


Figure 1. Percentage of WA fruit meeting WA and Australian standards over three years. Note: not all WA fruit is tested in this program

In 2013 the pass rate for post farmgate fruit showed there had been a marginal decrease in pass rates compared with the previous year. This was suggested to indicate a difficult growing season where fruit failed the standards because of low juice percentage, whereas the focus to start harvest is based on sugar and acid generally. Further interrogation of the data to citrus category, variety and grower will provide the opportunity to target improvement efforts.

To maximise returns there is still room for improvement in meeting the Australian standards, especially given the relationship between meeting these standards and consumer preferences demonstrated by sensory evaluation research.

Citrus Crop Forecasting

Growers were encouraged to do a crop forecast each year as part of the project, including using the counting frame technique suggested nationally.



Figure 2. Measuring citrus crop yield using a counting frame²

² Photo source: <https://www.agric.wa.gov.au/citrus-crop-forecasting>

Most of the growers who participated in the evaluation indicated that they did undertake crop forecasting in some form. A number of the growers indicated that they while they undertake crop forecasting they do not use a standard procedure or method (i.e. a counting frame). For example, one grower said:

I don't use the square measure or anything like that. I just do it by eye basically and that seems to work quite well for me, so that's what I stick to. (Grower)

Many noted that they relied on their experience to make crop forecasts and that their estimates were reliable. Most growers knew about counting frames and some had been trained to use them. Some felt that they were more valuable to less experienced growers.

Some respondents did not feel that crop forecasting was particularly important. Some reasons given were that production has been fairly stable and because it did not impact on the crop yield which was the important thing. This sentiment was shared across the small and large growers.

I know I will be within five per cent this year of [our average yield]. We don't get many ups and downs. We have a pretty stable production. But because there are not very many trees, I know what we can produce, and we will produce. (Small grower)

Evaluation and Discussion

Extracts of the results of the project evaluation were described in the previous section. Discussion of the evaluation results identified project adoption targets may need revisiting now there is baseline data as a reference point and that using activities throughout the project to gather data on progress against adoption targets may improve the level of engagement in the evaluation process itself.

Evaluation findings related to communication with growers and the value chain lead to discussion of getting a better understanding of the segments within the industry and their specific needs to fine tune and tailor messages and activities. Key to this strategy is having a complete contact database.

The maturity testing program is valued and creates much discussion between WA growers and at a national level. Continuing to communicate specific actions in the orchard and the relative impact on maturity results is important. In addition, communicating the level of confidence that can be attributed to testing results as well as **'the more tests, the more confident you can be'** will help in the adoption of the program and ease tensions. These topics were discussed at the Citrus Australia Sweeter Citrus workshop in 2014 and recommendations from the workshop are being developed further along with improving testing techniques. The maturity testing program is on-going in the new Citrus value chain Stage 2 project.

External quality remains an issue and understanding alternative value-add products and destinations for all fruit from the orchard is ongoing. The level of priority of this issue varies with the season however is still worthy of further understanding. Quantifying the definition and volume **of fruit within each 'grading'** segment at an industry level will be beneficial for engaging with potential value add agents and realizing the level of the issue and associated uses of each segment.

The value of the activity of crop forecasting versus the method to conduct the crop forecast is worthy of review. Encouraging conducting a crop forecast and reviewing its accuracy annually as an ongoing objective has value and is in the Citrus value chain Stage 2 project.

Revisiting costs of production was raised in this project as part of gathering evidence for management decisions and for export market development. This activity needs further work to include a number of growers. Benchmarking was last done in the Murray Valley region over 10 years ago and did not include WA. Since then there has been considerable changes in input costs and markets. As well as the value already identified production volume, cost of production and income records (gross margin) or at least regional averages will be extremely important in the event of a biosecurity.

The forecast increase in WA production was visible in 2015 therefore ongoing activity in the value chain and across industry is critical. Initiation of the pack shed group in 2015, first exports and increasing market agent attendance at industry events is an early indicator of the increased engagement of the whole value chain. Industry reviewed their strategic plan and highlighted priorities for on-going variety development, benchmarking for decision-making related to market development and improving quality performance and improving surveillance and community engagement for biosecurity.

Recommendations

Recommendations from the project evaluation and general project review are as follows:

1. Cohesion and communication in the WA citrus value chain.
 - a. Refine communication strategy.
 - i. Segment to different citrus industry member needs (large and small, crop type, accessibility) and agents and retailers.
 - ii. Update contact database
 - iii. Streamline reporting to stakeholder agencies
 - b. Maintain relationship with interstate and international RD&E and industry community.
 - c. Link project measures with those in industry strategic plan.
 - i. Review VCC Stage 2 project adoption targets and evaluation plan in relation to industry strategic plan targets.
 - ii. Maintain a balance of short, mid and long term outcomes and related activities; including monitoring changes in direction in national direction.
 - iii. Refine evaluation activities related to project targets into life of project activities to increase level of evaluation participation.
2. Improving market performance
 - a. Use further analysis of maturity testing results to understand and target future activities
 - i. Identify and investigate the level of influence of orchard management practices on improving maturity results.
 - ii. Consider the future of the maturity testing program related to who pays, value as marketing tool, etc.
 - b. Quantify **the volume of fruit within each 'grading' segment at an industry level.**

Information will be beneficial for engaging with potential value add agents and realizing the level of the issue and subsequent prioritizing.

Scientific Refereed Publications

None to report

IP/Commercialisation

No IP or commercialisation

References

De Vos, R 2009. Australian Citrus Industry Development needs assessment & recommendations. Horticulture Australia Ltd and Citrus Australia Ltd.

Fearne, A 2009. Sustainable Food and Wine Value Chains. Government of South Australia.

Department of Agriculture and Food WA 2009. WA Citrus Industry Strategic Plan 2010 – 2020.

Walsh, B 2011. An industry, markets and business development program for the Western Australian citrus value chain. Horticulture Australia project CT11005.

Acknowledgements

The role of value chain coordinator highlighted the value of working collaboratively towards a common goal.

Shane Kay and WA Citrus (formerly WACIG) provided exceptional guidance, collaboration, support and participation in the project, activities and organization.

Kevin Lacey, Graham McAlpine, Stephanie Faggetter, Nardia Shaw, Ingrid Smith, Soonchye Tan, Gavin Foord and other staff from Western Australian organizations (DAFWA, Fruit West and Horticulture WA) were equally helpful and supportive of the project and its role.

Colleagues from interstate, from Citrus Australia, Horticulture Innovation Australia, state government departments and growers have been more than open and collaborative with sharing information and contributing to WA activities.

The effort and participation of growers and value chain members in the project evaluation and providing information and feedback critical for the ongoing improvement of the project activities towards the **industry's vision are also acknowledged and appreciated.**

Appendices

1. Communication activities
2. Feedback on Website content
3. Examples of Newsletter content
4. Example of program for field day
5. Example of magazine article
6. Evaluation report

1. Communication/Extension Activities

Communication and extension activities are a strong component across the project. Specific examples are included in the following Appendices.

Date	Delivery	Activities	Subject matter	Target audience	Attendees
Monthly	E-mail	WA Season Updates	Crop production practices	Industry	~100+ national
Monthly	E-mail, Paper	Citrus Updates in FW Newsletter	Field day report, visitors to WA, interstate workshop news, calendar	Industry	~170+ WA fruit
Bimonthly	E-mail	WACIG eNewsletter	Market, In orchard, export	Growers	~170
Quarterly	Magazine	1 citrus articles per Fruit West magazine	Citrus issues forum, varieties, crop forecasting, maturity, field day	Industry	~170+ WA fruit
4 per year	Moora, Bindoon Harvey, Canning Vale, Carnarvon, Burekup, West Gingin, Canningvale	Field day - 2012 (Sept, Dec) - 2013 (Feb, May, Jul, Oct, Dec) - 2014 (Mar, Sept (2), Oct) - 2015 (Feb, May, July, Sept, Oct)	Climate change, Varieties, Business sustainability – Water, Quality; Market research; Quality testing, Citrus gall wasp, value chain, Nutrition management and quality, Thinning for quality	Growers, advisers	30
6 workshops over 2 years 2 market visits	Canningvale; Gingin; Moora;	WA citrus export interest group Workshops International market visits	Export awareness; Pest & disease protocols; Update on business activities; Trial shipment; Marketing; Freight forwarder	Export growers	6 (10 invitees)
Nov-May	Website	DAFWA website content	Crop forecasting, maturity testing, general industry information, nutrition, pruning,	Industry	>170
Annual	Various	Season review and plan, interviews and email	WA citrus performance, Volume, product development	Wholesalers, retailers	7
Jan-Nov	Harvey, Gingin, Bindoon, Carnarvon, Moora, Kununurra	Orchard visits	General	Industry	3
Apr-Nov	Email	WA Maturity testing results via National reporting and follow-up	Maturity testing results and follow-up for understanding failures and improved practices		
Bi-annual	Interstate	National Citrus Issues Forum, MVCB field day and Old regional forum, Market Forum, CitrusTech Forum, Issues Forum	Global trends, Markets, Sweeter Citrus, RD&E results, networking	National industry	1-8
Monthly	Various	General enquiries, Visitors ~1/month	Improved knowledge-pesticide, fruit symptom, citrus in farmland, export market, prices	Growers	8
Weekly-Quarterly	South Perth, Bindoon, Videoconference	Project meetings, Project reports.	Informed & guidance	Steering C,FW, WACIG, DAFWA, HIA	2-5

2. Feedback on Website content.

Walsh, Bronwyn

From: Penny Smith <pennysmi@riverland.net.au>
Sent: Wednesday, November 18, 2015 7:21 AM
To: Walsh, Bronwyn
Subject: Love your citrus site on Dept WA Ag

Hi Bronwyn

It was nice to see you again at the Citrus Forum last week in Melbourne.

Just wanted to let you know that your citrus info on the Dept Ag WA site is really well done, clear, concise and easy to navigate...

Penny Smith
Deputy Chair CASAR

CASAR

Citrus Australia South Australia Region

PO Box 52 Berri South Australia

Mob 0428432268 Ph +61(0)8 85432268 Fax +61(0)8 85432286

email : pennysmi@riverland.net.au

Citrus 

Australian Citrus Growers & Industry
Proudly Representing South Australian Citrus Growers & Industry

Please join us



3. Citrus contribution in Fruit West Newsletter & WACitrus Newsletter

Jul/Aug 2013 edition

APAL/SAL/Nashi Conference 17 – 19 July, 2013 (continued)

WA growers Terry Martella, Quentin and Margaret Dilley, Jason Jarvis and Mark Wilkinson and Brett Delsimone were also in attendance in their various capacities.

More details of the experience will be reported in the spring edition of the Fruit West magazine and presentations will be available on the APAL website.

Don't forget to check out the new look APAL website, www.apal.org.au. It is easier to navigate and view the wealth of information in the growers library. If you have difficulty logging in or have forgotten your password please contact APAL communications officer Richelle Zealley, rzealley@apal.org.au.



DAFWA bred apple variety ANABP01 presented at the recent APAL/SAL/Nashi Conference

Citrus Update

by Bronwyn Walsh

July was an exciting month with 4 days spent with interstate variety specialists and local Kevin Lacey, DAFWA, visiting orchards and speaking at our July field day. Thank you to all our hosts, it was great to be out in the orchards! If you didn't get the chance to attend the field day there will be an article in the next Fruit West magazine.



From being on the road in some relatively wet conditions, Kevin and I were then in the shopping centres with two intensive days of tasting panels for the sensory evaluation project lead by Graham McAlpine with Citrus Australia. Two hundred and forty recruits later we are looking forward to hearing what the citrus consumers likes in their oranges. There are two events left being held in Melbourne.

Nardia has been receiving photos from retailers of their displays using the Point of Sale material given out in June at the Markets. Results of the competition will be released shortly.

In the background, discussion about developing a Regional Biosecurity plan for Citrus has begun with DAFWA, export development activities continue, new officers appointed to the WA citrus improvement group and a new member has joined the Gingin citrus community - a warm welcome to Mario Valenti!

It is hard to do justice to the amount of valuable information that can be accessed related to citrus. Most recently notes from the MVCB Field day that included pruning, girdling, biosecurity, export and varieties are available on their website: http://mvcitrus.org.au/mvcb/?page_id=81.




Ned Taddei Graeme Sanderson, NSW DPI and Carlo Scamuffo at the recent Field Day



WACITRUS NEWS

OCTOBER/NOVEMBER 2014

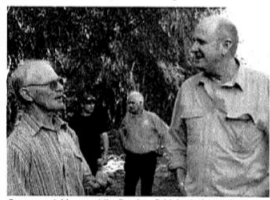


WESTERN AUSTRALIAN
CITRUS
IMPROVEMENT
GROUP

YOUR INDUSTRY

From Shane Kay, WACIG

Thank you to everyone who responded recently to requests to update your contact details and to those that completed surveys or interviews regarding the Western Australian Citrus Industry. The database is an important foundation for keeping you up to date with industry news and your responses are very important for structuring an industry body for the WA citrus industry that best suits its needs. It was also good to see some familiar and new faces at the field days in Camarvon, Burskap and in Canning Vale.



Growers catching up at the Burskap field day in September.

In WA we are very fortunate to have the ability to collect a Fee For Service (FFS) through the Agricultural Produce Commission. Recent changes have given us the chance to have a fresh look at what we do with these funds. As one of the FFS projects, AgKnowledge are working with the industry and the Western Australian Citrus Improvement Group to review what we are already doing and investigate our future needs, setting in place a structure that will service these needs in the most effective way to maintain a profitable industry for everyone.

There are a lot of resources with expertise and information that we can draw on, all we need is input and guidance from the people who can use it - "the growers". This is an exciting time as the industry changes and grows. So please look for dates of events and get involved to provide your input.

AgKnowledge are collating their findings from talking with WA growers over the last month and with other industry stakeholders through the value chain. This input and analysis of industry data will form the basis for our strategic planning workshop on October 20th. From the workshop will be a draft plan, which will be circulated to all growers for feedback and presentation at the


AGM on November 28th. The plan will be an important reference point for FFS investment decisions as well as leveraging other investment for targeting industry activities that will give us short and long term outcomes for WA citrus.

Some key messages for next season from reports at the recent WACIG meeting were:

- Decrease the proportion of Grade 2 fruit in the market
- Increase returns by attention to the national standard on internal fruit and external quality and
- Develop export markets for key oversupply windows.

Finally, the last few months have required extra effort from our committees with regular meetings and extra roles for some people so thank you very much to everyone on the WACIG and Citrus Sub-committee and to Bronwyn Walsh for supporting these committees.

I especially would like to thank Nardia Shaw and Stephanie Faggetter. Nardia is now working for Pome West and ceased working for Citrus at the end of September. Nardia's efforts and passion for our industry made her a pleasure to work with and is much appreciated. Stephanie also finished at the end of September, her input and attention to project management and policy for citrus will be missed. We all look forward to hearing the news of her new baby and wish them both the very best.



Biosecurity

By Mick Mann, WACIG biosecurity representative.

The APC has approved the citrus biosecurity FFS for WA and are now waiting on approval from the Minister. A framework for the biosecurity fund will be needed within one year of the commencement of the charge for ongoing approval.


Bronwyn Walsh and Sonya Broughton from DAFWA have been working to establish monitoring for citrus gall wasp emergence at infested metropolitan sites this October. Sonya and Bronwyn didn't find any sign of galls in nearby citrus orchards in the Swan Valley in early October. Presentations and handouts were also provided at field days in September in Perth and Burskap.

Mick Mann and Stephanie Faggetter attended a group discussion, arranged by the Australian Government Department of Agriculture, examining the import risk analysis process. The Department uses Biosecurity Advice notices to publicly provide information regarding significant import-related biosecurity work. Biosecurity Advice notices are sent to registered stakeholders. WACIG is now registered.


In the Markets

By Bronwyn Walsh, Value Chain Coordinator (VCC), DAFWA

Growers visiting Canning Vale market in September saw the sampling routine for our internal fruit quality monitoring program as well as heard from Mr Fresh Carline that WA consumers are looking for WA fruit. Our WA promotion material is used in their store to highlight WA fruit as well as samples for testing opportunities for shoppers. This was part of the VCC project field day held at Canning Vale.



Growers looking at new citrus product in Canning Vale market



Chris Hall discussing sampling for fruit at Canning Vale market

At both field days in September Nathan Hancock from Citrus Australia reported that the Australian citrus standards are being considered by the major supermarkets. Growers also got to taste the difference in using the new BrimA based standard for expressing internal fruit quality. Comparing the taste of two samples showed one was not pleasant, even though the two samples had the same

Biosecurity continued.

Biosecurity Contact Database – A database for the timely dissemination of information regarding biosecurity, is being developed in conjunction with an industry data base. The database is expected to include nurseries, crop monitors/pest scouts, gardening commentators within the media, gardening groups and other relevant commodities.

BrickAcid ratio.

The BrimA for each sample however was different. The BrimA was better at capturing the balance between brick and acid as well as accounting for any potential dilution effect. If you missed the demonstrations of how to test fruit yourself you can check out a video on YouTube via the Citrus Australia website <http://www.citrusaustralia.com.au/industry/citrus-quality-and-maturity.htm>.

Did you know that each season fruit from up to 81 WA growers is sampled from the wholesale or retail markets?



Growers testing the difference between BrimA and BrickAcid ratio

While in Kununurra in October Bronwyn Walsh, Gavin Foord, Export Manager for Horticulture WA and Peter Johnson, DAFWA, visited Kimberley Produce to discuss export protocols for grapefruit as well as getting a closer look at this season's limes that will be in the market soon.



Denis Prior of Ord River Limes at Kununurra

Contact

What else would you like to see in your bimonthly newsletter? What isn't right with this newsletter? If you have any feedback, content, significant dates or questions related to the newsletter please contact: Helen Martin on email hmartin@linet.net.au.

In the Orchard

Growers took the opportunity to pick up posters on crop phenology at recent field days as well as nutrition and irrigation fact sheets.

Evaporation and irrigation

Average daily evaporation rates for November are: Harvey 5.9 mm, Karnet 5.1 mm and Carnarvon 9.2 mm. A large citrus tree (14 metre square canopy area) will use an average of 58 litres of water each day during November in Harvey and 90 litres in Carnarvon.

Average daily evaporation rates for December are: Harvey 7.8 mm, Gingin 9 mm, Carnarvon 9.9 mm and Kununurra 8.4mm. A large citrus tree (14 metre square canopy area) will use an average of 65 - 88 litres of water each day during December in the south west and 97 in Carnarvon.

Phenology

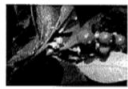


Flowering has been moderate to very heavy this season and up to two weeks earlier than usual.

Cell division starts at the end of petal fall and goes until fruit reach approximately 30 mm in diameter, usually in late December (Fruit Growth Stage 1 - Cell Division (petal fall to <30mm fruit size).

During this time natural fruit shed commences and will continue into December with the final drop of larger fruitlets towards the end of the month.

Management during cell division



Over 60% of potential size at harvest is determined in the Cell Division Stage (petal fall to < 30 mm size). Mild climatic conditions will favour fruit set and above average minimum temperatures will enhance fruit growth.

Adverse climatic conditions, water stress and nutrient deficiencies will negatively impact on fruit development and size at harvest. Water stress at this time can also cause excessive fruit drop.

Crop regulation

A crop load estimate can help determine the crop load. Chemical thinning in mid November can be used to thin a heavy crop in an "on" year. This will assist in maintaining good fruit size.

Irrigation

Monitor irrigation requirements closely, ensuring an adequate supply of water at all times through the cell division stage. A continuous flow of water is critical for the transportation of nutrients through the plant (particularly calcium).

Nutrition

Apply 25% of annual nitrogen at the end of the vegetative growth flush in November. Apply 30% of annual Potassium after fruit set (10mm size). Supplement potassium with foliar applications of KNO₃ at 15-20 mm size to promote cell division. Be careful not to over stimulate trees with nitrogen during this period as any growth flush will compete with the fruitlets and result in poor fruit set.

Calcium is important during this period to reduce albedo breakdown. A series of calcium nitrate sprays are recommended throughout the cell division stage for the management of albedo breakdown. Magnesium, nitrogen, phosphorus and potassium compete with the uptake of calcium. Application of these nutrients should be closely related to leaf analysis and should not be over supplied.

Mulch and compost

Now is a good time to consider applications of compost and mulch as part of your nutrition, irrigation and pest management strategies. Compost has been shown to be highly effective in the control of Kelly's citrus thrips and its water conservation properties have been shown to increase fruit size and yields.

*** Wind blemish ***

A high percentage of rind blemish is directly attributed to wind events in the first six weeks after petal fall. Significant damage also occurs within 12 weeks of petal fall. As soon as the petals fall and the small immature fruit is exposed, wind blemish to the rind can occur with any movement of leaves, branches, twigs, dead wood, thorns and even other fruit. Monitor wind speed and direction during this period to ensure your windbreaks are in the best position. Estimate the volume and consider your strategy for dealing with damaged fruit – hand thinning, select picking, leaving fruit in the orchard, identify market/value-add product to match volume or establish/manage windbreaks.

Pests and diseases

Remember to correctly identify insects in your orchard before taking action to control them – some beneficial insects are easily mistaken for pest insects and need to be protected. Be aware of pest infestation levels and recommended action levels before considering the use of insecticides. There are many publications to assist with this including some on the Department of Agriculture and Food website at www.agric.wa.gov.au.

Kelly's Citrus Thrip: Monitor for Kelly's Citrus Thrip weekly from petal fall to calyx closure.

Scale: Monitor scale crawlers, applying targeted oil sprays when crawler activity is evident. Release *Aphytis melinus* for the control of red scale during October/November.

Snails: If snails are a problem bait while conditions are still moist before the summer dormancy period – do not use copper spray alone as this will not kill the snails.

Ants: Ants are on the move now and will require monitoring and control throughout summer.

Aphids: If controlling aphids only spray the growth flushes.

Fruit Fly: Keep an eye out for fruit fly in ripening fruit.

4. Flyer for field day

South West Citrus Field Day

Wednesday September 17th, 2014
Greycliffe Orchard, Burekup

Program

- 15:00 Meet at Clay Rose's orchard**
- 15:15 Welcome**
Bronwyn Walsh, WA Citrus Value Chain Coordinator, DAFWA
- 15:20 Orchard walk**
Clay Rose, WA citrus grower
- 15:50 Internal fruit quality – are you getting the best fruit from your orchard**
Nathan Hancock, Manager Market Information & Quality, Citrus Australia
- 16:10 Demonstration of How to test your fruit**
Nathan Hancock
- 16:30 Citrus gall wasp**
Bronwyn Walsh
- 17:00 Thanks and Finish**

BBQ

Cost	RSVP by Friday 12th September
No charge.	Bronwyn
Expenses covered by the WA citrus value chain coordinator project & Citrus Australia market information project.	Ph: 0400 873 875 E-mail: bronwyn.walsh@agric.wa.gov.au

Thanks to Clay and Bridget for hosting the field day



Improving the market performance of WA citrus

5. Example of citrus article in industry magazine

Spring 2013
Vol 4.3

magazine

fruitwest

**The WA citrus
industry:
launch / varieties
research / future**

**The fresh fruit
taste test**
– who is setting the
benchmark?

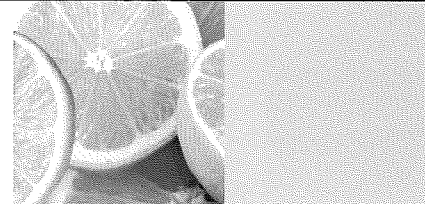
**National conference
highlights and reviews**

**WA
GROWN**



fruitwest

is a Producer Committee of the Agricultural Produce Commission.



Citrus update



WORDS: Shane Kay, Citrus Leadership Group Chair

The last three months for the citrus management group have been about structure, communication and promotion. We've had some wins on all fronts.

Structure

Industry structure has been talked about for sometime with growers and within the Fruit West magazine and newsletter. The new structure is mostly about streamlining and efficiencies for us as an industry.

The WACIG AGM was held at Bindoon before the varieties field day in July. At this meeting, the motion was passed to accept the FW-WACIG agreement and terms of reference which allows WACIG to undertake the roles of the Citrus Leadership Group on behalf of Fruit West. The current constitution allows for a committee of six people with members appointed for two year terms. You will have received correspondence outlining this process, along with the newly elected WACIG committee.

The new committee members are:

- **Chairman** — Shane Kay
- **Secretary/Treasurer** — Helen Humphry
- **Committee** — Peter Ansell, Helen Martin, Richard Eckersley, Mick Mann.

I would like to welcome our new members to the committee, and to thank all previous committee members. Thanks must go to Peter Ansell for the great job done as WACIG chairman and Bruce Wharton as a long term committee member. The activities WACIG can now perform would not be possible if not for your efforts. Also thanks to Helen Humphry for re-nominating for Secretary and Treasurer.

Activities will continue as in the past, with Peter Ansell coordinating field days and events and also taking care of the variety management. Helen Martin will continue doing a great job working with Fruit West on our promotional activities.

All growers are still welcome to WACIG meetings which are held generally on

a quarterly basis. The dates appear in the Fruit West newsletter. Meetings are relatively informal and a very good way to hear firsthand what is going on in the industry from different perspectives and to catch-up.

Communication

As our production in WA increases, so does the need for better communication in particular with our supply chain. While most growers are in regular contact with their market agent or wholesalers, communication with our major retailers on an industry level has been minimal and is an area we can do far better on.

Recently Bronwyn Walsh, Helen Martin and I had productive talks with representatives from Coles and Woolworths.

The message was clear that the better information we can provide regarding our crop each season, the better they can match programs to move our fruit. I can see willingness from both parties to work with us as our production increases. This was evident when we provided crop information to Coles and the Fresh Produce Group as they were developing a specification for their new WA Navel 2kg net bag. This product was recently launched and allowed more fruit to be included in supply to these markets. Small mandarins were also successfully marketed in bags this year.

We also plan to meet with representatives from IGA and others in the near future to continue finding ways of promoting and marketing as much of the WA crop as we can.

Explaining the climatic conditions that WA growers' face is difficult. If the proportion of heavily wind blemished fruit remains the same, as our overall production doubles or triples, this fruit will become our biggest challenge.

Each year I would like to see growers provide their crop forecasts, confidentially if necessary, to Bronwyn so that it can be combined into an accurate whole of industry forecast. This industry forecast is sought by all WA buyers so they can plan their purchasing to meet consumer demand for WA fruit.

Promotion

A lot has been achieved this year for what started with a small promotion budget. Firstly, we were able to conduct some good market research into consumer preferences and the recognition of the 'blue sticker' which we will be able to use into the future.

Secondly, the promotions team put together a great citrus season launch at Market City. The response from retailers was overwhelming and all the point-of-sale material was given out on that morning. Some fantastic photos of shop displays using the point-of-sale material are being sent in as part of a competition (see page 48). Well done to Helen, Nardia, Noelene, Suzie and Bronwyn.

Lastly, the launch of the Coles WA Navel 2kg bag provided us with some huge exposure with the Minister for Agriculture and Food attending and giving his support. WA citrus was heavily visible and promoted as the main focus of the event, with good media coverage and Coles and Fresh Produce Group sponsored advertising. Thanks to Helen Martin who spoke on behalf of Fruit West as promotion representative and to Bronwyn Walsh for doing background work to enable the Minister to attend and providing an industry brief.

I would like to acknowledge everyone's contributions to our promotions program this year. ●

Mick Mann

Woodhouse Produce

WORDS AND IMAGES: Bronwyn Walsh, Department of Agriculture and Food

From a background of wheat and sheep farming and 20 years of self-employment through businesses in the service industry, Mick Mann planted the first citrus trees on his Cowalla Road property at West Gingin in 2004.

HE has been planting ever since in the knowledge that being involved in horticulture, on the scale he could afford was more about lifestyle than about making money.

His orchard is a mix of Clementine and Imperial mandarins and sits among 30 to 40 similar-sized properties. Mick finds his Clementines colour up earlier than most others, so his fruit is some of the first into the local market. This year he is also managing a nearby orchard, making him a full-time citrus grower.

In July Mick was elected as a committee member on the WA Citrus Improvement Group. There wasn't a particular issue

driving him, but he felt he could assist in making a contribution to the industry at this level. He also saw the opportunity to lessen the work load on other committee member as "many hands make light work". He thinks the time he has to commit to attend four to six meetings is worth the effort for an industry he is part of.

Mick believes he can highlight the issues of smaller growers, those with fewer than 5000 trees, such as issues relating to economies of scale.

For these growers input costs have a bigger impact on their bottom line. Smaller growers need to pay greater

attention to fruit quality to ensure better prices as "they can't compete on volume," he says.

Looking to the future, Mick hopes to plant a little more. He is looking for varieties that first match the supply windows with market demand, can meet fruit quality standards of flavour, and then sweetness and freshness, in terms of a short time from picking to the consumer's fruit bowl.

Some challenges in the industry are reducing input costs while maintaining good fruit quality at acceptable prices.

Mick is a self-confessed data collection junkie. Each year he tweaks his production system, made possible because he monitors his practices closely. Some include:

- **Fruit counts.** He has been doing fruit counts for two years and has adjusted the recommendations to be more appropriate to his orchard.
- **Fertiliser.** Mick has spent a lot of time taking soil and leaf samples to develop his own fertiliser program. He thought it was worth the effort in order to use fertiliser efficiently and therefore reduce costs. Continued monitoring is bringing continued adjustments particularly because of the alkaline irrigation water. He thinks soil type has a big influence over fertilising frequency. He believes it is important to apply fertiliser a little at a time during the season and therefore use less and see a greater tree response. This means that the



Photo: Bronwyn Walsh





to a potentially oversupplied domestic market and an unfulfilled export market. Perhaps this idea is slightly ahead of its time but one I believe, should be discussed."

Growers who are not changing varieties may not be aware of what it is costing them.

The challenges are that the new varieties have Plant Breeders Rights that cost more with the same return as current varieties and the loss of yield for a few years during the changeover. However, an oversupplied market in one variety or fruit that doesn't match consumers' preferences is also not going to make any money.

Having better than average quality fruit recognised in the marketplace by a better than average price can be enhanced through the prudent use of maturity test results. These test results are an independent analytical measurement of fruit quality and in the hands of wholesalers and marketers should be used to encourage buyers to pay a better price for above-average quality fruit. Seeing a reward for good quality fruit is a good incentive for the effort and attention to producing it.

Above all, Mick's choice to plant citrus was for lifestyle. He enjoys the independence and opportunity for personal reward that the fruit industry offers. ●

me that may be required
, versus a once-off larger
tion, shouldn't be an issue.

ers. Some of the changes
made are monitoring micro-
r performance. He collects
a daily and monthly basis.

records. For each block Mick
harvest yield, fertiliser use,
mount and frequency, and the
of irrigation water used in
to evaporation, tensiometer
s and tree age. This aims
e efficient use of water and
g input costs.

of the industry lies in
ection, he feels. "I'd
state and national
dations of what varieties
ould consider planting based
chard location and when
likely to enter the market.
I mean less likelihood of
and the related issues."

nation would only be
ndation, with the final
th the grower, Mick clarifies.
work has already started
but there is need for well
and tried varieties before
ke Citrus Australia can make
dations. Recommendations
ased on avoiding oversupply
estic market and the
ts of export markets

TARGET Fruit Fly

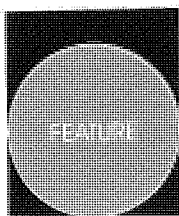
Cera Trap

- ✓ No residues
- ✓ Easy to install
- ✓ 100% ecological solution

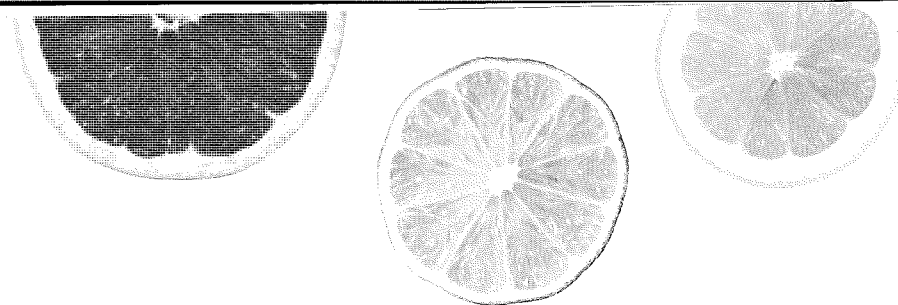
Cera Bait

- ✓ Salt FREE
- ✓ Economical
- ✓ Easy to measure, mix & spray

Your choice trapping or baiting or both, we have the solution



Focus on citrus



Citrus varieties to match the market

WORDS: Bronwyn Walsh and Kevin Lacey, Department of Agriculture and Food
IMAGES: Bronwyn Walsh, Department of Agriculture and Food

The choice of varieties is one of the most important decisions a grower can make. It is also something that needs continual review as the market changes and the orchard ages.

HAVING the right variety is an essential part of matching what is grown to what the consumer will buy and therefore making sure growers see a return for their efforts.

The significance of varieties was highlighted by the inclusion of international and national keynote speakers at a number of field days in the last six months.

Tastings, tree inspections and presentations on new variety characteristics, while exciting, can be overwhelming when trying to sort through the information to choose a variety.

Current market trends

This year some retailers report the volume of mandarin sales increasing. This is not surprising as consumers enjoy the convenience of the easy peel and low seeds of many varieties now available.

International visits have also observed a trend away from concentrate production to fresh, single-strength juice and blending mandarin juice with orange juice.

Globally, trends in the citrus market are for:

- Convenience — packaging, easy peel, low or no-seeds
- Taste — confidence in flavour performance
- Quality — premium for no blemishes
- Health — high nutritional value
- Speciality — colour, niche source or supply.

Fortunately WA citrus growers have already considered many of these trends in their business plans and the market development of their fruit.

The following outlines WA plantings, potential new varieties and some guidelines for making decisions on variety choice.

The WA citrus industry

In 2013 there is an estimated total volume of 15,000 tonnes of citrus produced by the WA citrus industry. Oranges have the highest volume of fruit, followed by mandarins, grapefruit, lemons and then limes, pummelo and tangelos (see Figure 1). This pattern is relatively common across Australia.

By 2016 non-bearing trees, that were 40% of the area of trees in 2011, will be close to full production (Figure 2). There are non-bearing trees in nearly every citrus category across the state. In 2011 there was a total of 1,561ha of trees. New plantings have continued to be planted since 2011.

Since oranges and mandarins are the largest proportion of the market, more detail is provided for these two market segments.

Oranges

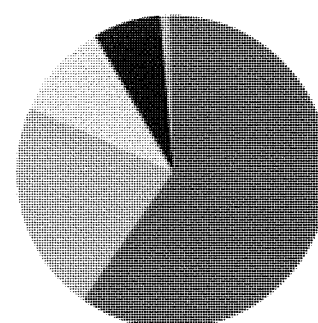
The area planted to early, mid and late season navels was 175, 227 and 271ha respectively in 2011. The area of specific varieties is shown in Table 1. These varieties account for more than 90% of the total area planted.

Overall, 59% of the navels recorded in 2011 were non-bearing. The largest

Caitlin Evans, Maria Cifuentes, Wayne Pail, Variety Access and Kevin Lacey, DAFWA

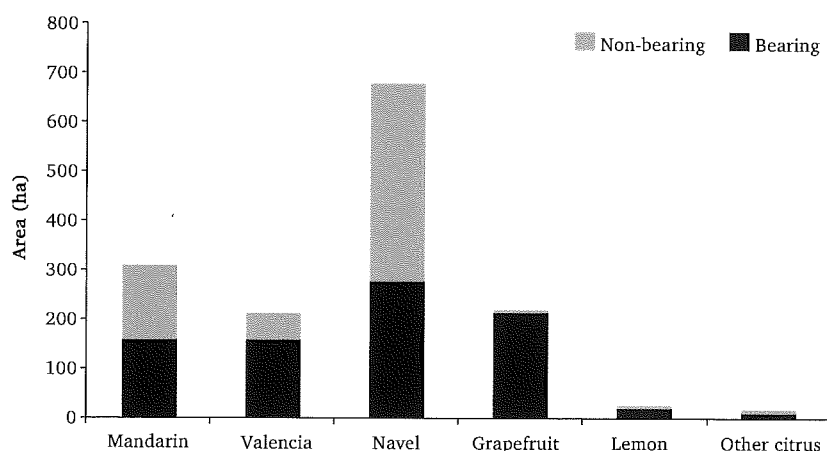


Figure 1 The proportion of citrus production in WA (%)



Source: APC

Figure 2 The area of bearing and non-bearing trees for types of citrus in WA (hectares)



Source: 2011 Planting Database

number of non-bearing trees was for the early season varieties of Newhalls and Navelias with approximately 40ha each, then Leng and M7 with about 13ha each. In the mid-season window the areas of non-bearing trees are 12ha of Rosey Red and Cara Cara and 33ha of Washingtons. At the end of the season there were 118ha of Late Lanes, 24ha of Chislett and 11ha of Rohde non-bearing trees.

Finally, there were 20ha of Valencias and 32ha of Midnights (non-bearing in 2011). The area producing oranges on a monthly basis ranges from 15ha at the beginning of the season to a peak of 575ha and sits at 468ha for August and September.

The mid-season volume of navels has been much discussed across the Australian citrus industry and is of particular concern when export trade is down.

Changing the orchard mix to improve the spread of production capacity or supply of types of citrus is a potential mechanism for managing volume of supply and avoid flooding the market with a particular product.

The choice of navel variety is mostly based on timing of maturity. For navels, albedo breakdown tolerance is also important. Table 2 indicates some characteristics of orange varieties.

New varieties in the pipeline include red flesh navels and Valencias, seedless Valencias, blood oranges and a brown skin navel as specialities or that extend the market window.

Mandarins

Mandarin plantings are described in Table 3. The total area of production in 2011 was 308ha. This was divided between 155, 111 and 42ha for early, mid and late-season varieties respectively. Other varieties not included

in the table, make up the remaining 5% and include Marisol, Silverhill, Darling, Hansen, Avana Tardivo and Dancy. For these varieties there is less than one hectare per variety in the ground.

Of the total area of mandarins in 2011, non-bearing plantings consisted of 41ha Imperials, 18ha Nules, 37ha Afourers, 13ha Daisy, 23ha Hickson and 13ha Mystiques. This equates to 49% of the total area under mandarins.

Table 2 Orange varieties and their characteristics

Time of season	Variety	Ownership	Albedo breakdown
Navel			
Early	M7	O	1-2
	Atwood	P	2
	Leng	P	4
	Navelina	P	4
	Newhall	P	2
	Pasin	P	3
	Ryan	P	5
Mid	Thomson	P	4
	Cara Cara	P	3
	Washington	P	3
Late	Autumn Gold	O	2
	Barnfield	O	2
	Chislett	O	2
	Late Lanes	P	2
	Powell	O	1
	Rohde	O	2
	Summer Gold	O	2
	Wilson	O	3?

Other oranges			
Sweet	Salustiana	P	?
Sour	Seville	P	?
Blood orange	Blood orange	P	3

Tangelo			
	Minneola	P	3

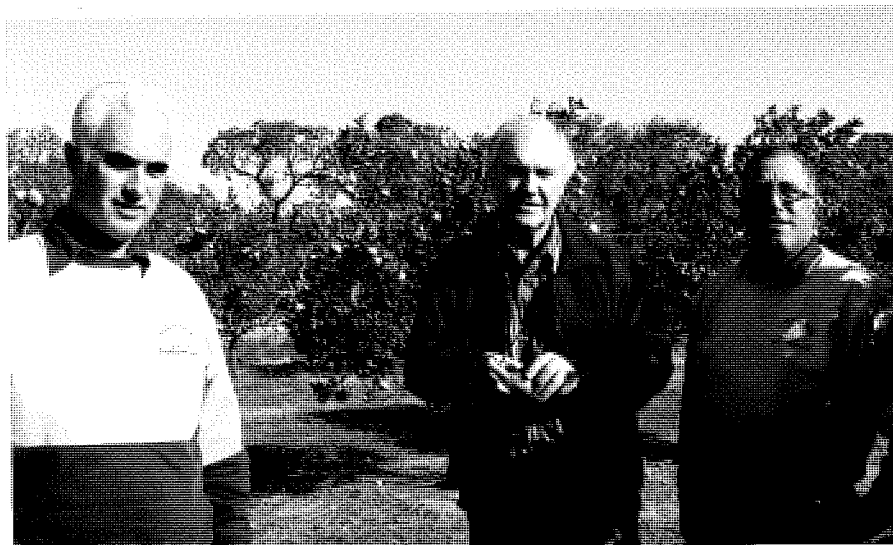
Valencia			
Seeded	Benyenda	P	?
	Berri	P	?
	Keenan	P	?
	Smith	P	?
	Valencia	P	?
Seedless	Midnight	P	?
	Delta	P	?

Ownership: O=owned, P=public.
Albedo breakdown: 1=<5%, 2=6-15%, 3=16-30%, 4=31-45, 5=>46%.

Table 1 Area of orange varieties grown in WA in their related maturity windows (ha)*

Variety	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb
M7		15									
Navelina			84								
Newhall			55								
Cara Cara				32							
Washington				195							
Late Lanes					209						
Chislett					32						
Midnight							32				
Valencia									74		

* Adapted from DAFWA Farmnote 2012; Planting database 2011.



Ned Taddel, Taddel Orchards; Graeme Sanderson, NSW DPI and Carlo Scamuffa, Taddel Orchards.

The early window in April and May is noticeably low in plantings. During this time Queensland mandarins are in the WA market. Varieties that can grow in WA to mature in that window and meet market preferences have been a challenge. The remainder of the year has 65ha to 140ha of production capacity from trees in the ground in 2011.

Looking to the future, Table 4 highlights some of the new varieties that have attractive characteristics to the market but are not yet publicly available.

New varieties under development from Israel, California and South Africa are pursuing low seed and easy peel characteristics. Yield, ease of management and suitability for all production windows and regions are also considered. Lower seeded

selections of existing varieties such as Murcotts are also available.

Choosing mandarin varieties seems more complicated than oranges, particularly Navels. This may be a result of the variation in characteristics such as taste, seediness, ownership, tree management and market acceptance.

Some scenarios of choices related to mandarin varieties include:

What to do with old varieties?

It is inevitable at any moment in time that there are old varieties in the ground and in the market. Small volumes may be a result of a 'look-see' planting.

Larger plantings are usually of varieties that at that time were evaluated and accepted by the market and growers. For up to 30 years, Imperials and Hicksons are examples of popular varieties with the market and growers. Some pros and cons for keeping old varieties are:

Pros for keeping old varieties

- Market is still accepting the fruit.
- Imperials are a very well recognised mandarin variety with the Australian consumer.
- Imperials have the largest area of trees in WA.
- Avoid loss of production during changeover.

Cons for keeping old varieties

- Seedy or very seedy varieties may not retain a market, as seedless varieties are available in the same window. Losing a market for fruit means that inputs of both time and money are wasted.
- Imperials are biennial bearing, which can mean they require more management of the crop load each season.
- Imperials suffer from internal drying/granulation and struggle to meet the juice standards in some seasons and growing areas.

Daisy is a more recent variety compared to Hickson and Imperial. The maturity time for Daisy bridges the window between Imperial and Afourer supply. However, there is some market segment resistance to Daisy.

Aside from sorting through the characteristics of varieties, the costs of changing varieties and the gap in production while trees grow are two other common reasons for keeping existing varieties. Ensuring there is an on-going market for the existing varieties will become particularly important over the next few years as non-bearing trees come into production. A gradual transition of old to new varieties can help ensure these costs are minimised or avoided.

Table 3 Area of mandarin varieties grown in WA and their related maturity windows (ha)*

	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct
Satsumas		3						
Caffin			1					
Nules				27				
Imperial				113				
Daisy					16			
Hickson						49		
Afourer							38	
Mystique								28
Murcott								10

* Adapted from DAFWA Farmnote 2012; Planting database 2011

Table 4 Mandarin varieties and their characteristics

Time of season	Variety	Seediness	Peelability	Ownership	Management
Early	Imperial	4	2	P	B
	Caffin	2	2	P	ID
	Marisol	2	2	P	ID
	Nules	2	2	P	ID
	Miho Satsuma	1	2	P	ID
	Okitsu Satsuma	1	2	P	ID
	Silver Hill	?	2	P	?
Mid	Emperor	4	1	P	?
	Darling	4	3	P	?
	Hansen	4	3	P	?
	Avana Tardivo	4	2	P	B
	Daisy	4	3	P	T
	Dancy	4	2	P	T
	Ellendale	4	3	P	T
	Hickson	4	2	P	T
	Afourer	2	3	P	IT
	Oroval	2	2	P	ID?
	Nandorott	1	3	O	?
	Tango	1	3	O	?
	Nectar	1,3	2	O	?
Late	Kara	?	2	P	?
	Murcott	5	3	P	T
	Low seeded Murcott	3	3	O	T
	IRM 1	3	3	O	T
	IRM 2	3	3	O	T
	Mor	3	3	O	T
	Phoenix	3	3	O	T
	Or (Ore)	3?	2	O	G
	Gold Nugget	?	2	O	T
	Mystique	2	4	P	P
	Topaz	2	4	P	P

Ownership: O=eg protected by trademark or PBR, P=public.

Seediness: 1=no seeds, 2=no seeds if grown in isolation, 3=low seeded (2-3 seeds), 4=seedy (4-10 seeds), 5=very seedy (>10 seeds).

Peel: 1=very easy peel, 2=easy, 3=not so easy, 4=not easy at all.

Management: I=grow in isolation for low seed, B=biennial bearing, T=thinning, G=girdling&GA, P=pruning, D=Degreening.

Pink shading: new varieties being evaluated

The supply of mid-season oranges and consumer interest in mandarins suggest there may be room for increasing the mandarin production capacity.

Recognising that this trend is seen across the world, a cautious approach may be required and potentially greater understanding of consumer preferences.

Other citrus categories

Market trends are for seedless lemons, red flesh grapefruit and potential niche products with unusual characteristics.

We receive many enquiries about planting limes from landholders changing from other agricultural sectors. While limes appear to receive a high price, this is related to particular supply windows and fruit with green

skin. Some areas have trouble in providing green limes. There is no recent market analysis for limes.

Any plantings of limes, as with any citrus, should only be done after careful consideration of the current market supply and demand and future trends. Data is available from a variety of sources to assist in this analysis.

Changing the orchard mix

Deciding to change your orchard mix may be part of your business planning.

If you decide to change the orchard mix, by planting or topworking trees, your next steps include:

1. **Scan the varieties available** — their windows and characteristics for example via DAFWA Farmnotes, field day handouts, presentations and company websites. Points to consider are:
 - Match the climate of the new variety to your own production area.
 - Variety performance is based on combination of rootstocks and scion.
 - Select rootstock to suit your variety and local conditions.
 - Consider the impact the new planting will have on your current harvesting program.
 - Be aware of Plant Breeder's Rights, licence agreements and the potential impact these may have. Many new varieties are sold subject to specific conditions and royalty agreements.
 - Consider your resources — land, water and economics.

2. Look at the varieties in the ground, taste the fruit.

This is emphasised by all parties involved in variety selection. Opportunities to do this are at field days or private events organised by the variety companies.

3. Contact the licensees

Discussion with the licensees will help to determine the availability of the new variety and the terms under which you will be able to grow and market it. These may influence your decision to grow the variety or not.

4. Market research

Talk to buyers, agents, retailers and consumers to understand what the

market is demanding and already supplied. There is no point planting anything if you don't know where and how you're going to sell it. Poor quality fruit and wrong varieties can disturb the market for you and others in the industry.

Frequently asked questions

Q Can oranges be re-worked to mandarins?

A Yes, in most cases orange interstock can be reworked to mandarins.

Q How do I get hold of new variety trees or wood?

A New varieties can be purchased through licensed nurseries for protected varieties. The amount you can purchase will be determined by the structure attached to the variety. There is usually a limit based on the number of trees or the area planted for protected varieties. Public varieties are available from any nursery as long as they are in stock.

WA nurseries include Citreos and Olea. Interstate nurseries have different accreditations for providing protected varieties. Using Auscitrus accredited material is strongly recommended for the survival of your orchard and others.

Q What is the difference between public or private varieties?

A There is a growing trend for varieties of desirable market attributes to be privately owned. Some can be seen in Tables 2 and 4.

Plant Breeder's Rights (PBR) protects privately owned varieties. Companies manage access to PBR varieties. This means limited access to these varieties.

To access a privately owned variety usually means paying a royalty. There may be other conditions attached to having access to the variety such as a minimum tree planting area or prescribed pathways to market.

'Access to varieties' applies to either new trees or wood and buds for topworking. This means 'topwork' for evaluation of private varieties on your own property is not usually legally possible without at least consent from the owner or variety manager.

WACIG now have access to a range of new protected citrus varieties through Variety Access, one of the companies

that manage privately owned varieties in Australia.

Evaluation blocks to test and evaluate these new varieties have already commenced, with new varieties to be added when released.

Through WACIG, WA growers will be able to subscribe for area allocation of these new privately owned varieties; and also receive the important technical data on the performance of each of these new varieties from the WA evaluation blocks and other evaluation sites throughout Australia and overseas.

Other forms of protecting the intellectual property of varieties is using patents, copyright, confidential information and trademarks.

A plant variety can be marketed under or in conjunction with a trademark. Sunraysia is an example of a registered trademark. Trademarking a name for a fruit with particular characteristics is a strategy that means a number of varieties that can be sold under that name. For example, varieties of similar characteristics that supply different windows can be used under one name. This may help the consumer identify the type of fruit they prefer throughout the season.

An example of trademarking in the Australia market place is the Phoenix, which has low seeded Murcott characteristics.

Public varieties are those not protected by PBR or other forms of protection. They are freely available to anyone who

wants to grow them. There may still be limitations in growing some public varieties where the source of suitable wood for propagation is difficult to obtain. This is particularly the case with old or obsolete varieties.

Q Who do I deal with?

A The source of help will depend on which stage you are at in choosing a variety (Table 5).

Q What is the difference in costs between public and protected varieties?

A Costs vary depending on the structure of the ownership. In most cases privately owned varieties 'cost' more, however they may have more attractive features in the marketplace. They may also be a variety that is exclusively used by a particular retailer and therefore a necessary purchase to access that particular market segment.

The variety owner sets up the royalty structure. The royalty is the amount payable by the person owning the orchard where the variety is planted. The structure on which it is paid may be based on the number of trees, the number of hectares planted, the amount of fruit sold (a production royalty) or a combination of the three.

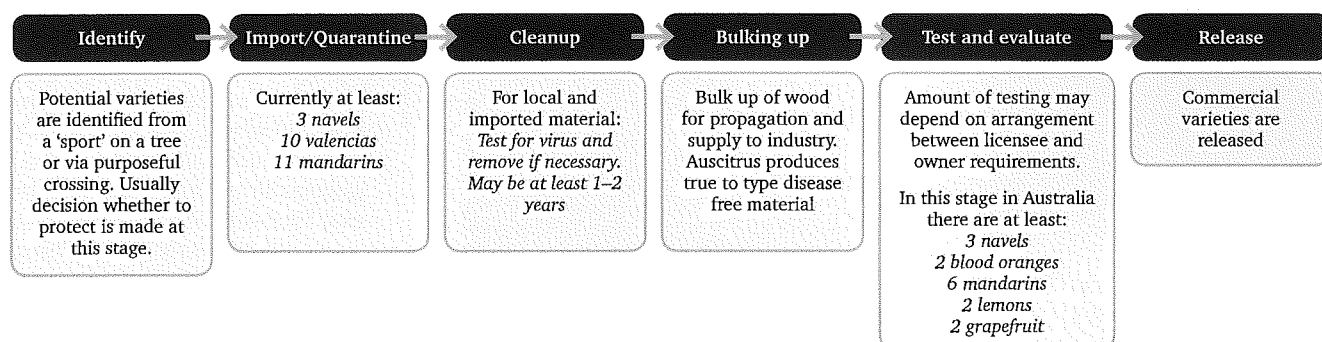
The structure chosen is based on the company's business model and analysis of the market supply and demand for the particular variety's characteristics.

Compared with public varieties the extra cost is in the royalty that must be paid on top of the normal costs associated with purchasing nursery stock.

Table 5 Stages of variety choice and the related sources of information

Stage	Who can help
Scanning on information about varieties	DAFWA Farmnotes, NSW DPI Farmnotes, CAL, Variety Companies, Field days etc, Companies are always updating their websites to highlight any new varieties they have coming through the system - especially any they think have promise.
Performance	Variety managers, DAFWA, NSW DPI
Market research	Consultant, Perth Market Authority, Citrus Australia, ABS
Costing	Variety companies
Negotiate access to protected varieties	Breeders own the PBR rights and may or may not manage access to the PBR rights. Alternatively some PBR variety managers will manage access.
Access public owned varieties	Most citrus nurseries will endeavour to have public varieties for a customer if they can source the material.
Purchasing trees for planting	Variety companies will direct you to the nurseries they have agreements with to propagate their trees.

Figure 3 Different stages of variety development



WA growers and market agents take the opportunity to taste some new and current varieties provided by Graeme Sanderson, NSW DPI at Sindoon field day this year.

What's in the pipeline?

There are different stages of variety development that means some new varieties are commercially available while others are years away from release for planting into an orchard (see Figure 3).

To make it through from the Test and Evaluate stage relies on commercial interest in the variety.

This might be based on their performance in Australian conditions. Depending on the ownership, the confidence in the variety and its source, it takes at the very least a minimum of six years to move from identifying a new variety to it becoming available. Varieties from all stages in the development process may be

discussed and presented to industry because feedback and assessment are an important part of variety selection.

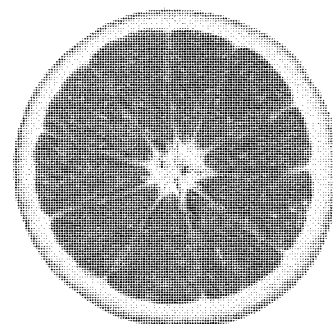
Private companies and public organisations may have varieties going through all of these stages. ●

Further information

This article was developed using the advice and material available from the sources identified below.

Reading material

- Orange varieties for WA 2012, DAFWA Farmnote 540
- Mandarins and tangors for WA 2012, DAFWA Farmnote 541
- Citrus rootstocks for WA 2012, DAFWA Farmnote 539
- Citrus Australia Regional Forum and Variety Day 2013 Citrus Australia
 - Evaluation program for new citrus varieties 2004–2012, 2013
 - Grower checklist when selecting new citrus varieties 2013



- Re-planting article, Australia Citrus News June/July 2013
- Plant Breeder's Rights: A guide for horticultural industries 2008, ACIPA.

PBR variety managers

- Advance Production Methods (APM)
- ANFIC
- FAVCO
- Carter and Spencer
- Chislett Developments
- Nu Leaf IP Pty Ltd
- Variety Access

Variety evaluations

- Kevin Lacey, DAFWA
- Graeme Sanderson, NSW DPI

Disclaimer

Information presented in this article is only a guide. Further information sources have been suggested and are strongly encouraged to be used to further understand variety choice before committing to a decision.

WA's Agriculture Minister update

WORDS: Hon Ken Baston MLC, Minister for Agriculture and Food

IMAGES: Department of Agriculture and Food

I was pleased to support an idea this month (August) to save externally wind-blemished oranges that would normally go to waste.

THEY'RE being packaged up by Coles supermarkets, sold at lower prices and marketed to encourage sports teams to reintroduce healthy oranges as a half time snack. The early response to that campaign has been outstanding.

It's a seemingly simple concept like all good marketing ideas, and one that will no doubt give the industry a tangible boost.

Over the past decade, WA has increased the value of its orange production four-fold. The value of our citrus industry is now at about \$18million a year and shows great potential for future growth. Production of oranges, mandarins, lemons, limes, tangelos and pummelos is expected to double from about 15,000 tonnes over the next five years.

We need to continue to look at new ideas and new markets both here and overseas that can boost demand — which in turn increases profitability and productivity.

We need to ensure the sustainability of our production — and I can ensure you I am absolutely serious about Western Australia's biosecurity and maintaining our safe food reputation.

We have been criticised for the recent arrival of peaches and nectarines from the US.

Great care was taken in the lead up to the door being opened to imports of these fruits and it occurred only after the Department of Agriculture and Food was satisfied that mandatory methyl bromide fumigation mitigated the risk of pests such as vinegar fly (*Drosophila suzukii*).

Under Australia's two-tier biosecurity system, the federal Department of Agriculture, Fisheries and Forestry is responsible for determining import requirements for produce imported from other countries, while the



Department of Agriculture and Food WA is responsible for imports from other Australian states and territories.

As a state and a nation, we have to stand by our international agreements around open trade as we are heavily reliant on access to export markets for our produce. There really is no alternative to accepting the scientific advice that I, and the federal Minister for Agriculture and Trade, are provided if we want to keep the door open for international trade.

I am hopeful that by keeping peaches and nectarines prominent on grocer's shelves throughout the year, we'll actually maintain the appetite of consumers when our WA stone fruits are in season.

Here on the domestic market we will continue to promote WA's high quality produce through the Buy West Eat Best branding program which allows consumers to identify homegrown food.

We need to keep thinking outside the square to get the best value out of our local produce so lookout for a new marketing program by the Perth Market Authority supporting the local Green Grocer who is selling your produce.

The Buy West Eat Best logos are applied to WA grown, farmed and fished products as well as processed items which use local ingredients. It's an important step towards boosting consumers' awareness of what they're buying, therefore securing a stronger future for our producers.

These growers would benefit from our support, and while there's only so much we can do even at State Government level — every household can play its part every single week at the checkout. ●

Ken Baston, Helen Martin and Shane Kay discuss the benefits of the Coles launch.



Promotion update

WORDS AND IMAGES: Noelene Swain, Fresh Finesse

WA citrus

THE WA citrus season kicked off with a colourful extravaganza when a multitude of enthusiastic growers gathered in the central trading area at Market City on 20th June, to launch and distribute a range of new point-of-sale (POS) resources to retailers.

The range of new and vibrant resources featuring the blue sticker WA birthmark logo were produced, with the aim of supplying 300 independent retailers with material to dress up their citrus displays and make it clearly obvious to shoppers that now is the time to buy WA citrus at its best.

This strategy was developed in response to the findings from consumer research conducted prior to the start of the season; detailing consumers have limited knowledge of citrus seasons, varieties and rely heavily on the information on display at retail level for this information to influence their buying decisions.

The ABC Country hour attended the launch, despite the early hour, and compiled an excellent story, integrating the views of growers, wholesalers and retailers. Follow up material was supplied to the *Countryman* and *Farm Weekly*.

Point-of-sale in retail stores

A revamped shelf 'wobbler' (3000), a new laminated pinpoint sign (3000), and colourful printed balloons (1500) were produced and supplied, along with previous supplies of posters to 300 independent retailers, either directly or through intermediate secondary wholesalers who buy on retailer's

behalf. Visits to stores indicate positive ongoing display of the citrus message at the point of purchase is continuing.

Product sampling

Citrus sampling sessions were conducted in 10 independent retailers in July and August. Results of sampling levels with consumers and sales are now being compiled; however, initial feedback is very positive indicating consumers and retailers respond very well to this initiative.

Whilst the budget only allowed a limited number of retail sessions, this is still an important opportunity to speak directly with shoppers about the importance of buying local and how to use the WA citrus blue birthmark sticker as a guide. This was represented in the consumer research conducted prior to the season commencement.

Urban Locavore

The Urban Locavore's gourmet food tasting box provided access to over 200 keen food enthusiasts, through supply of a small sample of citrus, along with the story of WA citrus and the importance of the WA citrus blue birthmark sticker to identify it. This partnership resulted in extensive media coverage through 6PR and the internet. Their winter tasting box featured WA lemons.

Media

Gift boxes and media releases sent to notable food media personalities during the season have succeeded in gaining media coverage through editorial print and radio channels. This has been strongly supported by weekly recipes and information being distributed to media across the state.

Events

The traditional domain of oranges as a sports refresher is sadly being replaced by glucose confectionery. A cooperative partnership with the WA Marathon club achieved logo placement on event material and publications with citrus served throughout the WA Marathon on 16th June.



Launch of Coles WA citrus prepack

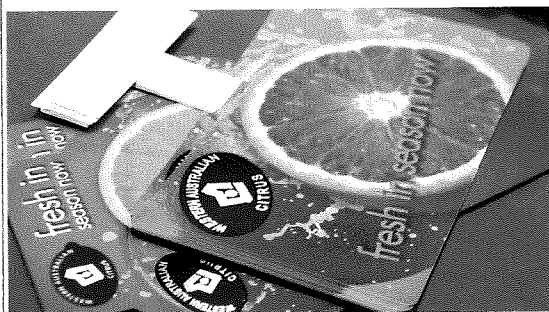
Support was provided to the official launch of a new bag of WA Citrus in Coles on 2nd August. The initiative for a commercial outlet for slightly marked fruit was a collaborative initiative between a number of local growers, the Australian Produce Group and Coles.

Attractively packed with local branding information, this seven piece bag is aimed as a sports pack to deliver higher prominence of citrus as half time snacks at children's sports fixtures, reclaiming some of this traditional ground from the glucose confectionery trade.

If any growers would like more information regarding this initiative please contact Helen Martin or Shane Kay.

Retail display photo competition

Prizes of \$200 were offered to retailers as an incentive to create an impressive display of WA citrus in the store. Although entries to the photo competition were received from just 12 stores across the state, visits to retailers through July has indicated a strong level of follow through; with stores installing the POS material indicating an exciting level of effort and enthusiasm for using the POS resources dispatched remotely through the wholesale market display morning.



Prizes were awarded to Wembley Supa IGA and Walpole Pioneer IGA, whilst Geraldton Fruit and Veg and Boddington IGA were highly commended for their efforts. Responses from those participating indicated their efforts were well rewarded within the store with strong sales. According to Exmouth IGA "the display has improved and increased sales, and the customers were impressed and liked what they saw, especially the children with the balloons".

This has been a most outstanding strategy particularly given the slight funds available. ●

1 Wembley Supa IGA; 2 Pioneer Store Walpole;
3 Geraldton Fruit and Veg; 4 Boddington IGA;
5 Exmouth IGA; 6 Beetroot Bros; 7 Busselton Fresh.



WA apples and pears

THE national Aussie Apples promotion program has been strongly positioned to promote Australian loyalty to steer customer preference away from looming imports from New Zealand or China. A budget proposal has been submitted to APAL access funds from the national campaign for locally based promotional initiatives. These have now been approved and will include:

Perth Royal Show

Planning is in place to stage a major promotion at the Perth Royal Show. This will be located in the new Farm to Food pavilion and will include sales of Apple slinky and juices with the aim of engaging consumers to think about the origin of the apples they eat.

Primary school promotion: The Great Aussie Crunch

In September, primary school students will be linked into the benefits of eating luscious Aussie Apples. Planned to coincide with the Livelighter health program, The Great Aussie Crunch, Aussie Apples and a range of school curriculum material will be distributed to approximately 30 metropolitan schools.

Bike to Work Breakfast

Support will be provided to the annual Bike to Work Breakfast on the 16th October.

Rediscover pear

Featured on radio programs and newsprint, this campaign will be supported by giveaways of the beautiful *Pears* cook book.

Canteen expo

A display of Aussie Apples and Rediscover Pears was presented at the WA School Canteen Conference in July. This provided opportunity to engage with the 500 canteen managers and health professionals in attendance, to inspire the use of local fruit on the menu and workshop ideas on how to enthuse children with the use of the Apple slinky machine. Slinky machines were available to canteens at the conference. ●

2013 highlights

Australian pears

Advertising

- 913 sites nationwide
- In market March & July
- First time with Coles or Woolworths co brand

Australian Pears Cook book

- 70,000 copies sold in Woolworths & newsagents
- Responsible for sales of 60,000kg Australian pears
- Huge media coverage

Australian Pears Bikers

- 12 sites visited
- Over 12,000 consumers engaged with

Rediscoverthepear.com.au

- 25,578 visits (+1,799.26%)
- 19,925 were unique
- 77.63% were new visits
- Sunday the most popular day
- 5pm most popular time
- 96% use on a mobile device

Greengrocer point-of-sale

- Delivered to over 600 greengrocers
- Over 120,000 bags distributed

Aussie apples

Advertising

- 2,016 sites nationwide
- In Market March – August
- First time with Coles or Woolworths co brand

Red Aussie Apple Month

- Over 35,000 participants
- \$25,000 donated to Bowel Cancer Australia

AussieApples.com.au


- 17,587 visits (+24.70%)
- 14,811 were unique

By: Lala, Genesis Marketing
Manager – Apples & Pears
Horticulture Australia Limited

fruitwest magazine

Summer 2013
Vol 4.4

What's next for the Australian
Summer Stone fruit campaign?



**Fruit quality and
setting the standard**

**The importance of
orchard management,
help is available**



fruitwest

is a Producer Committee of the Agricultural Produce Commission.

Sustainable citrus field day

WORDS: Bronwyn Walsh, Department of Agriculture and Food

IMAGE: Department of Agriculture and Food



Sustainable citrus field day participants overlook a Harvey orchard.

Citrus growers and industry representatives from throughout Western Australia gathered in Harvey for a sustainability field day in October.

THE program featured four speakers and visits to a local orchard and packing shed.

The long-term sustainability of the citrus industry is complex and relies on the environment, production systems, consumers and the financial health and wellbeing of growers. These factors are a focus of the local citrus industry as its production continues to increase and shrinking margins and rising input costs challenge profitability.

At the field day, Department of Agriculture and Food development officers Tilwin Westrup and James Dee spoke about the state of Western Australia's water and recommended irrigation management practices for improved water-use efficiency in orchards.

Building on training in the Waterwise program, James suggested growers:

- Develop water budgets for average and low rainfall years

- Improve irrigation management to maximise production from each megalitre of water by scheduling irrigation events effectively
- Adapt the production system to cope with potential water quality issues
- Use long-term predictive tools to estimate potential water resources
- Monitor water resources during rainfall periods for both quantity and quality
- Make decisions early to avoid rushed decisions or wasted resources on poor performing blocks.

Tilwin reminded growers they could take up the offer of comprehensive on-farm assessments through the department's More Dollars per Drop project which aims to assist growers to achieve more efficient water use.

He said following an assessment and interview on water-use practices, reports were prepared for growers, highlighting their current use and recommendations to improve efficiency.

"Growers are advised to use and maintain a soil moisture monitoring system that suits their soil, crop and

management practices, and calculate their yield per megalitre to gain insight on their potential to increase water use efficiency," Tilwin said.

"The More Dollars per Drop assessment combined with individual calculations of yield per megalitre will provide an indication of the gross dollar-value of water to the business to guide investment in water saving strategies and infrastructure," he said.

The field day also included a presentation from Andrew Wherrett from Living Farm about the nitrogen cycle and its contribution to greenhouse gas emissions and ways to limit them, which he indicated could become a long-term issue for the industry.

We also reported on preliminary results of fruit quality testing in the WA market.

So far, the testing is demonstrating excellent performance of most local fruit, indicating that Western Australian orchards are continuing to meet consumer demand for great tasting fruit and helping to ensure the long-term viability of the local citrus industry. ●

The field day was supported by DAFWA, Perth Region NRM, Horticulture Australia Limited, Fruit West and WACIG.

National Issues Forum

AS mentioned by Shane Kay in his report, the results of sensory panel research for citrus created a lot of interest at the National Issues Forum. The research investigated consumer preferences for the taste of navels and mandarins. The analysis looked at the brix and acid levels of preferred fruit.

Two calculations were used as potential measures on which to base the industry standard — a BrimA calculation and the traditional brix:acid ratio. Both measures use brix and acid levels, however the formulas differ slightly. BrimA refines the sugar acid ratio calculation and has a stronger correlation with consumer preference than other measures currently available.

The research team recommended an industry standard for navels and mandarins based on the BrimA calculation that would meet consumer preferences and lead to repeat purchases. For example it will allow growers to sell more of the fruit consumers like e.g. higher acid fruit that is balanced with sugar. More bland fruit that consumers do not like will not be accepted. Discussion and feedback from participants showed general support for the recommendation with need for a better understanding of the concept and implications for industry.

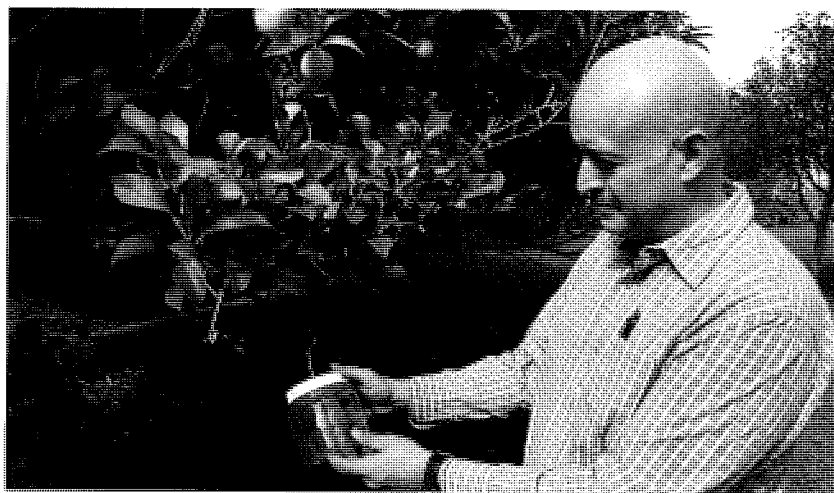
The National Issues Forum was hosted by Citrus Australia in Melbourne. Over two days participants heard presentations from HAL, citrus production regions, communication, promotion and media, China opportunities, quality standards research and biosecurity. Many sessions included small group discussion, questions and feedback that captured participants' thoughts on each topic.

We were also able to congratulate Shane Kay on his appointment as a Citrus Australia Director at their annual general meeting. ●

More detail on the forum is available from me, Bronwyn Walsh and other WA participants Ned Taddei, Shane Kay, Peter Ansell and Helen Marten or Citrus Australia.

Response to criticism of the international experience of the area-wide management of fruit fly

LETTER



Letter to the editor

In June 2013 I visited Western Australia as a visiting specialist with DAFWA, and would like to clarify the information that I provided in my talks, as I understand that there has been some miscommunication.

I consider that area-wide management (AWM) based on solid scientific data is probably the best we can do to manage fruit fly. AWM requires basic ecological data together with grower and community support, and the use of new technologies as they become available.

During my career, I have seen that the sterile insect technique (SIT) has improved fruit fly control and is now an important component of some area-wide projects.

We are all aware of the large area-wide projects that run successfully not only in Croatia, Spain, and Israel, but also in Mexico, California, Argentina, Brazil, Guatemala and South Africa.

I have never said that the area-wide project failed in Croatia or Israel or Spain. There might be issues on whether AWM results in complete eradication of Medfly populations from some of these areas. Nevertheless it usually brings population densities to below

economically damaging levels that may be even below detection levels.

When I mentioned a project against Medfly in Greece, I was referring to a pilot project that ran for few years in a restricted area in Crete (under a European Union research grant) and the grant was not renewed.

I would reiterate that:

- Management decisions should be based on information on the biology and ecology at or even below orchard level.
- Overwintering dynamics and 'behaviour' of low insipient populations are important for early management decisions.
- Area-wide projects should operate at different scales, with more emphasis on applying orchard-specific tactics.
- Integration of technological advances into area-wide projects should consider biological information.
- Detection efforts should be based on spatial modelling and local experience. ●

Regards
Dr Nikos Papadopoulos



Citrus update



WORDS: Shane Kay, Citrus Leadership Group Chair

IMAGES: Fresh Finesse

The Citrus Australia (CAL) National Issues Forum held in Melbourne this year has been hailed a success. The new format proved to be a great way for growers from all regions in Australia to be involved and have input.

It was good to see a small group of West Aussies make the trip to Melbourne, get a lot out of the event and take the opportunity to have a good break.

Highlights included hearing that one of the biggest opportunities for citrus growers in Australia is the potential for growth in the Chinese market for Australian citrus. Although not an easy market to access, there is massive potential year-on-year for growth in exports to China. This should have flow-on benefits for the WA marketplace.

There was general agreement to accept the findings of the sensory analysis work on citrus carried out by CAL and Fruit West. There were a lot of thanks going to Graham McAlpine for his efforts and the team for making it possible. Dr Christine Storer gave a detailed presentation on the methods and outcomes of the work.

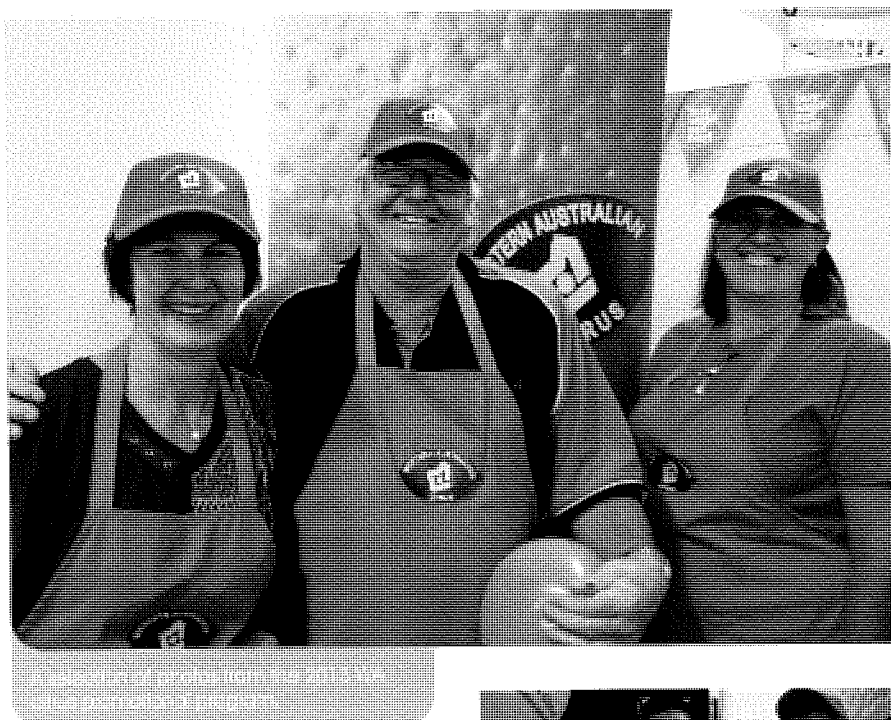
Fruit West was clearly acknowledged for their contribution to the project.

It was agreed in principle to follow the BrimA standard for the coming season to a level that will satisfy 75% of consumers and closely follow its application.

Stuart Pettigrew was also introduced as the new biosecurity officer for citrus nationally.

Closer to home, some of the issues we need to address leading up to the next season include:

- Communication with our retailers
- Crop forecasting
- The marketing of mandarins, particularly Hicksons, for the local market and the potential to export Mystiques



- Plan early for 2014 promotion
- Continue to develop Grade 2 navel marketing opportunities
- Assist in the challenge to shift to newer varieties through opportunities with WACIG and Variety Access
- Continue to develop the Industry Response Plan for the WA citrus industry.

Please look out for dates for WACIG meetings in the Fruit West newsletter to address these and other issues where everyone's input is welcome.

It was great to see everyone at the citrus end of year function in Gingin. It was an excellent opportunity to collect your ideas and issues for planning activities for next season.

2014 brings us a new year and a new crop; I would like to wish everyone the best and a Merry Christmas. ●



6 Project evaluation report conducted in 2014¹

WA Citrus Value Chain Coordinator Project Evaluation Report



Source: DAFWA website¹

**Prepared for the Department of Agriculture
and Food WA**

18 July 2014



Clear Horizon WA
www.clearhorizon.com.au

¹ <https://www.agric.wa.gov.au/citrus/overview-western-australian-citrus-industry>

Contact details

Clear Horizon Contact	Client contact
Carina Calzoni Managing Director Clear Horizon WA Suite 11, 16 Phillimore Street, Fremantle 6160 P: (08) 9335 E: carina@clearhorizon.com.au	Bronwyn Walsh Value Chain Coordinator - Citrus Department of Agriculture and Food Locked Bag 4, Bentley Delivery Centre, 6983 P: (08) 9368 3786 E: bronwyn.walsh@agric.wa.gov.au

Document review and authorisation

Version	Date distributed	Issued to:
Draft 1	8 July 2014	Bronwyn Walsh
Draft 2	14 July 2014	Bronwyn Walsh
Final	18 July 2014	Bronwyn Walsh

Project Director	Carina Calzoni
Internal Contributors	Sarah Butler, Grant Smith and Ruhamah Tennant
External Contributors	Various stakeholders of the Citrus Industry and WA
Last saved	1/02/2016 1:11 PM
Clear Horizon Reference Number	WA14_002

Disclaimer

This document has been produced with information supplied to Clear Horizon by DAFWA, including project documentation, interviews with citrus stakeholders and discussions with the Value Chain Coordinator and Fruit West. While we make every effort to ensure the accuracy of the information contained in this report, any judgements as to suitability of the information for the client's purposes are the client's responsibility. Clear Horizon extends no warranties and assumes no responsibility as to the suitability of this information for the consequences of its use.

Contents

1. Executive Summary.....	1
2. Introduction	4
2.1. About the WA Citrus Value Chain project.....	4
2.2. About this evaluation	5
3. Methodology.....	7
3.1. Data collection	7
3.2. Data analysis.....	8
3.3. Limitations.....	8
4. Findings.....	9
4.1. KEQ1: What is the current state of the WA value chain with regards to understanding the offer of WA citrus, understanding and using quality standards when harvesting and understanding and using crop forecasting?.....	9
4.2. KEQ2: To what extent has the VCC project impacted on the WA citrus value chain to increase domestic consumption of WA citrus fruit?	19
5. Recommendations.....	23
Appendix 1: Grower survey	24
Appendix 2: Semi-structured interview questions for Citrus growers.....	33
Appendix 3: Semi-structured interview questions for agencies	37
Appendix 4: Semi-structured interview questions for market agents/major retailers.....	40

List of figures

Figure 1. Number of trees and varieties grown by citrus growers who completed the survey	7
Figure 2. Grower ratings of the level of usefulness of four citrus publications	10
Figure 3. Number of growers who use maturity testing to time their harvest.....	13
Figure 4. Number of Fruit West tests (pre-harvest, wholesale and retail tests) completed over three years.....	14
Figure 5. Priorities for determining timing of harvest (7 is the highest priority ranking and 1 is the lowest priority ranking)	14
Figure 6. Percentage of WA fruit meeting WA and Australian standards over three years.....	15
Figure 7. Measuring citrus crop yield using a counting frame	16
Figure 8. Number of growers who report using crop forecasting.....	17
Figure 9. The number of respondents who report their crop forecasts to others.....	18

List of tables

Table 1. Key evaluation questions and sub-questions.....	6
Table 2. Reasons given for not attending a field day	11

Acronyms

DAFWA	Department of Agriculture Western Australia
ACQS	Australian Citrus Quality Standards
HAL	Horticulture Australia Limited
VCC	Value Chain Coordinator
WA	Western Australia

1. Executive Summary

The Western Australia (WA) Citrus Value Chain Coordinator (VCC) project aligns with the WA Citrus Industry Strategic Plan 2010 – 2020. The project aims to support the implementation of national citrus projects in WA and other regionally specific activities. This includes working towards the following key components of the WA Citrus Industry Strategic Plan:

- **Market information:** Improve the flow of information through all levels of the supply chain to enable the orderly marketing of produce and increase WA share of the local market.
- **Domestic market development:** Facilitate the strategic development of WA domestic market.
- **Production:** Increase the sustainability and profitability of WA citrus growers through improvements in production techniques and access to new varieties and technologies.
- **Export market development:** Develop a long-term export market strategy to support the increased volumes of citrus produced in WA.
- **Communication:** Maintain effective and strong communication networks within the local industry and further develop networks and communication with the national and international industry.

The VCC project also contributes to linkages between citrus projects and initiatives across Australia and WA and undertakes or identifies opportunities for professional development in relation to value chain thinking and tools.

A requirement of the funding of the VCC project is to conduct an evaluation to benchmark current industry status against industry adoption targets and outcomes of the project. Clear Horizon WA was contracted by Fruit West and the Department of Agriculture and Food WA (DAFWA) to conduct the evaluation between March and June 2014. The evaluation addressed two key evaluation questions (KEQ).

- KEQ1: What is the current state of the WA citrus value chain with regards to understanding the offer of WA citrus, understanding and use of quality standards when harvesting and understanding and use of crop forecasting?
- KEQ2: To what extent has the Project impacted on the WA citrus value chain to increase domestic consumption of WA citrus fruit?

The methodology used in the evaluation involved reviewing project documentation, administering an online survey for citrus growers and conducting semi-structured interviews with growers, market agents and agency/industry groups. In total 32 people were consulted as part of the evaluation. Growers consulted as part of the evaluation covered a broad range of growing regions, citrus varieties and size of orchard.

A low response rate was received for the online survey with 11 out of 60 growers responding. This meant there was some concern for the validity of the quantitative, survey findings even though findings from the survey were similar to findings from the semi-structured interviews when triangulated. For this reason the quantitative findings from this evaluation should be viewed in conjunction with evidence from a range of research and other sources.

Findings

KEQ 1: *What is the current state of the WA value chain with regards to understanding the offer of WA citrus, understanding and use of quality standards when harvesting and understanding and use of crop forecasting?*

The evaluation found that growers and market agents understand the offer of the WA citrus industry to some extent. The VCC project undertakes a series of communication and extension activities including providing written information, delivering field days and presentations. The evaluation found that growers value the VCC project communication and extension activities and they are effective mechanisms for the VCC project to work with growers. However, the effectiveness of these extension and communication mechanisms is limited for market agents. Other communication and extension mechanisms are used by the VCC project for engaging market agents.

The evaluation also found that most of the growers were aware of the WA internal maturity standards and Australian Citrus Quality Standards and most growers harvest only when fruit have reached these standards. It was also evident that a number of the market agents are aware of these standards and value the information this provides them in terms of managing market quality and volumes.

The majority of growers involved in the evaluation were also aware of the practice of crop forecasting using a counting frame. However, only a few growers said that they were using this technique. Most growers used more informal methods (e.g. observation) or relied on past experience. Generally market agents were aware of crop forecasting. However, in general they did not consider crop forecasts to be accurate. This did not usually pose a concern for market agents as they were often satisfied with 'ball-park' figures for forecasted volumes.

KEQ 2: *To what extent has the VCC project impacted on the WA citrus value chain to increase domestic consumption of WA citrus fruit?*

Evidence suggests that there has been little change in citrus consumption in WA over the past three years. However, there have been enhancements in industry relationships, cohesion and efficiency across the citrus value chain, important elements necessary for building a sustainable industry. The VCC project has helped to strengthen relationships across the value chain participants, resulting in faster resolution of market issues and greater availability of resources and information for the WA citrus industry.

There is some evidence that market agents and major retailers of WA citrus products are engaged and offered information on the WA citrus season through the VCC project. There is also evidence that market agents have improved market awareness of expected harvest timings and quality and this is assisting with ordering and promotion campaigns.

Recommendations

The following recommendations were made for the development and implementation of future VCC projects.

Recommendation 1 – It is recommended that a future VCC project employs a more targeted approach to industry and market development that strikes a balance between providing development support to growers and coordinating market development activities. Market development activities could include undertaking an analysis of effective communication tools suitable for market agents e.g. a 'market' specific newsletter, as well as holding combined industry events that facilitate better communication and relationship building across the value chain.

Recommendation 2 – It is recommended that prior to the commencement of a future VCC project, that Fruit West and the WA Citrus Improvement Group implement a communication strategy informing all industry participants of the shift in the focus and resources towards a whole of value chain model.

Recommendation 3 – It is recommended that a future VCC project involve careful consideration in the development of objectives and targets that are shared between HAL, Fruit West and DAFWA and where possible, establish appropriate baselines either prior to or at commencement of the project. In addition, to ensure that the necessary data is collected for monitoring and evaluating progress against the objectives or targets, a monitoring and evaluation plan is developed along side the project plan at commencement of the project.

2. Introduction

This report documents the evaluation of the Western Australia (WA) Citrus Value Chain Coordinator project (hereafter, the VCC project). Clear Horizon WA was contracted by Fruit West and the Department of Agriculture and Food WA (DAFWA) to conduct the evaluation of the project. The aim of the evaluation was to provide an assessment of the effectiveness of project processes and delivery of project outcomes. The evaluation was conducted between March and June 2014.

2.1. About the WA Citrus Value Chain project

The WA Citrus Industry Strategic Plan 2010-2020 (hereafter the Strategic Plan) was developed in 2009 in consultation with a range of stakeholders from growing operations, industry research and development staff, market agents and retailers. Through the Strategic Plan, the WA citrus industry is embracing the value chain model, shifting its thinking towards the 'pull' of product through the value chain. It is also ensuring a collective approach between regional bodies, value chain stakeholders and the national coordinating body, Citrus Australia.

The WA VCC project aligns with the Strategic Plan, with the purpose to develop and maintain linkages between Fruit West, State and Federal Government, Citrus Australia and stakeholders of the citrus value chain in WA. The role of the Value Chain Coordinator (VCC) funded under the VCC project, is to support the implementation of national citrus projects in WA and other regionally specific activities to support the overall success of national and regional initiatives of Citrus Australia. This includes working towards the following key components of the Strategic Plan:

- **Market information:** Improve the flow of information through all levels of the supply chain to enable the orderly marketing of produce and increase WA share of the local market.
- **Domestic market development:** Facilitate the strategic development of WA domestic market.
- **Production:** Increase the sustainability and profitability of WA citrus growers through improvements in production techniques and access to new varieties and technologies.
- **Export market development:** Develop a long-term export market strategy to support the increased volumes of citrus produced in WA.
- **Communication:** Maintain effective and strong communication networks within the local industry and further develop networks and communication with the national and international industry.

The VCC project also contributes to linkages between citrus projects and initiatives across Australia and WA and undertakes or identifies opportunities for professional development in relation to value chain thinking and tools.

The VCC project is funded by Horticulture Australia Limited (HAL). It is delivered by the Department of Agriculture and Food WA (DAFWA) and reports to Fruit West, the primary contractor to HAL.

The VCC reports directly to a steering committee formed by Fruit West. Written reports are provided to the steering committee on a quarterly basis and to HAL on a six monthly basis. The Fruit West steering committee includes:

- The Chair of the Fruit West Citrus Leadership Group
- Executive Manager of Fruit West
- Project Manager of DAFWA Supply Chains for Fruit Industries and New Crops project
- Manager Market Information and Quality of Citrus Australia.

Project outcomes and targets

There are four key outcomes expected for the Project:

- Greatly enhanced WA industry cohesion and efficiency through a national category approach to market development
- Better relationships with industry bodies and government agencies, resulting in faster resolution of market issues and greater availability of resources and information for the WA citrus industry
- Improved communications throughout the citrus value chain with resultant improvements in efficacies being demonstrated
- Increased consumption of local fruit on the domestic market based on providing higher proportion of fruit at optimum maturity.

Linked to the above outcomes are three project targets:

- 90% of growers (by production area) aware of Australian Citrus Quality Standards and harvesting only once fruit have reached and/or exceeded these standards
- 70% of growers participating in crop forecasting activities
- 90% of market agents and major retailers of WA citrus products are engaged and offered information on the WA citrus season – improving market awareness of expected harvest timings and quality and assisting with ordering and promotion campaigns.

2.2. About this evaluation

A requirement of the funding of the WA VCC project is to conduct an evaluation. The aim of the evaluation was to benchmark current industry status against industry adoption targets and outcomes of the project. The evaluation addressed two key evaluation questions and associated sub-questions shown in Table 1 below.

Table 1. Key evaluation questions and sub-questions

Key evaluation questions (KEQs)	Sub-questions
KEQ1: What is the current state of the WA value chain with regards to understanding the offer of WA citrus, understanding and use of quality standards when harvesting and understanding and use of crop forecasting?	<ul style="list-style-type: none"> • What is the proportion of growers participating in crop forecasting activities? • What is the number of growers using quality testing and aware of testing options and standards required? • What is the level of knowledge of market agents and major retailers of harvest timings and quality of WA citrus? • How effective are the communication mechanisms of the VCC project? • To what extent are citrus growers and industry aware, involved and supportive of the VCC project?
KEQ2: To what extent has the VCC project impacted on the WA citrus value chain to increase domestic consumption of WA citrus fruit?	<ul style="list-style-type: none"> • Do WA growers and industry think that cohesion and efficiency has increased since 2011 in the WA citrus industry? • To what extent are there better relationships between WA citrus industry agencies due to the project? • To what extent is there better communication through the citrus industry value chain since the beginning of the project? • To what extent is there increased consumption of local fruit on the domestic market based on providing a higher proportion of fruit at optimum maturity because of VCC project activities?

3. Methodology

3.1. Data collection

Review of existing project documentation

Clear Horizon reviewed existing project documentation, including quarterly reports to Fruit West and six monthly reports to HAL.

Online survey

An online survey was developed using the online platform, SurveyMonkey. **Appendix 1** shows the survey for WA citrus growers. In designing and conducting the survey, Clear Horizon adhered to the DAFWA corporate policy on ‘Conducting and Recording Consumer Surveys’. The survey was designed to be as brief as possible, yet elicit the greatest amount of valid data.

A draft survey was piloted with a small group of five growers. The feedback provided by these growers was incorporated into the survey to ensure it was easy to understand and complete.

Sample for the survey

The web link to the survey was distributed via email to 60 citrus growers by the VCC. There were two follow-up emails and a newsletter article to encourage participation.

In total, there were 11 survey responses from citrus growers. Respondents covered a broad range of growing regions including Bindoon, West Gingin, Kununurra, Harvey, Gingin, Moora/Dandaragan and Carnarvon. The citrus grown by survey respondents included mandarins, Navel, Valencia, grapefruit and lemons and the number of trees in an orchard ranged from less than 500 to more than 10,000 (Figure 1).

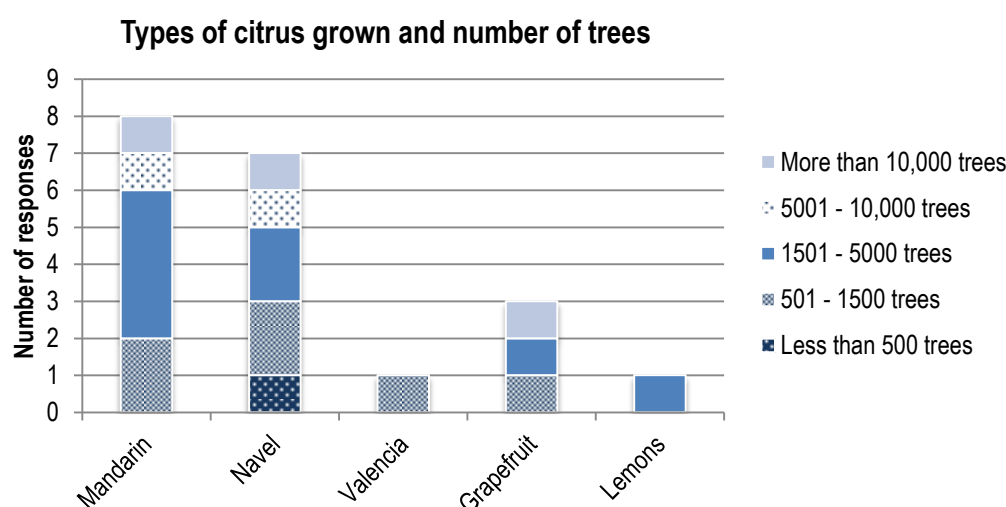


Figure 1. Number of trees and varieties grown by citrus growers who completed the survey

Semi-structured interviews

Not all the elements of the key evaluation questions (KEQs) could be addressed through the survey and therefore a more in-depth method of inquiry was required. Therefore, 21 semi-structured interviews were conducted with growers, market agents and agency/industry representatives.

Ten growers were interviewed including individuals from four small citrus orchards and five large citrus orchards (one grower did not indicate their orchard size) and the fruit grown included mandarins, lemons, limes, oranges, limes and grapefruit. The growers experience in the industry was varied with individuals interviewed indicating that had been in the industry anywhere from five to 36 years.

In addition, semi-structured interviews were conducted with three agency/industry representatives and eight market agents. Semi-structured interviews were designed around a series of open-ended questions, which were followed-up with additional questions generated from discussion.

Reliant on the social interaction between the researcher and interviewee, semi-structured interviews sought to understand the perceptions and experiences of those interviewed. To ensure that the same format and topics were covered with each interviewee, interview guides were created and followed by those conducting the interviews. The interview guides were driven by the KEQs (Table 1) and are provided in **Appendices 2 (growers), 3 (agency/industry representatives) and 4 (market agents)**.

3.2. Data analysis

Data from the review of project documentation, surveys and semi-structured interviews were collated and analysed against the KEQs by Clear Horizon. The quantitative data from the surveys was analysed in Microsoft Excel to produce descriptive statistics such as percentages or proportions of respondents answering questions in particular ways.

All qualitative data collected through interviews or surveys were thematically coded and entered into a matrix according to their relevance to the KEQs. The data were then analysed for key themes and patterns, and where relevant, significant convergence and divergence of findings was noted.

3.3. Limitations

Unfortunately the time for growers to respond to the online survey was during the peak harvest period and even though there was a good spread of survey respondents across citrus types, growing areas and size of orchard, there was a low response rate. This is a concern because the views of the non-respondents are potentially different from those who did respond (i.e. the responses are not representative of all growers).

Triangulation of the findings from semi-structured interviews and the survey showed similar themes. This helps to allay concerns about the small sample size from the survey and provides greater confidence in the findings overall. However, for reasons described above, the findings provide an indication of the perspectives of growers and do not represent the views of all growers across WA. Therefore, the findings from this evaluation should be viewed in conjunction with evidence from a range of research and other sources before making any strong generalisations.

4. Findings

4.1. KEQ1: What is the current state of the WA value chain with regards to understanding the offer of WA citrus, understanding and using quality standards when harvesting and understanding and using crop forecasting?

Key findings

- Growers value communication and extension activities such as field days and printed material and these are effective mechanisms for the VCC project to work with growers. However, the effectiveness of field days and printed material for communication was limited for market agents.
- Communication and engagement with market agents involved individualised meetings. None of the market agents interviewed mentioned the VCC as an important source of market information. However, it is likely that market agents consider information collectively and not from particularly individuals or projects.
- Most of the growers across the evaluation were aware of the WA internal quality standards and the Australian Citrus Quality Standards and most were harvesting only once fruit have reached the WA internal quality standards.
- A majority of growers involved in the evaluation were aware of the practice of crop forecasting using a counting frame. However, only a few said that they were using this technique. Most growers used other informal methods or relied on past experience.
- Market agents were aware of quality standards and crop forecasting, however they were not aware of the particular farm practices involved. Generally market agents do not consider crop forecasts to be accurate, although this did not usually pose a concern. Market agents were often satisfied with 'ball-park' figures for crop yield.

The main areas of focus for the VCC project are to deliver market information across all levels of the citrus supply chain and facilitate the development of the WA citrus market. The findings of this evaluation focus on these two aspects, specifically the effectiveness of the communication and extension activities (delivery of market information) and the level of awareness and adoption of the quality standards and crop forecasting practices across industry (development of the WA citrus market). The following sections provide the evaluation findings in relation to communication, extension, awareness and adoption of quality standards and crop forecasting.

Effectiveness of communication and extension activities

For the purposes of raising awareness and promoting farm practices and industry opportunities, the VCC is involved in a number of communication and extension activities. This includes articles in industry newsletters and magazines and presenting at grower field days and events. It also includes updating the DAFWA website with citrus production information.

The main publications that the VCC contributes to are Australian Citrus News, Fruit West Magazine, Fruit West newsletter and seasonal updates. The survey responses showed that these publications were valued by growers with the majority of survey respondents rating the publications as somewhat useful and very useful (Figure 2).

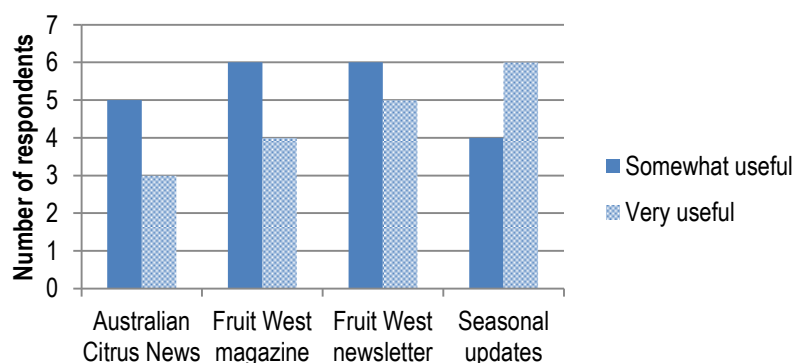


Figure 2. Grower ratings of the level of usefulness of four citrus publications

The growers interviewed also indicated they value these publications. It was evident that the Fruit West magazine contained useful and interesting information for growers. The articles in the magazine were considered relevant and practical. They also provide a good update about what is going on in the industry. The newsletter and seasonal updates were also mentioned as valuable and useful to growers.

I think [Fruit West communication] is pretty down to earth. It's usually a case study or somebody's experience. That's always handy. (Grower)

I think the magazine is great. It's got lots of really valuable information in it. The newsletter that comes out ... is also very good and the seasonal updates are also very timely. (Grower)

Most of the growers interviewed indicated that they preferred to receive information in printed form. The ease of accessing hard copy information when they had time made it appealing to growers. Some growers interviewed also indicated that they did not easily access information via the internet.

I like to sit and read something and not necessarily off the screen. I still prefer printed stuff, like in a booklet form. You can come back to it at any time you want to pick up for 10 or 15 minutes. You don't have to go through all the systems trying to find it on the computer. (Grower)

I don't get time to get onto the internet and that sort of thing. I just like to have something, either a brochure or pamphlet or booklet that I can sit back at night and read it. (Grower)

In comparison, growers who completed the online survey reported their preferred way to receive citrus industry information was via email or text message (the most commonly preferred option) closely followed by the internet. Of the 11 people who responded to the survey, 9 indicated that they had a smart phone.

The VCC also extends citrus market information and market development messages at grower field days. Most of the survey respondents had attended a field day in the last two years suggesting that field days are an effective mechanism for communicating with growers. A number of growers described field days as useful learning experiences.

Going to [field days] you learn a lot. Because you get [information on] new varieties, the stock, what they're doing and fertilisers, watering regimes, so you do learn a lot. (Grower)

If I had to pick out the one thing that was very relevant for us now, it's really the field days. They're very interesting, good contact with people, but very good technically. You'll pick up stuff on grafting, on chemical fertilisers, soil.... They're always very interesting. I don't think I've been to a bad day. (Grower)

The chance to network and have a look at the way things are done on other orchards was a key benefit of the field days for some growers.

What I get most out of field days, probably because of the way I tend to learn, is talking to the other growers and having a look at someone else's orchard. (Grower)

It is good to have the opportunity to talk to other growers. Good to compare other's orchards to yours. The more detailed information I tend to take in through reading. (Survey respondent)

However, it is important to recognise the limitations of field days. The findings suggest that the location and relevance of field days was a key factor in whether growers would attend. The survey results showed that the most common reason for not attending a field day was that it was not in their area or the perception that it was not relevant to them (Table 2).

Table 2. Reasons given for not attending a field day

Reason	Number of responses
The field days have not been in my area	3
The field days have not been relevant to me	2
I have had other commitments on the day of the field day	1
The field days are too expensive	1

The finding from survey respondents was reflected in the findings from interviews found that field days that were not held locally or when there was a perception that the topic was not relevant there was a barrier for growers attending.

Our problem is they don't hold [field days] locally. If they're not in the hills or at Harvey, to go up to Gingin and Bindoon is nearly a two day operation for us. (Grower)

We've had [a field day] a couple over the years, but the information was supplied by people from down south and it isn't applicable to us. We're completely different. (Grower)

One grower suggested that field days need to continue to cater to varying needs that growers have. For example, on grower said:

Need to continue to address the varied needs of our changing grower base. For example, large versus small, advanced versus new to industry and conventional versus alternative like organic, biological or other. (Survey respondent)

While growers' preferred information sources were field days and Fruit West publications, this was not the case for market agents. A market agent interviewed indicated that while he could see the value in the Fruit West magazine and field days for growers, they were not particularly useful for other members of the industry.

To be honest I kind of flick through [the Fruit West magazine]. It's probably great for growers. There might be something interesting or something I didn't know was going on, but as a general rule, I flick through it. I haven't attended the field days because they seem to be very grower focussed and really, I don't think my time is best invested in going. (Market agent)

It was recognised early in the VCC project that different communication and extension methods were required for market agents. As an alternative to group presentations at field days, the VCC organised pre and post season meetings with individual market agents, as well as market report emails and random visits to the Canning Vale Markets to increase the general awareness of the VCC and industry information. At the individual market agent meetings the overall performance against quality testing results (for fruit taken from their floor) and yield forecast information was used as a part of the discussion. In addition, following an incident in which there was a potential over supply of mandarins, discussions (with major retailers) have also included whether any change in purchasing of varieties was expected.

Although most of the market agents interviewed were aware of the VCC, none mentioned the individual pre and post season meetings or emails. Given the nature of their business, and their general comments about the value of information that has been generated by the project, it is likely that they consider all information they receive collectively in making market decisions. Market agents may not be conscious of the specific role that the VCC plays in collecting and providing information.

Awareness and adoption of practices

Quality standards

The WA citrus industry uses two types of quality standards, the WA internal maturity standards and the Australian Citrus Quality Standards (ACQS). The WA minimum internal maturity standards are enforceable standards set for different citrus types for juiciness, sugar content and acid ratio (Brix ratio). The enforcement of WA standards ensures that all citrus fruit produced in WA and sold on the fresh market meet the minimum standards.

The WA minimum standard is legislated and is reviewed and set annually by the industry and government. A penalty is applied for growers who do not meet the minimal standard. To help growers meet the minimum standard, Fruit West has provided a maturity testing program over the past three years. Pre-harvest tests are used by growers to determine maturity prior to picking. Post harvest testing is done by Fruit West when fruit reaches the wholesalers and retailers to assess the overall performance of WA fruit in the marketplace.

The ACQS have been established by Citrus Australia and are voluntary. The aim of the ACQS is to increase consumption by improving eating quality. Like the WA standards, the national standards recommend a minimum standard, however it is not mandated. Fruit is randomly tested at market to assess the extent to which fruit meets the minimum ACQS standards and the grower names and pass/fail test results are provided to Citrus Australia members.

The role of the VCC is to raise awareness and promote the adoption of the WA internal maturity standards and ACQS across the WA citrus industry. This involves communicating and extending

information in newsletters and at field days and reporting the maturity rates against the standards through email updates to growers, market agents and retailers. This evaluation showed that information about standards and standard test results is valued by market agents across WA.

As I said, the effort that's being put in at the beginning; maturity testing and the publishing of those results and just making a lot of noise about them is the greatest thing that's happened to the citrus industry. (Market agent)

The findings of the evaluation found that overall there was a high level of understanding and use of both the WA internal maturity standards and the ACQS for citrus quality by growers. Many of those interviewed indicated that they understood and utilised the quality standards when harvesting.

All of the growers who completed the online survey indicated that they knew of the WA standards and ACQS and the majority of growers indicated that they used quality standards to manage the quality of their crops (Figure 3).

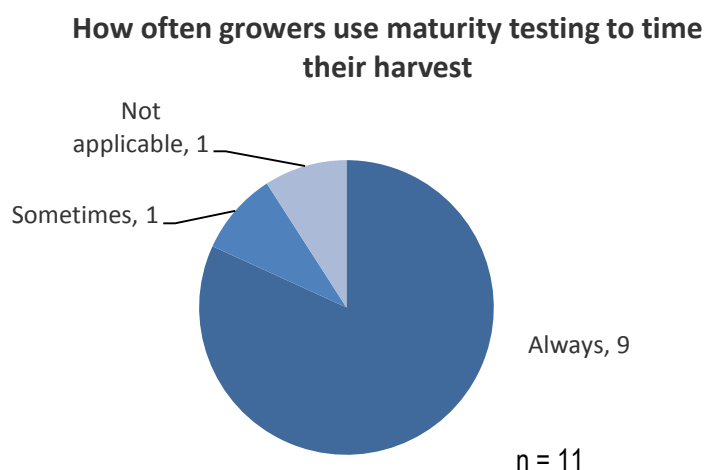


Figure 3. Number of growers who use maturity testing to time their harvest

The results shown in Figure 3 are supported by the findings provided by the VCC on the Fruit West testing program that show the number of pre-harvest tests (the test used by growers to time their harvest) conducted by Fruit West has steadily increased since 2011 as growers have become more aware of the program and its value (Figure 4).

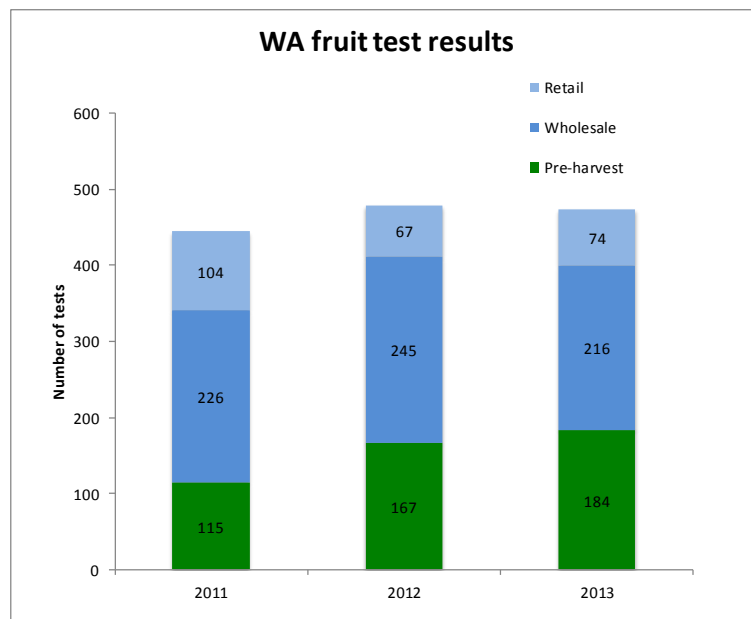


Figure 4. Number of Fruit West tests (pre-harvest, wholesale and retail tests) completed over three years

In addition, the majority of the growers interviewed indicated that they do maturity testing through Fruit West and a number of the larger growers mentioned that they are now doing their own testing.

We were going to do the free testing but I've gone ahead and bought my own burettes and pipettes and all the gear. I thought bugger that, we will do our own. (Grower)

Most growers interviewed and surveyed reported that they always use maturity testing to time their harvest. Figure 5 shows the average ranking for the different decision parameters when selecting the time to harvest where 7 is the highest and 1 is the lowest priority ranking. This figure shows that growers determine their harvest timing primarily on maturity test results, followed by what the crop looks like then weather conditions.

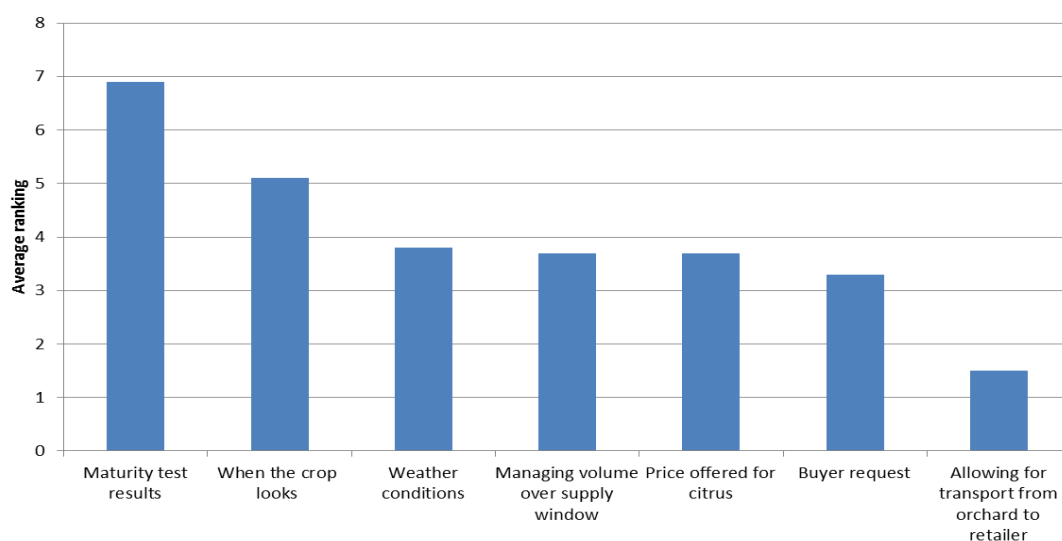


Figure 5. Priorities for determining timing of harvest (7 is the highest priority ranking and 1 is the lowest priority ranking)

The qualitative reasons given for maturity testing by survey respondents were:

Guesswork is not an option. (Survey respondent)

Knowledge of Brix, acidity and juice levels is important for decisions at harvest time. However the use of this information to produce "pass" and "failure" scores is unlikely to change growers' behaviour. Publication of the data is fine, red highlighting of failure scores is quite unacceptable. (Survey respondent)

The performance test data provided by the VCC project showed the performance of WA fruit post farmgate against the WA quality standards has increased from 2011 (Figure 6). However in 2013 the pass rate for post farmgate fruit showed there had been a marginal decrease compared with the previous year. This was suggested to indicate a difficult growing season where fruit can fail the standards because of low juice percentage, where as the focus to start harvest is based on sugar and acid generally.

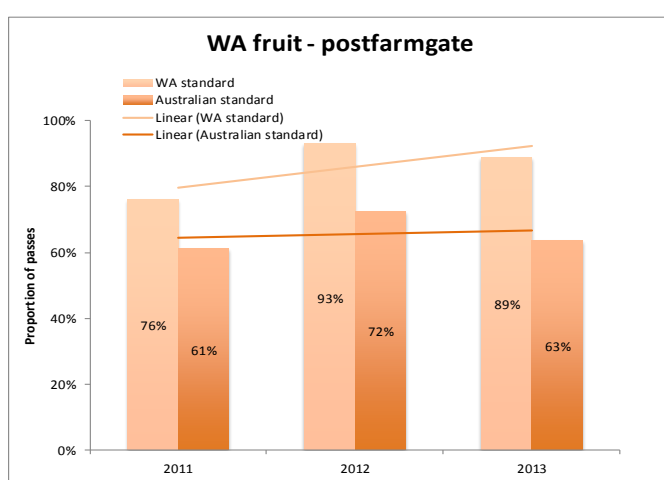


Figure 6. Percentage of WA fruit meeting WA and Australian standards over three years

The evaluation evidence suggests that there is an increasing trend in the adoption of maturity testing across the citrus industry. However, one agency/industry interviewee noted that not all of the growers in WA are currently meeting the maturity testing expectations. To maximise returns there is still room for improvement in meeting the Australian standards, especially given the relationship between meeting these standards and consumer preferences.

I know that there are still a couple of producers that aren't meeting [maturity testing] expectations. But a greater majority are and it's just a matter of trying to ensure that the remainder of that industry come forward and meet those requirements to benefit the whole industry. (Agency/industry group)

Interestingly, one market agent interviewed seemed unaware that there were citrus standards. This individual believed that growers do their own testing and they trust the growers' judgement.

There are no real standards in WA. The growers basically decide that and put some into a number 1 box and some into a number 2 box based on quality. I really take the information from the growers because they know their fruit the best. They do all the [Brix tests] on the farm. The growers worry about that and then they just tell us about it. (Market agent)

Citrus Crop Forecasting

Growers are encouraged to perform a crop forecast in summer to help with orchard management and again between January and March to estimate supply to market. Market agents are mainly interested in the results of the second crop forecasts for yield estimates.

The main methods of crop forecasting include experience, estimating the fruit count on one tree and multiplying it across the total number of trees in the orchard or using the counting frame technique. Figure 7 shows a counting frame in use. It takes growers approximately 45 minutes per block to estimate the yield using a counting frame.

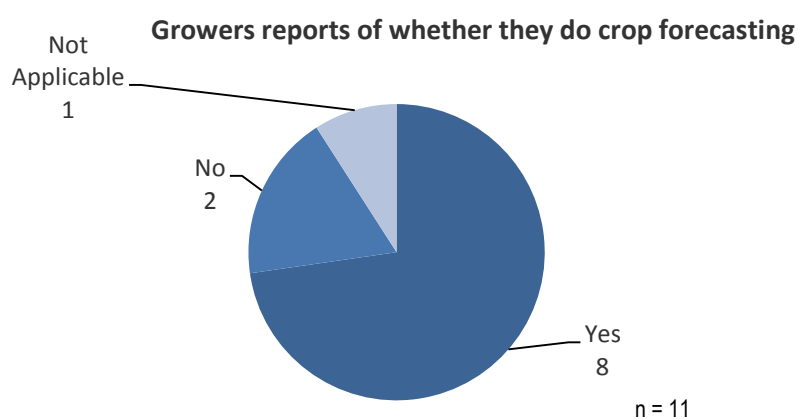
The counting frame technique is considered the most accurate by Citrus Australia. The VCC project has involved promoting the use of counting frames through articles in the Citrus newsletter and at field days. Over 30 counting frames were distributed in the 2013 growing season by the VCC project.



Figure 7. Measuring citrus crop yield using a counting frame²

This evaluation examined the extent to which WA citrus growers are undertaking crop forecasting. Most of the growers who completed the online survey indicated that they did undertake crop forecasting in some form (Figure 8). Of those who did not, one commented that this was because:

Seasonal conditions have meant we are certain how our fruit will develop. (survey respondent)



² Photo source: <https://www.agric.wa.gov.au/citrus-crop-forecasting>

Figure 8. Number of growers who report using crop forecasting

A number of the growers interviewed indicated that they while they undertake crop forecasting they do not use a standard procedure or method (i.e. a counting frame). For example, one grower said:

I don't use the square measure or anything like that. I just do it by eye basically and that seems to work quite well for me, so that's what I stick to. (Grower)

Many of these interviewees noted that they relied on their experience to make crop forecasts and noted that their estimates were reliable. This was echoed in the survey with some growers indicating they make crop yield estimates based on their own experience. Most growers interviewed knew about counting frames and some had been trained to use them. Some felt that they were more valuable to less experienced growers. For example:

The [VCC] project has organised field days so we have had experience and lessons of how to use the counting frame to do our crop forecasting. I must say, it's not something that we personally because our crop has been so intermittent and unknown. But I know that the other growers have. (Grower)

Eight growers who responded to the online survey indicated that they used a standard procedure or method to arrive at crop forecasts. Some growers interviewed indicated that they used a modified version of a counting frame or that they did crop forecasting in a systematic way, rather than an educated guess based on experience.

We count a quarter - about one hundred trees. We select at random about one hundred trees and count the amount of fruit on a quarter of each tree [and then make our estimate from that]. (Grower)

Some respondents did not feel that crop forecasting was particularly important. Some reasons given were that production has been fairly stable and because it did not impact on the crop yield which was the important thing. This sentiment was shared across the small and large growers.

I know I will be within five per cent this year of [our average yield]. We don't get many ups and downs. We have a pretty stable production. But because there are not very many trees, I know what we can produce, and we will produce. (Small grower)

The forecast is always visual. I don't get hung up on the forecast because you can only take what you've got and there is no point in worrying too much whether you have a heavy crop or a light crop or whatever you've got. (Large grower)

As already mentioned, one of the main purposes for the crop forecasting is that, when combined across the industry, it gives buyers and packing sheds an understanding of supply capacity. Packing shed logistics and marketing decisions require a good estimate of the yield and this helps to secure WA fresh produce in stores around the State.

One of the roles of the VCC project is to provide an industry wide crop yield forecast. This is collected from eight of the major orchards to estimate the volume of citrus types that will enter the market in the coming season. This information is communicated to growers and market agents through a 'Crop Forecast Report' sent via email to industry members and included in Citrus Australia's forecasting figures.

Most of the growers who were interviewed indicated that they do not share crop forecasting information with anyone else. A couple of interviewees advised they do provide information to market agents and the VCC, and one indicated that they alert their packing shed.

In comparison, of the growers who responded to the online survey only one individual noted that they do not share crop forecasting information with anyone else. Figure 9 below shows that growers commonly share forecasting information with market agents and packers and some also shared information with the VCC. One grower provides information to a retailer.

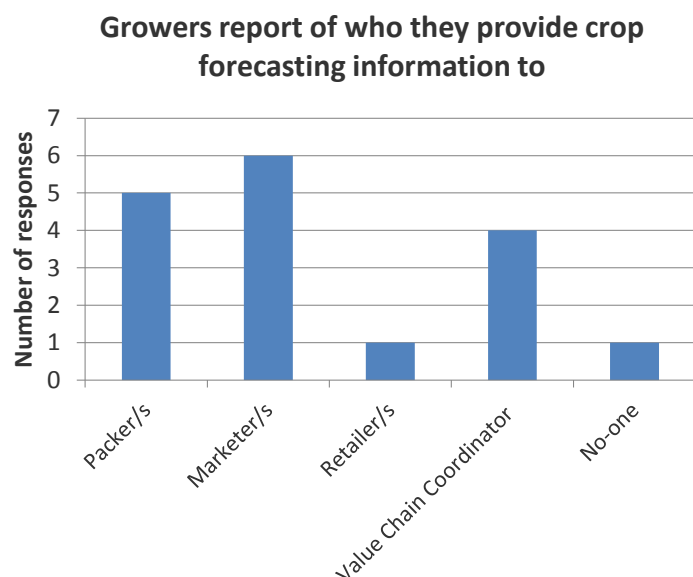


Figure 9. The number of respondents who report their crop forecasts to others

Some market agents interviewed believed that growers keep their crop forecasting information 'close to their chest'.

Look I don't have, no one has any faith in those figures at all. ... It's important to have an overall guide, just to see if it's bigger than last year, lower than last year. That's about all we need to know. ... They keep it commercial-in-confidence and I understand that. That doesn't worry us at all.... (Market agent)

4.2. KEQ2: To what extent has the VCC project impacted on the WA citrus value chain to increase domestic consumption of WA citrus fruit?

Key findings

- There have been enhancements in the WA citrus industry cohesion and efficiency as a result of the VCC project.
- There have been improvements in the communications throughout the citrus value chain with resultant improvements in efficiencies.
- The VCC project has facilitated better relationships across the value chain.
- There is some evidence that market agents and major retailers of WA citrus products are engaged and offered information on the WA citrus season through the VCC project and there is improved market awareness of expected harvest timings and quality and assisting with ordering and promotion campaigns.

There has been a shift in the citrus industry across Australia from a 'push' to a 'pull' through the value chain. Sustainable value chains involve collaborative relationships, effective flow of information, rational decision making and effective resource allocation that benefits all the players across the value chain as a whole³.

As such, the WA citrus industry is embracing the value chain model to increase the domestic consumption of WA citrus fruit. This has been demonstrated in the establishment of the VCC project which is a shift away from a focus on production issues and servicing growers under the traditional 'Development Officer' model, towards a greater emphasis on markets and marketing activity. A key focus of the VCC project is to improve industry cohesion and efficiency throughout the value chain and improve relationships and communication between industry partners. The findings of this evaluation focused on these aspects.

Potential influence on consumption

Although evidence provided by the VCC project suggests that there has been little change to the volume of consumption of WA fruit in the domestic market over the past three years, incremental value chain improvements are likely to influence domestic fruit consumption over time. For example, this evaluation suggest that there have been improvements in industry cohesion and efficiency and there are more effective relationships and communication between industry partners (see further evidence in the following sections). It may be some time before these improvements are reflected in the market but these improvements suggest a positive step in the right direction.

³ Fearne, A. 2009. Sustainable Food and Wine Value Chain. Government of South Australia

Improved industry cohesion

It is evident that the citrus industry has become more cohesive since 2011 and the VCC project has contributed to this. However, it is difficult to isolate the contribution of the project in light of a number of other factors. For example, the transition of the Citrus Leadership Group to the new industry group – the WA Citrus Improvement Group. Even so, many of the growers and agency/industry interviewees felt that the VCC project has played an important role in facilitating these improvements.

I think there have been improvements [in industry cohesion] for sure, even though we started from a pretty good base. (Agency/industry group)

[Industry cohesion] is fantastic. You couldn't fault it. It's difficult to say [if it's because of the VCC project]... I guess [the VCC project] has just contributed to it. It helps to continue with that feeling that we're all trying to do the same thing. (Grower)

A market agent noted that an important role for the VCC project is providing an independent body that can facilitate cohesion across the industry. The citrus industry is relatively small and most of the major players in the industry know each other. Although the relationships are professional and friendly, this is some competitive tension. Because the VCC project is independent it can provide an unbiased appraisal of industry needs and issues and can act as a conduit between market agents and growers.

An independent body from the marketers who is trying to bring cohesion to the industry through the growers approach, I think is a good thing. (Market agent)

Changes in industry composition from small family orchards to large enterprises provide challenges for industry cohesion and efficiency. Some growers felt this shift in industry composition has meant that there is a greater focus on providing services and support to the major growers and the needs of the smaller orchards are now being overlooked.

Well, if you're a big grower you get all the attention. Little growers like me have never had a visit from Fruit West or anyone else. ...We don't get any attention at all and sometimes the small growers would probably learn a lot more, we do a lot more trial work than a lot of the big guys. But everything is focused on the big growers, your 10,000 to 15,000 trees. (Grower)

Others have recognised this challenge but feel that the VCC has assisted in ensuring that industry cohesion has been maintained.

It's been a difficult few years.... Our industry has changed. When we first got involved there was a lot of small growers that all banded together. The size of the growers has changed. There are far more big businesses creating orchards which has the potential to cause an issue for cohesion. But certainly having the [VCC] project to always keep us focused certainly contributes to the fact that we haven't lost that sense of cohesion at all. (Grower)

Improved communication and relationships across the industry

There was evidence that communication across the industry has improved and there are more open and trusting relationships as a result. A market agent interviewee described how communication has improved over recent years and growers and market agents are having more honest dialogue about the volume of fruit and time of maturity which has led to a win-win situation.

It's taken a long time to develop trust, but at the end of the day you need trust between the merchant and the grower so that you can go forward. We've actually got better results this year by waiting an extra week [to market the fruit] and the price has stayed up. (Market agent)

It is difficult to attribute changes to the VCC project. A number of interviewees mentioned that communication had improved. However it is not clear the extent to which these changes were influenced by the project.

As far as positive things I feel as a retailer we're working a bit closer in with the industry now, but I'm not sure whether this project has had anything to do with it in particular. (Market agent)

In contrast, some interviewees felt that the VCC project was instrumental in influencing improvement in communication across the industry. For example:

I think the communication within the value chain is a key thing that's come out of this project since 2010. I see that as the most important thing. I know a lot of the market agents are asking for estimates of varieties which [the VCC] has been forwarding onto them. So [communication between growers and suppliers] is definitely happening when it wasn't happening at all in the past. (Agency/industry group)

Some people indicated that the VCC plays an important role in facilitating communication between different stakeholders in the industry.

[The VCC is] doing a good job of staying out of the politics and maintaining live communication. [The VCC] is the linkage between WA industry and what's going on in Australia. [The VCC's] involvement in lots of the different forums, whether they be marketing or growing, brings information and contacts and builds networks that are really useful to WA growers. (Agency/industry group)

One grower indicated that while there has been an increase in the amount of communication received, most of it is not relevant to small growers.

I've noticed there's been more contact with Citrus Australia but it's not up our alley. That's the big end of town and we're not in that game. It's just not relevant. I'm not opposed to it. If I was one of the bigger players, I'm certain I would see the benefit for it and recognise the need for it. (Grower)

A market agent interviewed believed that growers were not providing specific information to them because growers lack trust in the market agents believing that they will use information against the industry to drive the price down. This suggests that although there have been improvements in industry communication and stronger relationships across the industry, there is still further progress to be made.

Sometimes [growers] are nervous to provide [crop yield] information because they feel that it gets used against the industry to drive the price down. But usually it's quite the reverse, because if we know where the peaks of volume are, we know when we need to plan promotional activity to take care of the volume. What tends to happen now is that we don't understand it, we end up not planning the promotions at the right times and then when the fruit is available in good volume we haven't planned around it... Then there's a reaction in price and chasing demand to fill the volume. They end up driving the price down whether it's in the markets or the system or wherever it is. Then they end up probably worse off. If we understood the [crop yield] information more, we would know what sorts of volumes that are coming through. We would plan around it and make sure that we've got the right activity in place to take care of the volume. (Market agent)

Improved industry efficiency

Industry efficiency is described as having operational processes in place for the early identification of issues and fast implementation of resolutions and actions. In other words, less time is wasted in establishing problems and there is no duplication of effort when resolving issues. Having industry efficiency is the result of having good industry cohesion, effective communication and positive relationships between industry partners.

The evaluation found there had been improvements in industry efficiency in the WA citrus value chain as a result of the VCC project. Some of the interviewees felt that the work of the VCC was important in improving overall industry efficiency.

Yes, definitely, without a doubt [industry efficiency has improved]. To have somebody there who's constantly putting all the ducks in a line and making sure that things are done on time. (Grower)

There were a number of cases described by interviewees where improved communication along the value chain had led to improvements in industry efficiency. For example, last year yield forecasting focused on total navels and the major varieties of mandarins. The supermarket chains were in the process of purchasing mandarins from interstate, unaware that a large volume of WA fruit was about to enter the market. Once the situation of a potential over supply became apparent, negotiation between buyers and market agents reached an arrangement for the sale of WA Hicksons into the domestic market without much impact on price.

As a result of good industry cohesion and effective communication the situation was well managed and important lessons learnt. There are now more varieties covered in yield forecasting from the VCC project. In addition, this information is now incorporated into the pre-season interviews and there is greater dialogue between market agents and growers on changing consumer demands, which may include new variety choices. There is recognition that growers need a several years to change to new varieties and advanced warning is important to ensure a smooth transition.

There were some interviewees who suggested that industry efficiency could be improved. This suggests that although there has been some success in improving industry efficiency, there is still some development required.

[Crop forecasting] is really quite important and that's probably one of the areas of efficiency we could improve. That communication, letting the market agents and the retailers know what we've got coming and getting those numbers right by doing the forecasting [is important]. (Agency/industry group)

I'm sure [communication about testing results] happens at a higher level with [Fruit West], but that's too slow and too irrelevant for us. We need that instant communication back when stuff is tested. (Market agent)

5. Recommendations

It appeared from the evaluation findings that the VCC project was effective in acting as a transition from a traditional development officer to a value chain coordinator role. The activities undertaken by the current project covered both extension of farm practices and market development activities. However, it is clear from the findings that further work is required in the area market development and provision of market information. Although there had been improvements in industry cohesion and efficiency resulting from improved communication across the industry and stronger relationships between industry partners, there is still a need for improvements in this area.

Recommendation 1

It is recommended that a future VCC project employs a more targeted approach to industry and market development that strikes a balance between providing development support to growers and coordinating market development activities. Market development activities could include undertaking an analysis of effective communication tools suitable for market agents e.g. a 'market' specific newsletter, as well as holding combined industry events that facilitate better communication and relationship building across the value chain.

In addition, there was a general lack of awareness the VCC project's overall objective in shifting the focus from a 'push' to a 'pull' through the citrus value chain. It is important for the growth of the industry overall that all stakeholders are aware of and see the benefits in this shift in focus.

Recommendation 2

It is recommended that prior to the commencement of a future VCC project, that Fruit West and the WA Citrus Improvement Group implement a communication strategy informing all industry participants of the shift in the focus and resources towards a whole of value chain model.

There was no baseline provided for the VCC project objectives and adoption targets and no measurements established prior to commencing the project. In addition, the alignment between the outputs, outcomes and adoption targets was not clear. This made it difficult to evaluate the overall effectiveness of the project.

Recommendation 3

It is recommended that a future VCC project involve careful consideration in the development of objectives and targets that are shared between HAL, Fruit West and DAFWA and where possible, establish appropriate baselines either prior to or at commencement of the project. In addition, to ensure that the necessary data is collected for monitoring and evaluating progress against the objectives or targets, a monitoring and evaluation plan is developed along side the project plan at commencement of the project.

Appendix 1: Grower survey

WA Citrus Value Chain Project Evaluation_ Questionnaire for Growers
Introduction
What is the WA Citrus Value Chain project?
<p>The WA Citrus Value Chain project aims to develop and maintain linkages between Fruit West, Government, Industry and Citrus Australia. The role of the Value Chain Coordinator, funded under this project is to support the implementation of national citrus projects and WA regionally based activities of Citrus Australia. This includes working towards key components of the WA Citrus Industry Strategic Plan 2010 – 2020 developed by the WA citrus industry in 2009:</p>
<ul style="list-style-type: none">• Market information• Domestic market development• Production• Export market development• Communication
<p>The project also contributes to linkages between citrus projects and initiatives across Australia and WA and undertakes or identifies opportunities for professional development in relation to value chain thinking and tools.</p>
Evaluation of the project
<p>The project is being evaluated by Clear Horizon WA, a consulting company. The evaluation aims to benchmark current industry status against adoption targets and outcomes of the project.</p>
<p>To help evaluate the project and provide feedback on developments in the citrus industry in WA, the evaluation team are seeking input from growers, via this questionnaire.</p>
What do I need to do?
<p>The questionnaire should take approximately 15 minutes to complete and focuses on:</p>
<ul style="list-style-type: none">• Participation in crop forecasting• Experiences of quality testing• Perspectives on how the industry is working• Communications between growers and industry organisations• Some demographic information
How will my information be used?
<p>The responses to this questionnaire will provide evidence for the evaluation.</p>
<p>Closing date Wednesday 4th June 2014.</p>
1. I understand the information above and would like to continue
<p><input type="radio"/> Yes</p>
<p><input type="radio"/> No</p>

WA Citrus Value Chain Project Evaluation _ Questionnaire for Growers

Crop Forecasting

Finding out about your involvement in crop forecasting so far.

2. Do you do crop forecasting?

- ☐ Yes
- ☐ No
- ☐ Don't know
- ☐ Not Applicable

3. Who do you provide crop forecasting information to? (please select all that apply)

- ☐ Packer/s
- ☐ Marketer/s
- ☐ Retailer/s
- ☐ Value Chain Coordinator (i.e. Bronwyn Walsh)
- ☐ I don't provide the information to anyone
- ☐ Don't know

Other (please specify)

Crop Forecasting

Finding out about your involvement in crop forecasting so far.

4. Which of the following methods do you use to arrive at your crop forecasts? (please select the most frequently used method)

- ☐ A standard procedure/method (e.g. a counting frame)
- ☐ An estimate of crop yield based on my own experienced judgement (i.e. not using a standard method)
- ☐ A consultant made the assessment
- ☐ I don't know

Other (please specify)

Crop Forecasting

Finding out about your involvement in crop forecasting so far.

WA Citrus Value Chain Project Evaluation _Questionnaire for Growers

5. Do you intend to continue crop forecasting?

- ☐ Yes
- ☐ No
- ☐ Maybe
- ☐ Don't know
- ☐ Not applicable

6. If you don't do a crop forecast, please give reasons why not

Quality Testing

Finding out about your use and experience of quality testing.

7. Are you aware of the Citrus Quality Standards?

- ☐ Yes
- ☐ No
- ☐ Don't know
- ☐ Not applicable

8. Do you use the Australian Citrus Quality Standards to manage the quality of your citrus crops?

- ☐ Yes
- ☐ No
- ☐ Don't know
- ☐ Not applicable

9. Do you use the WA Citrus Quality Standards to manage the quality of your citrus crops?

- ☐ Yes
- ☐ No
- ☐ Don't know
- ☐ Not applicable

WA Citrus Value Chain Project Evaluation _Questionnaire for Growers

10. Do you use maturity testing results to time your harvest? (please select one)

- ☐ Always
- ☐ Sometimes
- ☐ Never
- ☐ Don't know
- ☐ Not applicable

Please give reasons for your answer

Quality Testing

Finding out about your use and experience of quality testing.

11. Of the following who usually does your maturity testing? (select one)

- ☐ I do it myself
- ☐ One of my employees
- ☐ A testing contractor
- ☐ Fruit West
- ☐ Marketer
- ☐ I don't know

Other (please specify)

Quality Testing

Finding out about your use and experience of quality testing.

WA Citrus Value Chain Project Evaluation Questionnaire for Growers

12. Most of the time which of the following do you consider when timing your harvest? (rank in order of priority)

<input type="text"/>	Weather conditions
<input type="text"/>	Price offered for citrus
<input type="text"/>	Allowing for transport from orchard to retailer
<input type="text"/>	When the crop looks ready
<input type="text"/>	Maturity test results
<input type="text"/>	Buyer request
<input type="text"/>	Managing volume over supply window

Communication

We'd like to know about how communication happens in your industry and whether or not this suits you.

13. Are you a member of Citrus Australia?

- ☐ Yes
☐ No
☐ Don't know
☐ Not applicable

14. Do you receive the following items? (select all that apply)

- ☐ Australian Citrus News
☐ Fruit West magazine
☐ Fruit West newsletter
☐ Seasonal updates

Other (please specify)

15. How would you rate the usefulness of the information you receive in the following?

	Very useful	Somewhat useful	Not useful	Useless	Not applicable/don't know
Australian Citrus News	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fruit West magazine	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fruit West newsletter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Seasonal updates	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

WA Citrus Value Chain Project Evaluation _ Questionnaire for Growers

16. Have you attended a citrus field day in the last two years?

- ☐ Yes
☐ No
☐ Not applicable
☐ Don't know

Communications

We'd like to know about how communication happens in your industry and whether or not this suits you.

17. Do you have any general feedback on the field days you attended?

Communications

We'd like to know about how communication happens in your industry and whether or not this suits you.

18. If you answered no, please select any of the following reasons why not (select all that apply)

- ☐ The field days have not been in my area
☐ The field days have not been relevant to me
☐ I have had other commitments on the day of the field day
☐ The field days are too expensive
☐ I do not like attending field days
☐ I get my citrus information elsewhere

Other (please specify)

Communication

We'd like to know about how communication happens in your industry and whether or not this suits you.

WA Citrus Value Chain Project Evaluation _ Questionnaire for Growers

19. Where do you get most of your citrus information from? (please select one from the list below)

- ☐ DAFWA
- ☐ Fruit West
- ☐ Citrus Australia
- ☐ WA Citrus Industry Group

Other, please specify

20. Of the following what is your preferred way to receive citrus industry information? (rank in order of preference)

<input type="text"/>	In person
<input type="text"/>	By phone
<input type="text"/>	By email or text message
<input type="text"/>	In the post
<input type="text"/>	Via the internet

21. Do you have a smart phone (i.e. iPhone or similar)?

- ☐ Yes
- ☐ No
- ☐ Don't know
- ☐ Not applicable

A bit about you

WA Citrus Value Chain Project Evaluation Questionnaire for Growers

22. What types of citrus are grown in your citrus business and how many trees do you grow? (choose all that apply)

	No trees	Less than 500 trees	501 - 1500 trees	1501 - 5000 trees	5001 - 10,000 trees	More than 10,000 trees
Mandarin	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Navel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Valencia	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Grapefruit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lemons	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Limes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tangelo	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Other (please specify)

23. Which of the following best describes your production region? (select all that apply)

- ☐ Harvey
- ☐ Gingin
- ☐ West Gingin
- ☐ Moora/Dandaragan
- ☐ Camarvon
- ☐ Kununurra
- ☐ Chittering
- ☐ Bindoon
- ☐ Perth Hills
- ☐ South West

Other (please specify)

24. Which of the following best describes your role?

- ☐ An owner of a citrus business
- ☐ A member of a family owned citrus business
- ☐ The manager of a citrus business
- ☐ A staff member of a citrus business
- ☐ I don't work in a citrus business

Other (please specify)

WA Citrus Value Chain Project Evaluation_ Questionnaire for Growers

25. Is there any additional information you would like to provide?

Conclusion

Thank you for taking the time to complete this questionnaire. If you would like any further information on the evaluation please contact the evaluation team via email: carina@clearhorizon.com.au

Appendix 2: Semi-structured interview questions for Citrus growers

Before you begin the interview you need to do the following things:

- Ethics and confidentiality – how your data will be used
- Sign a consent form
- Tell interviewee will go for 0.5-1 hours
- Approval for recording the interview to help us to take accurate notes.

Background for the interviewer

The purpose of WA Citrus Value Chain project is to develop and maintain linkages between Fruit West, Government, Industry and Citrus Australia. The role of the Value Chain Coordinator, funded under this project is to support the implementation of national citrus projects and WA regionally based activities of Citrus Australia. This includes working towards key components of the WA Citrus Industry Strategic Plan 2010 – 2020 developed by the WA citrus industry in 2009:

- **Market information:** Improve the flow of information through all levels of the supply chain to enable the orderly marketing of produce and increase WA share of the local market.
- **Domestic market development:** Facilitate the strategic development of WA domestic market.
- **Production:** Increase the sustainability and profitability of WA citrus growers through improvements in production techniques and access to new varieties and technologies.
- **Export market development:** Develop a long-term export market strategy to support the increase volumes of citrus produced in WA.
- **Communication:** Maintain effective and strong communication networks within the local industry and further develop networks and communication with the national and international industry.

The VCC also contributes to linkages between citrus projects and initiatives across Australia and WA and undertakes or identifies opportunities for professional development in relation to value chain thinking and tools.

The aim of this evaluation is to understand the effectiveness the Project to ensure that the Project meets the expectations of its stakeholders and funders. The evaluation will also ensure that outcomes of the project are being met.

This interview will provide evidence for the evaluation. We will use what you say along with information provided by a range of other people and project documentation. Please let us know if you do not want your organisation or name associated with any quotes or information about the project. Also see our confidentiality and ethics statement for further information.

Warm up questions

1. **Can you tell me a bit about your citrus growing business?**
 - 1.1. What type of citrus do you grow?
 - 1.2. Approximately how many trees do you grow?
 - 1.3. How long have you been growing citrus fruit?
 - 1.4. What is your role in the business? (Business manager, owner etc)
2. **Can you tell me about what you know about the project?**
 - 2.1. Were you involved in the development of the project or the early stages of its set up?
 - 2.2. Have you been to any of the Citrus Industry events run by or receive information produced by the VCC?
 - 2.3. Have you heard other people talk about the project or read about it through the media or on websites?

Impact questions: What was the impact of the project?

3. **If you know about the project can you think of any outcomes/changes (either positive or negative) that you have seen or heard from the Project?**
 - 3.1. Can you describe some of these things in a little more detail?
 - 3.2. Were there any changes in terms of:
 - 3.2.1. Improving market information
 - 3.2.2. Facilitating the strategic development of WA domestic market
 - 3.2.3. Helping to improve production techniques or access to new production technologies
 - 3.2.4. Facilitating long-term export market strategies
 - 3.2.5. Improving communication networks
4. **Of these outcomes, which one do you think is the most important/significant?**
 - 4.1. What has changed?
 - 4.2. What was it like before?
 - 4.3. What was it like afterwards?
 - 4.4. Why did you say that this was the most important outcome/change?
5. **Were there any negative outcomes?**
 - 5.1. Please tell me about these.

Practice change – grower participating in crop forecasting activities (KASA)

6. Can you tell me a bit about how you estimate your crop yield prior to picking?

- 6.1. Do you provide a crop forecast for the season?
- 6.2. What did you do to arrive at your crop forecast?
 - 6.2.1. Do you usually use a counting frame?
 - 6.2.2. Did you use a consultant to do the assessment?
 - 6.2.3. Do you intend to continue with crop forecast?

7. Who do you provide that information to?

Practice change – quality testing (KASA)

8. Can you tell me about what you know about of the Australian Citrus Quality Standards?

- 8.1. Do you use the Standards to manage the quality of your citrus fruit?
- 8.2. Do you use any other quality standards? If yes – what are they

9. Do you regularly use maturity testing?

- 9.1. Why or why not?
- 9.2. If yes, who does your maturity testing?
- 9.3. How do you use the results?

10. Is there anything that stops or would stop you from doing maturity testing?

E.g. Cost, availability of people do to the testing, time,

11. Apart from maturity testing, is there anything else that influences when you harvest?

Industry cohesion and efficiency

Part of the role of the Value Chain Coordinator is to improve industry cohesion and efficiency.

1. How would you describe the WA citrus industry cohesion?

- 1.1. Do you think the citrus industry is working better together since this project?
- 1.2. Do you think the Value Chain Coordinator helps with industry cohesion?
- 1.3. Can you describe any differences?

2. Do you think this had made the industry more efficient?

- 2.1. In what ways

Communication

3. Are you a member of Citrus Australia?

3.1. Why or why not?

4. Do you receive FW newsletter or magazine?

4.1. Can you tell me about how useful you think the publications are?

4.2. Is there anything that you can think of that could be improved?

5. Do you receive citrus information from sources other than Citrus Australian, Fruit West, or DAFWA?

5.1. If yes, can you please specify?

6. How do you prefer to receive citrus industry information?

E.g. email, text message, in person, combination of the above

7. The Value Chain Coordinator project also runs industry field days, I was wondering if you can remember attending a field day in the last two years?

7.1. If yes, what can you tell me about it – did you find it a useful way to get information

7.2. If no, is there a particular reason why not? E.g. the field days have not been in my area, they have not been relevant to me, they are too expensive, don't like attending field days

Appendix 3: Semi-structured interview questions for agencies

Before you begin the interview you need to do the following things:

- Ethics and confidentiality – how your data will be used
- Sign a consent form
- Tell interviewee will go for 0.5-1 hours
- Approval for recording the interview to help us to take accurate notes.

Background for the interviewer

The purpose of WA Citrus Value Chain project is to develop and maintain linkages between Fruit West, Government, Industry and Citrus Australia. The role of the Value Chain Coordinator, funded under this project is to support the implementation of national citrus projects and WA regionally based activities of Citrus Australia. This includes working towards key components of the WA Citrus Industry Strategic Plan 2010 – 2020 developed by the WA citrus industry in 2009:

- **Market information:** Improve the flow of information through all levels of the supply chain to enable the orderly marketing of produce and increase WA share of the local market.
- **Domestic market development:** Facilitate the strategic development of WA domestic market.
- **Production:** Increase the sustainability and profitability of WA citrus growers through improvements in production techniques and access to new varieties and technologies.
- **Export market development:** Develop a long-term export market strategy to support the increase volumes of citrus produced in WA.
- **Communication:** Maintain effective and strong communication networks within the local industry and further develop networks and communication with the national and international industry.

The VCC also contributes to linkages between citrus projects and initiatives across Australia and WA and undertakes or identifies opportunities for professional development in relation to value chain thinking and tools.

The aim of this evaluation is to understand the effectiveness the Project to ensure that the Project meets the expectations of its stakeholders and funders. The evaluation will also ensure that outcomes of the project are being met.

This interview will provide evidence for the evaluation. We will use what you say along with information provided by a range of other people and project documentation. Please let us know if you do not want your organisation or name associated with any quotes or information about the project. Also see our confidentiality and ethics statement for further information.

1. **Can you tell me about what you know about the project?**
 - 1.1. Were you involved in the development of the project or the early stages of its set up?
 - 1.2. Have you heard other people talk about the project or read about it through the media or on websites?
 - 1.3. Of the activities you are aware of that the project does, can you tell me what works well and what improvements you could suggest.
2. **What role does your agency play in the project (how have you been involved)?**
 - 2.1. What are the links between your agency and the VCC?

Better relationships with industry bodies

3. **Do you think there is a better relationship between agencies (DAFWA, Fruit West, Citrus Australia) since the project?**
 - 3.1. Why or why not?
 - 3.2. How has the project helped in building better relationships (if at all)?
 - 3.3. How could the project help more?
4. **Can you think of an example where there are effective relationships which have resulted from the project?**
 - 4.1. What did the project do to facilitate these relationships?

Industry cohesion and efficiency

Part of the role of the Value Chain Coordinator is to improve industry cohesion and efficiency.

1. **How would you describe industry cohesion?**
 - 1.1. Do you think the citrus industry is working better together since this project?
 - 1.2. Can you describe any differences?
 - 1.3. What do you think could be improved? How?
2. **Do you think that industry cohesion had made the industry more efficient?** (this could mean information flows are quicker, decisions are quicker)
 - 2.1. In what ways?
3. **Do you think that the Value Chain Coordinator has contributed to making the industry more efficient?**
 - 3.1. In what ways?

Need for the project

5. **What value do you think the project has for the citrus industry overall?**
 - 5.1. What difference do you think it would make to the citrus industry if the project didn't exist?
 - 5.2. In what ways, if any, does this project add value to the work of other agencies?

Practice change – quality testing

6. **Do you think that WA citrus growers understand how to estimate their crop yield?**
 - 6.1. What methods do you think are commonly used? E.g. counting frame, past experience
 - 6.2. Do you know of they provide a crop forecast to someone? E.g. a market agent, to Bronwyn
7. **Do you think that WA citrus growers are aware and use of the Australian and WA Citrus Quality Standards?**
 - 7.1. Why or why not?
 - 7.2. Do you think there any barriers
 - 7.3. Do you think there are any other quality standards that they use?
8. **Are you aware of how many citrus growers have undertaken maturity testing?**
 - 8.1. And what percentage of those passed the test?
 - 8.2. is that about the same, more or less than last season?
 - 8.3. Is there a trend? Why or why not?
9. **Do you have any thoughts about why growers do or don't do maturity testing?**
10. **Do you know if they report that information to anyone and how the information is used?**

Impact questions: What was the impact of the project?

11. **If you know something about the project can you think of any outcomes/changes (either positive or negative) that you have seen or heard from the Project?**
 - 11.1. Can you describe some of these things in a little more detail?
 - 11.2. Were there any changes in terms of:
 - 11.2.1. Improving market information
 - 11.2.2. Facilitating the strategic development of WA domestic market
 - 11.2.3. Helping to improve production techniques or access to new production technologies
 - 11.2.4. Facilitating long-term export market strategies
 - 11.2.5. Improving communication networks
12. **Of these outcomes, which one do you think is the most important/significant?**
 - 12.1. **What has changed?**
 - 12.2. What was it like before?
 - 12.3. What was it like afterwards?
 - 12.4. **Why did you say that this was the most important outcome/change?**
13. **Were there any negative outcomes?**
 - 13.1. Please tell me about these.

Appendix 4: Semi-structured interview questions for market agents/major retailers

Before you begin the interview you need to do the following things:

- Ethics and confidentiality – how your data will be used
- Sign a consent form
- Tell interviewee will go for 0.5-1 hours
- Approval for recording the interview to help us to take accurate notes.

Background for the interviewer

The purpose of WA Citrus Value Chain project is to develop and maintain linkages between Fruit West, Government, Industry and Citrus Australia. The role of the Value Chain Coordinator, funded under this project is to support the implementation of national citrus projects and WA regionally based activities of Citrus Australia. This includes working towards key components of the WA Citrus Industry Strategic Plan 2010 – 2020 developed by the WA citrus industry in 2009:

- **Market information:** Improve the flow of information through all levels of the supply chain to enable the orderly marketing of produce and increase WA share of the local market.
- **Domestic market development:** Facilitate the strategic development of WA domestic market.
- **Production:** Increase the sustainability and profitability of WA citrus growers through improvements in production techniques and access to new varieties and technologies.
- **Export market development:** Develop a long-term export market strategy to support the increase volumes of citrus produced in WA.
- **Communication:** Maintain effective and strong communication networks within the local industry and further develop networks and communication with the national and international industry.

The VCC also contributes to linkages between citrus projects and initiatives across Australia and WA and undertakes or identifies opportunities for professional development in relation to value chain thinking and tools.

The aim of this evaluation is to understand the effectiveness the Project to ensure that the Project meets the expectations of its stakeholders and funders. The evaluation will also ensure that outcomes of the project are being met.

This interview will provide evidence for the evaluation. We will use what you say along with information provided by a range of other people and project documentation. Please let us know if you do not want your organisation or name associated with any quotes or information about the project. Also see our confidentiality and ethics statement for further information.

Warm up questions

4. Can you tell me about what you know about the project? Or what Bronwyn Walsh, the co-ordinator (VCC), does. *(Bronwyn provides beginning and end of season review – contacts them all and lines up appointments to ask – what are their impressions of the season, any issues, have they increased sales – how are sales going?)*
 - 4.1. Were you involved in the development of the project or the early stages of its set up?
 - 4.2. Have you been to any of the Citrus Industry events run by or receive information produced by the VCC?
 - 4.3. Have you heard other people talk about the project or read about it through the media or on websites?
 - 4.4. Of the activities you are aware of that the project does, can you tell me what works well and what improvements you could suggest.

Level of knowledge in market agents and major retailers of harvest timings and quality of WA citrus

5. What do you understand about citrus harvest timing in WA?
 - 5.1. Can you tell me about what you know about how growers forecast their crop yields?
 - 5.2. Do you have access to that information?
 - 5.3. Is it useful and how do you use it?
6. What do you know about the Australian and WA citrus fruit quality standards (internal and external)?
 - 6.1. Do you use the quality standard information?
 - 6.2. Who gives you the quality standard information?
7. To what extent do you believe there has been an increase in consumption of local fruit on the domestic market based through providing a higher proportion of fruit at optimum maturity?
 - 7.1. What role do you think the information provide through the Value Chain Coordinator played in this?

Improved communication

8. What do you think is the level of communication across the citrus value chain?
9. Do you think there have been improvements in communication since 2011?
10. What could be improved?
11. Do you receive the Fruit West newsletter and magazine?
 - 11.1. How useful is the information you receive?
12. Where do you get most of your information about crop yield and citrus quality?

Industry cohesion and efficiency

Part of the role of the Value Chain Coordinator is to improve industry cohesion and efficiency.

13. How would you describe industry cohesion?

- 13.1. Do you think the citrus industry is working better together since this project?
- 13.2. Can you describe any differences?
- 13.3. What do you think could be improved? How?

14. Do you think that industry cohesion had made the industry more efficient? (this could mean information flows are quicker, decisions are quicker)

- 14.1. In what ways?

15. Do you think that the Value Chain Coordinator has contributed to making the industry more efficient?

- 15.1. In what ways?

Impact questions: What was the impact of the project?

16. If you know something about the project can you think of any outcomes/changes (either positive or negative) that you have seen or heard from the Project?

- 16.1. Can you describe some of these things in a little more detail?
- 16.2. Were there any changes in terms of:
 - 16.2.1. Improving market information
 - 16.2.2. Facilitating the strategic development of WA domestic market
 - 16.2.3. Helping to improve production techniques or access to new production technologies
 - 16.2.4. Facilitating long-term export market strategies
 - 16.2.5. Improving communication networks

17. Of these outcomes, which one do you think is the most important/significant?

- 17.1. What has changed?
- 17.2. What was it like before?
- 17.3. What was it like afterwards?

18. Why did you say that this was the most important outcome/change?

- 18.1. Were there any **negative outcomes**?
- 18.2. Please tell me about these.