

## Final Report

Delivering robust citrus market information for  
a more competitive industry

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Citrus Australia

Project Number: CT13037

CT13037

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## Summary

The Australian citrus industry is one of Australia's largest horticulture industries, with commercial production in five States and one territory. The citrus industry is one of Australia's largest fresh produce exporters, exporting on average 160,000 tonnes per year, over the last ten years. While the industry's size and output is significant in Australia, it comprises less than 0.5% of global production and is one of the highest cost producers in the world, relying on its reputation for quality and safety to command premium prices in high paying export markets. The industry is currently in a buoyant phase, demand from China, Hong Kong and Japan has been strong, the exchange rate is low and growing conditions have been favourable. These variables can change quickly as experience has shown.

Knowledge is power and vital in informing marketing decisions. Keeping industry informed of short, medium and long-term supply volumes is essential. This project delivered plantings database updates, annual crop forecasts, weekly supply data, and shipping volume data. Analysis of these data to aid industry planning was a key aspect of the project.

## Highlights

During this project, significant gains have been made in the quality of market intelligence provided to industry. The market development team developed improved processes for collecting production, delivery and plantings data.

It is critical that Australian citrus exporters have access to real-time information on citrus shipments and market conditions to prevent situations of over-supply in overseas markets. The Market Information Manager aggregated shipping data and provided weekly delivery reports throughout the harvest season.

The development team improved the methodology for capturing information to provide accurate crop forecasts for each major crop and production region.

The market development team made significant progress in gathering national plantings data through a custom-designed online data capture system. The efficiencies gained by transitioning from paper-based to electronic data capture have made an annual update of the national tree census feasible.

For the first time, tree census data was coupled with tree yield models to provide a citrus production outlook.

## Recommendations

1. CT13037 operated as a separate project to CT13022 (Driving citrus industry success through a coordinated market development program) yet it shared resources, common goals, outputs and outcomes. For efficiency and reduced repetition in reporting it is recommended that market information, including the Citrus Tree Census be included in future market development projects.
2. InfoCitrus is a key plank in the collection and collation of citrus industry data, it is recommended that InfoCitrus continue to be developed and maintained in future market development projects.
3. Where possible, involve the packing industry in collecting industry data.
4. Data collection should be web based and digitally accessible into the future, but allowance must be made for sections of the growing and packing industry that lack the skill or confidence to use this medium.
5. Data collection is easiest when it is industry driven, market information projects must be closely aligned with industry to improve the likelihood of positive outcomes.

Keywords

InfoCitrus; data capture; dispatch data; citrus statistics; production outlook; tree census; shipping data; crop estimates.

## Introduction

The Australian citrus industry is one of Australia's largest horticulture industries, with commercial production in five States and one territory. The citrus industry is one of Australia's largest fresh produce exporters, exporting on average 160,000 tonnes per year, over the last ten years. While the industry's size and output is significant in Australia, it comprises less than 0.5% of global production and is one of the highest cost producers in the world, relying on its reputation for quality and safety to command premium prices in high paying export markets. The industry is currently in a buoyant phase, demand from China, Hong Kong and Japan has been strong, the exchange rate is low and growing conditions have been favourable. These variables can change quickly as experience has shown.

CT13037 aimed to establish a hub for citrus market information so as to deliver timely robust national citrus market information to stakeholders across the value chain with the primary aim of increasing market transparency and allowing informed decisions, thereby improving industry prosperity. Market information included planting area, seasonal and long term forecasts, production volumes, trade data and competitor country analysis.

The Australian Citrus Strategic R&D Plan 2010-2017 (Horticulture Australia Ltd, Citrus Australia Ltd 2011) identified four Objectives & Key Strategy Areas.

Objective 1: Develop and Maintain Market Opportunities

Objective 2: Increase Product Value

Objective 3: Improve Efficiency and Sustainability

Objective 4: Provide a Supportive Operating Environment

CT14010 specifically addressed Objective 1: Develop & Maintain Market Opportunities. The project addressed the following strategies, outputs and key performance indicators under Objective 1:

### Strategies

Provide supporting data and resolve technical export market access issues

Provide supporting data and resolve technical domestic market access issues

Collect & analyse ongoing production and market information to support decision making

Identify, prioritise & develop new market opportunities

Drive citrus consumption through targeted consumer research, evaluation and value chain engagement

### Outputs

Market information reports; market intelligence & scan data, market trends & consumer preferences, competitor analysis & market research reports

Market development plans

### Key Performance Indicator

Market information - install a market intelligence reporting system which provides:

3-yearly reports of plantings, long-term forecasting & consumer trends

Yearly reports of crop forecasts, end of season volumes & marketing campaign evaluation

Weekly reports of market dispatch & harvest rate

CT13037 addressed the Federal Government's Rural Research and Development priority 'Supply Chain and Markets'. Specifically it:

Provided appropriate stages of the supply chain with timely and accurate information on market demands and consumer requirements

Effectively serviced the information needs of consumers

Improved packaging, storage and transportation, business analysis and supply chain logistics to ensure customers receive high quality products in the shortest possible timeframe.

The project funded a Manager of Market Information (0.3FTE) and was driven by Citrus Australia's market development team. CT13037 project built on the platform of previous industry projects such as CT09034 (National InfoCitrus development project) and CT10035 (Citrus National Plantings Database - 2011 update), which in turn was based on the 2003 and 2008 national plantings database (NPD) projects (CT02033 and CT07055). The market development team were involved in the CT14010 (Delivering a national citrus plantings database) project which streamlined processes in both projects and informed the CT13037 project.

Knowledge is power and vital in informing marketing decisions. Keeping industry informed of short, medium and long-term supply volumes is essential. This project delivered plantings database updates, annual crop forecasts, weekly supply data, and shipping volume data. Analysis of these data to aid industry planning was a key aspect of the project.

## Methodology

In all aspects of the CT13037 project, the market development team sought to find efficiencies and improve processes to deliver timely, accurate, relevant data. Networks with packers and exporters have been developed on trust and professionalism. Reducing complexity in provision of data has been a key focus as well as finding the most relevant data and focusing on delivering it; this has meant that over time the project has evolved to deliver different types of information for different stakeholders.

## InfoCitrus

The Market Information Manager developed and managed the InfoCitrus database. InfoCitrus is a data exchange system modelled on Infocado; it has been modified significantly from its original purpose and provides a platform for many of the market information activities undertaken in CT13037. Where possible, data collection is driven through InfoCitrus to increase efficiency in collation and reporting. InfoCitrus is used to collect and collate dispatch and shipping volumes as well as the tree census data and the KCTT online export application system.

### Weekly supply data

Each week in season, contributing pack houses logged on to InfoCitrus and entered dispatch data , such as:

- Weight of dispatch

- Variety

- Market destination.

Weekly reports were compiled and sent to contributors. Weekly reports included:

- Dispatches by region.

- Dispatches by market destination.

- Dispatches by variety

- Comparisons to previous years, by region, market destination and variety

### Shipping volume data

InfoCitrus was used to collate shipping data for specific export markets. Exporters, some of who were packers, entered shipping data into the InfoCitrus system. This data differed from InfoCitrus dispatch reports in that:

- The unit of measure was 40 foot shipping containers

- The grade of the fruit was also recorded

- Exporters may not be growers or packers

Weekly reports were provided to contributors. This information informed the ACCC approved voluntary Japan exporters group and the government regulated Export Efficiency Powers USA export group.

## Harvest rate reports

The Manager of Market Information collected and collated harvest data for specific crop types. These reports were usually industry driven, often a perceived market failure was raised by a part or parts of the supply chain such as the estimated number of tonnes of late navels available mid-way through the market window.

## Annual crop forecasts

The development team improved the methodology for capturing information to provide accurate crop forecasts for each major crop and production region. The system now involves 5 steps including:

- measuring and analysing fruit frame counts and fruit diameters on sentinel trees of each main variety in each main region



comparing data to previous seasons' crop volumes  
 tree census production forecasts  
 packing shed bin tip reconciliations at the end of each season  
 crop estimate committees consisting of packers in each region.

#### Plantings database updates

During the early stages of CT13037 the citrus plantings database was maintained and improved through industry consultation. The 2011 report had not been completed due to industry restructure and loss of data. The market development team eventually acquired the collated South Australian plantings database from the state government and added that data into the report. In 2014 a new project was developed (CT14010) to bring the national plantings database online.

#### Production outlook

The market development team produced a 10-year production outlook based on the 2014 Citrus Tree Census (CT14010). It provides an estimate of potential tonnages for each citrus category at three points in time: 2016, 2020 and 2025.

Predicted production trends are described for the main 4 categories of citrus grown in Australia: navel oranges; juicing oranges; mandarins; lemons & limes. Minor categories such as grapefruit, blood oranges and other mandarins can be estimated from detailed planting data reported in the 2014 Citrus Tree Census. The assumptions used to develop this model were:

1. Yield estimates: for each major category, the potential yield was estimated in tonnes per hectare for each year of tree age. Top-worked (re-grafted) trees were aged from the date of top-working.

Comments on these yield estimates were provided by technical experts from all regions, and a conservative average estimate was adopted for the model.

2. Plantings data: planted hectares for each major region were obtained from the 2014 Citrus Tree Census. Some of the data sets were increased as shown below to compensate for suspected under reporting in the census:

#### PERCENT INCREASE

Queensland

Riverina

Murray Valley

Riverland

WA

Early navel 0 15 10 10 5

Mid navel 0 15 15 15 5

Late navel 0 10 5 5 5

Red navel 0 10 10 10 5

Valencia 0 20 10 10 5

Common orange 0 10 0 0 0

Imperial mandarin 0 10 10 10 5

Afourer mandarin 0 10 10 10 5

Murcott mandarin 0 0 0 5 0

Lemon 5 10 10 10 5

Lime 20 5 10 15 10

3. New planting rate: scenarios were estimated for the years 2016, 2020 and 2025. For the 2020 and 2025 estimates, we assumed that new plantings would continue annually at the same average rate as had occurred in the 5 years 2010-2014.

4. Old trees: in the yield estimates, all hectares for each category were amalgamated above 40 years of age. For the 2020 and 2025 estimates, the 40+ age group from the 2014 Citrus Tree Census was dropped, on the assumption that these older trees would either have been removed or top-worked.

5. Harvest spread: the weekly spread of crop across the season was estimated for each category from past seasons' data collected via InfoCitrus.

## Outputs

### Reports

In the 3 year period, CT13037 produced 84 weekly reports detailing dispatch data to various domestic and export markets. At the peak of the season the InfoCitrus system was collecting data from 60 packing sheds each year and reported on major mandarin categories, navel orange and lemon dispatches.

Harvest rate reports were delivered each year on a needs basis, by major category.

### Shipping volume reports

40 weekly shipping volume reports were produced

### Crop forecasts

National crop forecasts were delivered each year of the project

A national crop estimate reconciliation was conducted in 2014 and 2015 and reports delivered.

### Plantings database updates

The 2011 National Plantings Database update was delivered in 2014

The Citrus Tree Census module of InfoCitrus was developed and implemented in 2014 which collected data for the 2014 Citrus Tree Census and will do so for subsequent years

### Production outlook

The market development team produced a 10-year production outlook based on the 2014 Citrus Tree Census (CT14010). It provides an estimate of potential tonnages for each citrus category at three points in time: 2016, 2020 and 2025.

### Presentations

Presentations based on the data reported above were delivered at national and regional meetings across Australia each year. Data was provided from this project to other presenters to inform their presentations, within the market development team but also to the wider citrus industry.

### Media

Articles were written for the Australian Citrus News magazine and Citrus eNews by the Manager of Market Information and data was used in other articles featured in the magazine and Citrus eNews throughout the project.

## Outcomes

CT13037 supplied timely market information to appropriate sections of the supply chain, enabling informed decisions in a range of citrus businesses. Industry was informed of short, medium and long-term supply volumes and trends that shaped short term marketing decisions and long term strategic supply programs. Plantings database updates, annual crop forecasts and long term supply forecasts set the scene for the industry into the future. Analysis of these data to aid industry planning was a key aspect of the project and enabled the market development team to raise potential opportunities before they arose. Citrus businesses were able to make informed decisions which have the potential to improve market return and hence farm-gate returns in the short, medium and long term.

During this project, significant gains have been made in the quality of market intelligence provided to industry. The Market Information Manager has engaged with value-chain participants to capture and disseminate timely information on supply, market conditions and shipping movements. The market development team developed improved processes for collecting production, delivery and plantings data.

Weekly reporting of domestic market dispatches provided growers and packers with timely, unbiased market information. Analysis of weekly dispatch reports over time provided evidence that supply of mandarins reaches a critical threshold when total dispatches exceed 2,500 tonnes per week. This was used as a guide by growers and packers to determine the effect of harvest rate on market conditions.

It is critical that Australian citrus exporters have access to real-time information on citrus shipments and market conditions to prevent situations of over-supply in overseas markets. The Market Information Manager cultivated strong relationships and earned the confidence of the export and packing sectors to collect and disseminate information on citrus shipments. Using the InfoCitrus platform, he continued to aggregate shipping data and provide weekly delivery reports throughout the harvest season. This data was critical for stakeholders in assessing effect of volume on pricing of export fruit in the Japan and United States markets for example.

The development team improved the methodology for capturing information to provide accurate crop forecasts for each major crop and production region. This robust methodology is delivering far more meaningful crop forecasts, which are used along the supply chain to determine harvest rates, critical supply points in the season and market opportunities in various countries based on fruit size and availability.

Gathering information on national citrus plantings was poorly coordinated in the past. During this project and through project CT14010, the market development team made significant progress in gathering this information through a custom-designed online data capture system. The efficiencies gained by transitioning from paper-based to electronic data capture have made an annual update of the national tree census feasible. Tree census information guides growers looking for information on trends in plantings and highlights market opportunities and threats. Tree census data informed government negotiators in market access priorities and was used in several instances to justify the case for changes in market protocol.

For the first time, tree census data could be coupled with tree yield models to provide a citrus production outlook. The estimated volumes of each major product category in 2020 and 2025 have given substance to industry trends that were suspected but not quantified. This information will allow for much more robust decision making in every sector of the supply chain. The citrus production outlook will inform the citrus supply chain of upcoming challenges and opportunities into the future.

## Evaluation and Discussion

The citrus industry comprises more than 1,400 citrus growing businesses with a production base in excess of 25,000 hectares in five States and one territory. Data collection from an industry this size is challenging.

Differences in citrus businesses capability to engage in data delivery are as broad as the geographic area the industry occupies.

The citrus businesses the project engaged with ranged in size from over one thousand hectares to less than one hectare. Some businesses represented 80 to 100 separate growers and had numerous specialised staff whilst many were owner operators that were engaged in all aspects of their business. Resources, computer literacy and internet connection each impacted to some degree on the timely collection of data from citrus businesses of all sizes.

The market development team encountered some issues in delivering CT13037. Some of these we assume are common in many horticulture projects:

Privacy; some citrus businesses would not share their data for privacy reasons. Other businesses would not share data with Citrus Australia specifically, for reasons including privacy.

Trust; the data collected in this project is highly confidential. Some of the largest businesses in the industry trusted valuable market information to the project. This took time and relationship building.

Data availability; many smaller businesses did not have the data needed easily at hand. Larger businesses had data but did not supply it in a format that could be easily uploaded (csv files) or through the system provided which required regular data input by the Manager of Market Information.

Resourcing; whilst larger businesses had resources to provide the data some were under extreme workloads and did not prioritise the data entry in a timely manner. Smaller businesses were often under resourced.

Some smaller citrus businesses were less motivated to participate in data sharing, most commonly because they considered their contribution insignificant.

Whilst expectations are high that data can be collected by digital means (web forms, databases, apps) there are a number of hurdles that arose during the delivery of CT13037:

Computer literacy; the older demographic of the industry often struggled with use of web forms and data entry (usually a lack of confidence which could be overcome if they reached out for help). A surprisingly high number of growers have poor email etiquette; they do not respond to emails, follow instructions delivered in email or do not open attachments etc. When a call was placed to these growers or packers they would happily give the information over the phone.

Obsolete computers and poor internet connection; some areas had poor internet connection which caused interruptions in data entry. Some growers had very old computers or old versions of web browsers which needed to be upgraded.

There are many functions and reports that InfoCitrus can deliver, however not all services were deemed as important or relevant by industry. The market development team assessed the response rate of each information service provided and modified or stopped some of these activities as time progressed. CT13037 evolved to provide tailored reports to specific sectors of the supply chain. For example, Queensland mandarin and lemon

reporting on the domestic market can be used by contributors in real time. Consultation with southern region mandarin growers has determined that dispatch reporting will be of use to them in coming seasons. Similarly, Western Australian packers find InfoCitrus dispatch data useful because it is a relatively closed market.

In contrast, the large volume of navel oranges delivered weekly to the domestic market made weekly dispatch reporting of less importance – no impactful marketing decisions could be made to effect supply. This meant that the motivation to complete the data entry was less and over time the number of contributing packing sheds dropped below the 80% of volume required to make the report viable, so the reporting of navel orange weekly supply was stopped. The impact of not collecting weekly dispatch data is that historical data is not collected. The market development team subsequently devised a bin tip reconciliation plan (discussed earlier) which provides an overall picture of volume, but does not have the detail of weekly supply trends.

In summary, the need for industry statistics is self-evident and the technology to capture it is available; weak point exists in each industry stakeholder's individual capability and/or personal motivation to engage. Largely the grower demographic is 50-60 years of age, and despite the prevalence of computers, tablets and smartphones there remains a resistance by many small businesses to engage in the digital age. This requires flexibility and problem solving on the part of the service provider to exceed the minimum levels of data needed to produce reliable reports and information.

## Recommendations

1. CT13037 operated as a separate project to CT13022 (Driving citrus industry success through a coordinated market development program) yet it shared resources, common goals, outputs and outcomes. For efficiency and reduced repetition in reporting it is recommended that market information, including the Citrus Tree Census be included in future market development projects.
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Intellectual Property/Commercialisation

No commercial IP generated

