

## **Final Report**

# **Citrus market development, market access and quality**

**Project leader:**

David Daniels

**Delivery partner:**

Citrus Australia

**Project code:**

CT18002

**Project:**

Citrus market development, market access and quality (CT18002)

**Disclaimer:**

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 this Final Report.

Users of this Final Report should take independent action to confirm any information in this Final Report before relying on that information in any way.

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 the Final Report or from reliance on information contained in the Final Report or that Hort Innovation provides to you by any other means.

**Funding statement:**

This project has been funded by Hort Innovation, using the citrus research and development levy and contributions from the Australian Government. Hort Innovation is the grower-owned, not-for-profit research and development corporation for Australian horticulture.

**Publishing details:**

Published and distributed by: Hort Innovation

Level 7  
141 Walker Street  
North Sydney NSW 2060

Telephone: (02) 8295 2300

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

© Copyright 2024 Horticulture Innovation Australia Limited

## Contents

Public summary.....	4
Keywords.....	4
Introduction.....	4
Methodology.....	6
Results and discussion.....	13
Outputs.....	20
Outcomes.....	24
Monitoring and evaluation.....	26
Recommendations.....	29
Intellectual property.....	30

## Public summary

The Australian citrus industry is a mature industry in the advanced stages of market development. Its success today is the result of several decades of a very targeted and strategic research and development program. The industry experienced a buoyant period between 2013 and 2019 fuelled primarily by export success in Asia. Fundamental to that success was strong demand and high returns for premium-grade Australian citrus in China.

At the commencement of the project, we predicted that the global landscape would continue to change and that the industry would be presented with new threats and challenges. Throughout the life of this project, the evidence demonstrated that our predictions were well-founded. The trade war between China and the United States has been ongoing since January 2018 and this has had flow-on effects on the trading relationship between Australia and China. A series of events starting in 2020 saw an escalation of geopolitical tensions between Australia and China which put further pressure on the already struggling citrus export trade into China. These geopolitical tensions had an immediate impact on trade. The Chinese port authorities made clear signals through disruption to import clearance procedures for Australian fresh produce. Product spoilage and quality loss led to serious financial losses for exporters and importers. For close to three years, the Chinese importing authorities did not provide new export approval for Australian citrus businesses and exporters were exporting to China on a speculative basis, with no assurance of import clearance. Understandably, Australian exporters and Chinese importers became increasingly apprehensive and the citrus export trade was reduced to a fraction of the peak volume achieved in 2019.

The end of 2019 saw the start of the global pandemic and at the time of reporting, the world economy is far from a full recovery. The pandemic has had sweeping consequences for the Australian citrus industry which included:

- disruption to production through availability of labour (skilled and unskilled) due to the closure of international and domestic borders
- disruption to freight and logistic services within Australia
- a substantial reduction in reliable and unaffordable shipping services
- loss of access to farm inputs (e.g. chemical and fertiliser) and inflated prices
- closure and delays with port services in importing countries
- lock-downs and 'stay at home' orders at numerous cities around the world

Within the life of this project, we also saw the commencement of conflict in the Ukraine and more recently in the Red Sea. These conflicts have had a detrimental impact on global trade. The project leaders provided a high level of assistance to the sector in navigating the challenges and disruptions with the ultimate objective of returning the industry to the growth trajectory it was previously on. At the time of writing, we are cautiously optimistic of a better season outcome in 2024.

## Keywords

Citrus, market access, market development, market information, citrus quality standards, agrichemicals, risk management.

## Introduction

The Australian citrus industry is well-positioned to reliably supply the Australian domestic market and northern hemisphere markets with counter-seasonal fruit with the best colour, flavour and sweetness found anywhere in the world. Australia's proximity to Asia and reliable shipping routes provide the citrus industry with a competitive advantage over other southern hemisphere citrus producers.

The industry entered a buoyant phase in 2013 with record high returns, fuelled largely by the growing demand in Asia. At the commencement of project CT18002, the industry was fully capitalizing on the global demand for high-quality Australian citrus. In 2019, citrus exports exceeded 300 000 tonnes, double the volume exported in 2011. Domestic market returns and returns for processing fruit were also at historically high levels.

However, as predicted, the trading environment continued to change with new threats and challenges. Conditions of entry into export markets are continually reviewed and are seldom liberalised. While phytosanitary conditions are seen as the most significant trade barrier, food safety, maximum residue limits (MRLs) and other technical specifications (e.g. grading, packaging and labelling) also represent challenges and a barrier to entry for some businesses.

The demands of consumers, retailers and regulators continue to evolve and become more challenging. Requirements relating to food safety, labelling, environmental protection, sustainability, fair trading and fair work are contemporary issues for the entire horticulture sector.

As the export trade has grown, so too has the level of risk. Phytosanitary, food safety, and Maximum Residue Limit (MRL) violations have the potential to cause serious trade disruptions or even market closures. Political risks also exist in certain markets. These are not hypothetical risks. In the recent past, violations have occurred which have resulted in swift regulatory action. Trade has also been suspended for other reasons. For example, trade into Russia closed several years ago due to economic sanctions and exports to Indonesia have in some years been completely halted due to quota-based restrictions. During the life of this project access to China was covertly disrupted by the Chinese import authorities due to ongoing geopolitical tensions between Australia and China.

Global competition also adds to the challenges as other suppliers become more productive, improve their product offerings, and improve their supply-chain efficiencies. These competitors have the potential to represent a major threat to the profitability and competitiveness of Australian citrus exports. South Africa in particular has seen aggressive plantings of citrus and has aspirations of growing market share in Asia.

The Australian domestic market is the largest market for the Australian citrus industry where approximately one-third of the production is sold for fresh consumption and one-third is sold for processing into juice. Analysis of tree census data indicate that the juicing sector is in crisis with the majority of juice variety plantings over 21 years old and becoming unproductive. Investment in plantings has been minimal and juice processors have been seeking Citrus Australia's advice on how to reinvigorate the industry.

In short, strong leadership at the national level is required to work with the industry, government and Hort Innovation to respond to the regulatory and commercial challenges in the trading environment.

## Methodology

This project rationalised the activities from two previous projects:

- CT15012 (Australian Citrus Industry Innovation and Market Development Program)
- CT15013 (Australian Citrus Quality Standards Program – Stage 3).

Activities for this project were categorised into three broad areas including:

- market access
- market information
- quality improvement.

A total 3.5 full-time equivalent staff were appointed at commencement of the project, to undertake project activities. Here we outline how the project was undertaken:

### Issues Committees and Regional Advisory Committees

Fundamental to our priority setting and industry consultation are the various Issues committees and Regional Advisory Committees established as part of this project. The committees were established at commencement of the project and each committee convened at least twice annually. Three issues committees were established at the commencement of the project that included:

- Export Market Committee
- Domestic Market Committee
- Variety and Rootstock Committee

The Export Market Committee was made up of eight citrus marketers, two project team members, and an *ex-officio* representative from Hort Innovation. Hort Innovation's marketing team also attended regularly for input into marketing activities. The committee provides advice on:

- market access and R&D priorities
- agrichemical challenges relating to market access
- pest management issues relating to market access
- market performance
- season expectations (pre-season) and season outcomes (post-season)
- priority markets for marketing and promotions.

The Domestic Market Committee comprised five industry members with knowledge of the Australian domestic market (wholesale and retail), growing and packing, and a representative from Hort Innovation. The committee's Terms of Reference was to:

- provide a conduit for two-way exchange of information on issues in the Australian domestic market
- continually review the Australian Citrus Quality Standards
- provide advice on retail trends with respect to retailer and consumer demands
- inform the R&D efforts that relate to citrus quality
- provide input into the seasonal review, seasonal forecast and market forecast
- raise awareness of issues related to supply (e.g. frost and hail)
- identify opportunities to lead the industry on domestic issues (e.g. labelling, food safety, data bars, traceability)
- provide guidance to retailers on product handling and storage
- provide input into the domestic market strategy and risk management assessment.

The Variety and Rootstock Committee brought together expertise from Hort Innovation, plant breeders, growers, the research community, and the nursery industry. The committee's role was to:

- identify new global trends in varieties
- identify competitor trends with respect to plantings

- explore solutions (genetic or otherwise) to biosecurity risks (e.g. HLB tolerant rootstocks)
- provide advice to the project team on issues and disorders in certain varieties
- provide input into Hort Innovation funded variety and rootstock evaluation trials
- determine topics for field days and regional workshops
- provide linkages between the industry and the Post-Entry Plant Industry Consultative Committee (PEPICC).

Towards the end of the project Variety and Rootstock Committee took on a new composition and Term of Reference and was re-named the Future Production and Technology Committee to better reflect the needs of the industry.

Mid-way through the project, we established a Citrus Juice Committee in recognition of the challenges facing the juice sector. The Committee met at least twice annually to discuss issues affecting the sector including production of juicing varieties, understanding viable bin returns to enable reinvestment in new plantings, juice production technologies and export.

Regional Advisory Committees were established across the five major growing regions of Australia that include:

- South Queensland Regional Advisory Committee
- Far North Queensland Regional Advisory Committee
- Riverina Regional Advisory Committee
- Murray Valley Regional Advisory Committee
- Western Australia Regional Advisory Committee.

The Regional Advisory Committees were established to provide a conduit for communication between the project team, growers and packers in each region, as well as Hort Innovation. The role of the committees was to ensure that regional issues were included in the project agenda and to provide direction on regional forums and regional workshops.

In the absence of a working committee in South Australia, the project leaders consulted with the South Australian industry via regional forums, dedicated workshops (e.g. fruit fly specific), packing house meetings and face-to-face visits with growers. Consultation in South Australia is made slightly more efficient through the fact that close to 50 per cent of the planted hectares in South Australia are owned by a single business.

### **Regional workshops and regional forums**

Regional workshops and forums were held in each of the major growing regions on an annual basis to address regional issues relating to productivity, efficiency, pest management, market access, agrichemicals and quality. The frequency of forums was somewhat disrupted by regional quarantines and lockdowns due to the pandemic in 2020. However, we managed to reschedule all forums as Australia slowly returned to normal. Topics were determined by the Regional Advisory Committee in each region. Examples of regional topics included:

- fruit fly management
- contingency planning and transition to management in the Riverland Pest Free Area
- citrus gall wasp management
- improving fruit quality a class-1 pack-out
- pruning and tree architecture
- tree census and plantings
- crop forecast and season outlook.

The workshops and forums also provided an opportunity for the project leaders to provide updates on:

- project outcomes
- Hort Innovation's other R&D investments
- market access
- market updates and export performance
- marketing and promotional activities
- agrichemicals, food safety and maximum residue limits
- biosecurity.

### **Market Outlook Forums**

A Market Outlook Forum was held in 2020 and 2023. While we planned to hold the forum biennially, control measures associated with the global pandemic prevented meant that the frequency of our events changed. Australia's multitude of state-based lockdowns, quarantines and social distancing laws made it virtually impossible to hold any major events in 2021. Due to the changed timing of other events (namely the Citrus Technical Forum), The 2022 Market Outlook Forum was held in 2023. The Market Outlook Forums provided an opportunity for exchange between growers, packers, marketers, retailers, researchers, and regulators with an emphasis on domestic and international markets. The forums included presenters with expertise from overseas and project team members delivered formal presentations related to market access, crop forecast, planting statistics, fruit quality and market information. Hort Innovation's other delivery partners were provided the opportunity to present on the outcomes from other investments (e.g. citrus postharvest project, food safety, variety evaluation, nutrition, biosecurity preparedness).

### **Citrus Technical Forums**

The Citrus Technical Forums were held in 2022 and 2024 (alternating with the Market Outlook Forums) with a focus on applied R&D of a technical nature. The two-day events included auditorium sessions, break-out workshops and field visits to observe the latest innovation in citrus growing and packing operations. Overseas speakers were included in the event and the project team provided formal presentations. Hort Innovation was provided with the opportunity to present and occupy exhibition space at the event. Hort Innovation's other delivery partners were provided the opportunity to present on the outcomes from other investments (e.g. citrus postharvest project, food safety, variety evaluation, nutrition, biosecurity preparedness).

### **Exporter groups**

Under the Competition and Consumer Act 2010, certain exporter agreements lodged with the ACCC are exempt from the legislation. At the commencement of the project we re-established a two exporter groups and furnished new agreements with the Australian Competition and Consumer Commission (ACCC). The two exporter groups are:

- Japan, China, USA Exporter's Group
- Queensland Citrus Exporter's Group

Under the agreements, the groups were strictly prohibited from entering into any discussions that could affect pricing or volumes on the Australian domestic market — and this as firmly enforced by the project leaders at the commencement of every meeting.

The Japan, China, USA Exporter's Group provided a forum for exporters to calibrate pricing and discuss market signals in exports markets. The project team coordinated the group and provided videoconferencing facilities for the group to hold regular meetings. The group typically met at the commencement of each season with two 'follow-up' meetings late in the season. Meeting minutes and minimum pricing recommendations were released immediately after every meeting.

The project leaders worked with the Queensland Department of Agriculture and Fisheries (QDAF) to coordinate the Queensland Citrus Exporter's Group. The group shared market intelligence and recommended minimum prices for citrus exports from Queensland into China, Thailand, Indonesia, Japan, Taiwan and the Middle East. The group typically met fortnightly via videoconference with several face-to-face meetings throughout the year. Meeting minutes and minimum pricing recommendations were released immediately after every meeting.

While the two exporter groups provided a forum for exporters to share market intelligence and pricing signals, they also provided a useful platform for regular communication between the project team and industry participants.

### **Agrichemical Reference Group**

The Agrichemical Reference Group was established to provide a platform for exchange of advice on agrichemical issues. The group comprised representatives from agrichemical companies, the research community, Integrated Pest Management (IPM) specialists, regulators, agrichemical experts, packers and growers. The group was used as an informal sounding board to provide advice on agrichemical issues to the project leaders and Hort Innovation. The group was instrumental in informing Hort Innovation's Strategic Agrichemical Review Process (SARP) in 2022. The knowledge and skills within the group were utilised on a regular basis (via phone and email) when agrichemical issues arise. Issues



through the life of the project included:

- regulatory action on dimethoate, chlorpyrifos, dithiocarbamates
- fruit fly controls chemicals
- citrus gall wasp control
- control of fungal diseases in Queensland
- off-label use of bifenthrin.

### **Maintaining a watching brief on changes to importing country requirements**

Importing country phytosanitary, agrichemical and food safety regulations are continually changing and seldom liberalised. The project team maintained a watching brief on changes to importing country requirements by monitoring Sanitary and Phytosanitary (SPS) notifications, Technical Barrier to Trade (TBT) notifications, international media, engagement with government, and through our extensive networks of exporters and importers. The team has communicated regulatory changes to the sector through our regular channels to minimise disruption to trade. Changes have included phytosanitary conditions, agrichemical bans, changes to MRLs, changes to food safety laws, tariffs and quotas. We also monitored and provided advice to industry on changes to importing country conditions for our southern hemisphere competitors (e.g. South Africa and Chile).

### **Improvements to phytosanitary conditions**

While the citrus industry is in the advanced stages of export development, it must continue to address cost and efficiency from every angle and improve the exiting conditions of trade. Onerous phytosanitary conditions remain a key challenge and cost for the sector. For some small enterprises, phytosanitary conditions (e.g. orchard registration for China) represent a complete barrier to trade.

While the citrus industry has access to almost every market, there are still a number of outstanding issues that relate to expanded market access. Examples (among several others) include expanded access to the United States and access for additional mandarin varieties to Japan. There have been extensive delays (more than 20 years) in realising these expanded access requests.

The project team has continued to provide technical and commercial advice to government to seek improvements to phytosanitary protocols. Market access priorities were informed by the Export Market Committee, exporter groups and regional advisory committees. We met regularly meetings with DAFF in addition to our participation in Hort Innovation's industry Trade Advisory panel (iTAP) and DAFF's Horticulture Export Industry Advisory Committee (HEICC).

### **Maintaining market access**

Maintaining market access has involved a large amount of effort and during the life of the project there were a number of threats and challenges. Examples include:

- the expanding distribution of fruit flies in South Australia's Riverland
- geopolitical tensions in China
- Indonesia's quota-based system for imports
- Indonesia's country recognition agreement on food safety
- pre-clearance inspection requirements for exports to South Korea
- pre-season verification visits by the Japanese importing authorities
- changes to Fiji's importing requirements in relation to fall armyworm
- unannounced changes to maximum residue limits in Thailand
- new food safety certification requirements for exports to Thailand.

The project leaders have provided technical and commercial advice to DAFF and other agencies to ensure channels of international trade remain open.

### **Improved efficiencies in export auditing, inspection and certification.**

At the commencement of the project a large number of inefficiencies in the export inspection and certification process still existed. Through our participation on the Horticulture Export Industry Consultative Committee and through direct engagement with Horticulture Exports Program, we have worked with government to continue to identify efficiencies and implement practice change to reduce the administrative burden for industry and government. We capitalised on the

government's 'Busting Congestion for Agricultural Exporters' package from 2020-21.

#### **Advice to government on tariff and non-tariff measures**

At commencement of the project, a number of free trade agreements were being negotiated including the Indonesia-Australia Comprehensive Economic Partnership Agreement, the Australia-India Joint Free Trade Agreement and the Australia-European Union Free Trade Agreement. We have worked constructively with the Department of Foreign Affairs and Trade and DAFF to ensure the best possible outcomes for the citrus industry.

#### **Engagement with DAWR Horticulture Exports Program**

As citrus exports have grown, the DAFF has struggled with the increased administrative burden. The project leaders have maintained a productive working relationship with DAFF's Horticulture Exports Program. We are in almost daily contact with program staff during the export season as we work together to resolve issues with audits, inspection, certification, audit registration, distressed cargo and visits by the overseas authorities. We have worked cooperatively with the program over the last five years to maintain an efficient export registration system which includes an online platform, eLearning for crop monitoring, record keeping and instructional material. Ultimately our objective has been to ensure that regulatory services (e.g. export registration, audits, inspection and certification) are timely, efficient and effective.

#### **Participation in Hort Innovation's International Trade advisory panel (iTAP)**

The project team has participated and contributed to Hort Innovation's International Trade advisory panel (iTAP). The role of iTAP was to provide expert advice and oversight of the International Markets Fund, including input into proposed projects and recommendations on potential methods to address future gaps or deficiencies.

#### **Weekly Shipping reports and monthly export data**

At the commencement of the project, the project team established an online system whereby major exporters would report weekly dispatches into certain export markets. For the first three years of the project, we aggregated the weekly shipping data and provided weekly reports (between June and December each season) for citrus exports to Japan, China and USA with a view to inform marketing decisions. The system was entirely voluntary and did not provide entirely accurate or timely data, especially when major exporters failed to report their figures.

Mid-way through the project, DAFF agreed to provide weekly shipping reports (oranges and mandarins only) based on phytosanitary certification documentation. While DAFF's information is useful, it is excessive and beyond our industry's purposes (34 pages per week). There was therefore a large amount of weekly effort required to distil down the information provided by DAFF into a meaningful format. While the new system of data capture is an improvement on the previous voluntary system, it is still not entirely perfect and only includes oranges and mandarins. On that basis, the project team has continued to interrogate a number of trade databases to also provide monthly reports to export businesses based on data released by the Australian customs authorities.

#### **Maintain national citrus quality standards**

The Australian Citrus Quality Standards were developed under previous iterations of CT18002. The project team has maintained the Australian Citrus Quality Standards and consulted with industry participants via our various committees to ensure that the standards are still relevant. No amendments were necessary during this project. Training was provided to contractors together with training material. Contractors were periodically audited to ensure that they were proficient in the use of the equipment and in the testing procedures.

#### **Weekly quality testing and reporting**

Market testing was conducted in the wholesale markets in each capital city by sampling early season fruit of each variety. The project team aggregated weekly results and provided a report to supply-chain participants each week. The rationale behind market testing was that it reduces incentive to harvest and market fruit early. It also provides verification that the Australian Citrus Quality Standards are being adhered to.

#### **Pre-season quality testing and reporting**

Early-season fruit was sampled from orchards and tested from a range of representative growing regions prior to harvest. Reports were released for each region each season to provide an indication on how each region was tracking in terms of maturity.

### **Engagement with retailers**

The domestic market is the largest market for Australian citrus. We maintained two-way engagement between Citrus Australia and the major retailers on issues such as fruit maturity, defects and seasonal conditions. The project team has continued to engage with retailers on labelling, definitions of 'seedless', traceability, product handling, food safety. The project team has remained stable in a period where the major retailers have experienced high staff turnover in their citrus categories. The project team is recognised as a reliable third-party for advice by retailers and they regularly reach out to Citrus Australia.

### **Coordinate annual export registration system**

An online system for export registration (for certain markets) was developed and maintained under previous iterations of CT18002 and the project team has been operating an online export registration since 2015. The system has provided efficiency in the export registration process, expedited export approvals, and extended the marketing opportunities in overseas markets. The project leaders have continued to work with IT developers to maintain and update the system as required by DAFF. We assisted more than 750 businesses with export registration each season. During this project, there was a period of nearly three years when the Chinese importing authorities did not approve any new citrus businesses (orchards or packinghouses) for export, due to geo-political tensions. Citrus exports to China could still take place but only from orchards and packinghouses approved in 2019. This presented some obvious challenges for the project leaders given the large number of ownership changes and new plantings entering into full production over the last few years. Nevertheless, we assisted businesses to navigate the regulatory challenges and minimise the disruption to businesses.

### **Maintain and update instructional material for export compliance**

The multitude of export requirements (pest management, cultural practices etc.) across multiple markets can be extremely challenging to citrus growers and packers, particularly those that are new to export and when new personnel join businesses. On that basis, the project leaders maintained and updated clear and concise instructional material to assist businesses to understand and fulfil export requirements and ultimately be successful at the time of audit by the Australian Government. We also provided a large amount of individual support to growers, packers, agronomists and exporters to assist in their understanding of export obligations.

### **Online training for crop monitors**

Some importing countries require that orchards must be surveyed for pests and diseases to qualify for export registration. Personnel conducting the pest surveys must be suitably qualified and trained and assessed annually. Under previous iterations of the project we develop an online training package for crop monitors in partnership with a Registered Training Organisation (Tocal college, NSW DPI). We have maintained and updated that training package and each year throughout this project more than 100 crop monitors were trained and assessed annually.

### **Coordinate audits and verification visits by overseas authorities**

Several importing countries require ongoing audits verification visits for trade to take place. For instance, South Korea requires pre-clearance inspectors (and site visits) in Australia for the entire season. Japan requires an annual verification visit before trade can take place. The project leaders coordinated the South Korean pre-clearance program and the annual Japanese verification visit each year throughout the life of the project. It is critical that site visits are coordinated by the project leaders (rather than government) to showcase the most professional and reliable citrus businesses.

### **Distressed cargo**

Resolving issues with distressed cargo has occupied a large component of the project leaders' time during each export season throughout the life of the project. Issues have included, documentation errors, labelling errors, cold disinfection failures, agrichemical residue breaches and consignment contamination. Distressed cargo was more frequent during the years immediately after the pandemic, especially in relation to (unofficial) punitive measures imposed by the Chinese authorities. The project leaders have maintained a cooperative relationship with Australian government authorities (e.g. DAFF Horticulture Exports Program, DFAT, National Residue Survey) and overseas contacts to resolve issues as they arose. In a large number of cases, we have managed to mitigate serious financial losses for citrus industry growers, packer and exporters.

### **Annual citrus tree census**

The project leaders have been conducting a citrus tree census annually since 2011 with funding through Hort Innovation and its predecessor. We have continued to conduct the tree census under project CT18002. The tree census was opened each year in November and data were collated and published by March the following year. Publication of the tree census usually coincided with the annual citrus conference (Technical Forum or Market Outlook Forum).

### **Annual crop estimates**

Each year during the project, the project team provided regional and national crop forecasts. The methodology involves five steps.

1. Measuring and analysing fruit frame counts and fruit diameters on sentinel trees of each main variety in each main region.
2. Comparisons to previous season's crop volumes.
3. Tree census production forecasts.
4. Crop estimate committees consisting of packers in each region.
5. End of the season reconciliation by aggregating 'bin-tip' data from packing-houses.

Contractors were engaged in each region to perform frame counts and fruit measurements. Reconciliation (step 5) proved to be extremely difficult with some packers being unwilling to participate.

### **Agrichemical risk management**

From 2019 to 2021, Hort Innovation invested in a separate agrichemical project for the citrus industry (CT18001). At completion of that project in January 2022, activities under CT18001 were incorporated into CT18002. Those activities included:

- monitoring and publishing Australia and overseas maximum residue limits (MRLs) for the agrichemicals used in the citrus industry
- coordinating a residue testing program with a competent contract laboratory (Symbio Laboratories)
- reviewing test results to determine where the greatest residue risks exist and better understand use patterns within the industry
- maintaining a network of agrichemical specialists to provide advice to Citrus Australia, Hort Innovation and the Australian Government
- assisting in Hort Innovation's Strategic Agrichemical Review Process (SARP) (MT21005)
- working with Hort Innovation and product registrants to address gaps in the agrichemical needs of the industry
- providing advice to the project leaders of other agrichemical related projects (e.g. MT23000, CT19009, CT19011, CT20009, CT19003).

### **Food safety certification**

In 2019, a new system of food safety certification was implemented in Australia designed to harmonise food safety requirements across the major retailers (the Harmonised Australian Retailer Produce Scheme, aka HARPS). Ultimately, this led to a large amount of additional rigour growers required of growers. The new systems required that all growers supplying the major retailers to be certified to one on the Global Food Safety Initiative (GFSI) benchmarked schemes (GlobalG.A.P, Freshcare, SQF or BRC). The transition was not smooth or without protest. The project leaders assisted a large number of growers with training and assessment to be accredited to Freshcare.

### **Support Hort Innovation's trade events, 'Grown in Good Nature' campaign and other industry events**

There is currently a high level of investment (both time and financial) by Hort Innovation in overseas trade shows and other events. While CT18002 was strictly an R&D project, where possible we supported Hort Innovation's trade events provided that our contributions were technical and directed at businesses.

### **Support the juice sector**

Despite world production of juicing varieties being in decline due to disease pressure in Florida and Brazil), Australian growers lack the confidence to invest in orchard development after several decades of poor returns. In recognition of the challenges facing the juice sector, a Citrus Juice Committee was established by Citrus Australia in 2019. The Committee met approximately two times per year to discuss issues affecting the sector including production of juicing varieties, understanding viable bin returns to enable reinvestment in new plantings, juice production technologies and export. The development of export markets for Australian juice would provide encouragement for new investment. Mid-way through

the project we applied for a project variation and an additional resource was brought into the team. One of their responsibilities was to investigate opportunities in the juice industry and communicate them through various publications and workshops. We held two juice forums and specific juice sessions at our annual conference.

One of the issues determined by the Citrus Juice committee was that juice being labelled as “100 per cent Australian” may not indeed be true to claim. On that basis, we agreed to conduct authenticity testing via stable isotope analysis. We worked with a competent laboratory in New Zealand and developed a sampling methodology to conduct a modest number of analyses during this project. The analyses revealed some levels of adulteration with crystalline cane sugar, water and juice concentrate in a small number of samples.

### **Communications**

The project team provide regular contributions to the fortnightly newsletter (Citrus eNews), the quarterly tabloid (Australian Citrus News) and provided a large amount of input into content and editing for project CT18000 (Citrus industry communications). Communications included:

- market access update
- R&D update
- agrichemical update
- update on tariffs and non-tariff barriers
- food safety update
- snapshot from annual tree census
- 10-year production forecast
- export figures from previous year.

### **Monitoring and evaluation**

A Program Logic Model and Monitoring and Evaluation Plan were developed at the commencement of the project. In working towards achieving the objectives in the Citrus Strategic Investment Plan (2017-2021), a range of activities were conducted by the project team. The details and timeframes for those activities were presented each year in a formal Annual Operating Plan. At each milestone, we reported against the Annual Operating Plan.

## **Results and discussion**

The Australian citrus industry has maintained a positive trajectory since 2013 when the China market surged with flow on effects across the rest of Asia. The citrus industry maintained this trajectory from the commencement of the project until 2021. The 2019 season was a record export season with 304 000 tonne exported to a value of \$A548 million – the first time on record that the citrus export trade exceeded the 300 000 tonne mark or half a billion dollars. It is our view that while we cannot claim the entire credit for this success, it most certainly would not have been the case without the efforts of the project team over the last decade and throughout the life of CT18002.

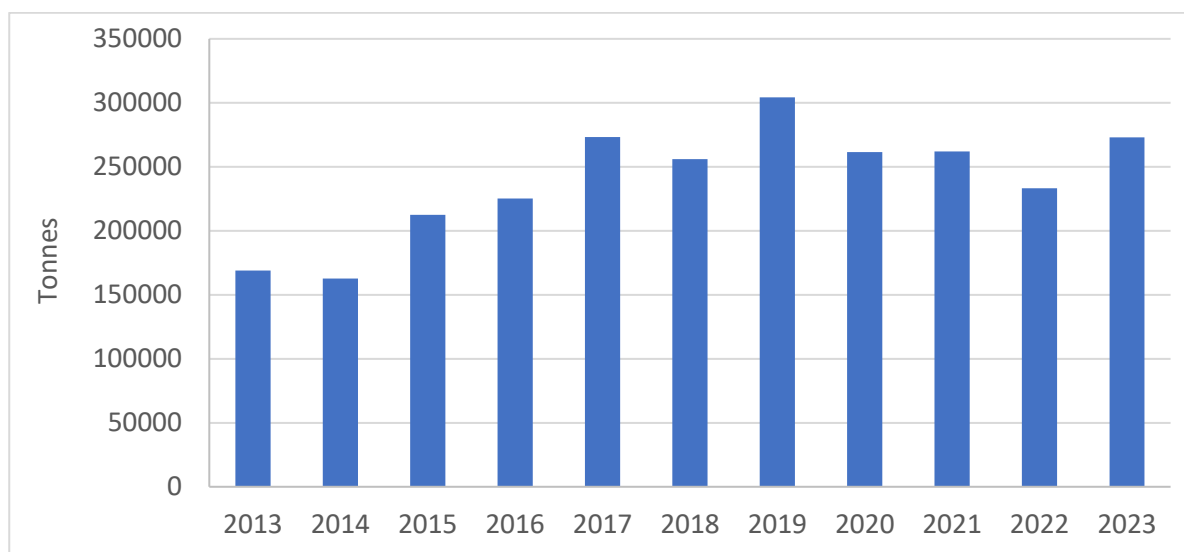
While the global pandemic reached Australian shores in early 2020, the immediate impact was mostly positive for the Australian citrus industry, with strong demand for Australian citrus in both the domestic and international markets due to the health benefits associated with citrus. However, the impacts of the global pandemic were soon to be realised during the 2021 season. Impacts included:

- reduced shipping availability with less frequent services
- escalating shipping costs
- difficulty in reaching certain markets (e.g. the middle east)
- port disruptions in Australia and overseas
- reduced container availability
- lockdowns in importing country cities (e.g. Shanghai, Bangkok)
- low availability of workers (field staff and packing staff)
- challenges in moving workers within Australia due to intra and inter-state restrictions on human movement
- transport disruptions in Australia.

The period 2019 – 2023 also saw an escalation in geopolitical tensions between Australia and China. Those tensions

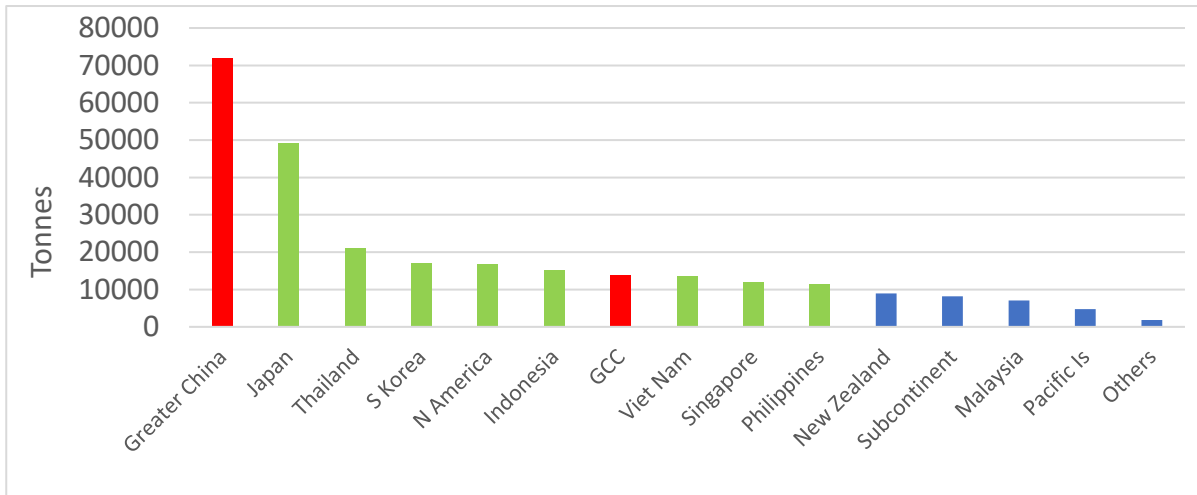
created a large amount of apprehension in the citrus export trade (with both importers and exporters) with anecdotal evidence that Chinese importing officials were deliberately disrupting trade by delaying import clearance procedures. Financial losses most certainly occurred. Moreover, during those tensions, the Chinese importing authorities did not approve any new Australian businesses (growers or packers) for export. This created substantial challenges for the industry given the large number of new plantings, ownership changes, and the commissioning of new packing houses taking place. It should be noted that Greater China is the number-1 market for Australian citrus reaching more than 120 000 tonnes in 2019. As a result of the challenges described, this figure rapidly plunged over the next few seasons.

During the same period, Australia experienced three consecutive La Nina events with extremely poor growing conditions that led to a severe loss of fruit quality. The combined effects of the global pandemic, geopolitical tensions and poor fruit quality resulted in a sharp decline in export volumes across most markets.



**Figure 1. Australian citrus exports (tonnes) (2013 – 2023)**

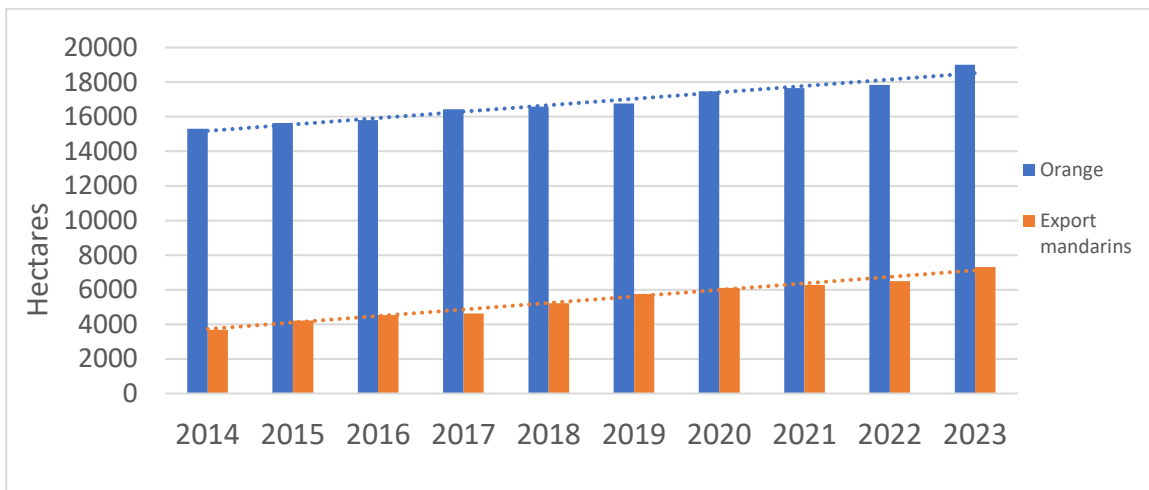
The project leaders have assisted the industry navigating the challenges with a large amount of effort placed on maintaining trade into China, irrespective of the regulatory disruptions associated with business registration. The 2023 export figures indicate that despite three years with poor growing conditions, the citrus export trade has mostly recovered. An examination of the data shows that trade volumes in eight of the top 10 markets have increased since the 2019 record year, with the exception being China and the six Gulf Cooperation Council countries combined. With better growing conditions in the 2023 – 24 season, we predict a better season outcome in 2024.



**Figure 2. Australian citrus exports (tonnes) (2013 – 2023). Green bars indicate growth, red bars indicate decline.**

The trade volume into China has declined by approximately 50,000 tonnes since the peak in 2019. Of most concern is that China is the highest returning market of any market on a dollar per tonne basis. In other words, we have witnessed a decline of 50,000 tonnes in the citrus industry's most profitable and important market. It is evident that for the industry to remain buoyant over the next decade, it must regain its market share in China, irrespective of any rhetoric around market diversification. There are very few opportunities remaining for the citrus industry with most markets already being exploited to their full potential. The only exceptions perhaps are the South Korean and Vietnamese markets that are only just starting to gain momentum. On that basis, China, South Korea and Vietnam will remain a key focus of the project leaders in the next iteration of the project.

The success in export markets has had flow on benefits in the Australian domestic market and as a result of that success, the industry has attracted a large amount of investment in new plantings and other capital. Tree census data indicate a 25 per cent increase in orange plantings and nearly a 40 per cent increase in mandarin export varieties. The aggressive plantings are a clear signal that there is strong business confidence in the industry. With these increases, sound R&D investment and leadership at a national level will continue to be required.



**Figure 3. Australian citrus plantings (hectares) 2014 – 2024**

### **Industry consultation**

At commencement of the project, we established an extensive network of value-chain participants that included growers, packers, exporters, researchers, regulators, agronomists, retailers, wholesalers. During the project there have been seismic changes within the industry with changes of ownership, many long-term citrus 'identities' exiting the industry and many new entrants. The ongoing effort required to cultivate and maintain relationships with well-informed citrus industry stakeholders who engage constructively should not be underestimated. We have capitalised on those relationships to increase our knowledge and develop priorities in the areas of:

- market access
- market information
- fruit quality
- research and development
- agrichemicals
- biosecurity
- food safety.

Our various committees and forums have provided industry participants the opportunity to collaborate and gain intelligence on markets. The research community and Hort Innovation have been given a platform to extend R&D findings and there continues to be strong evidence of businesses capitalising on the latest findings (e.g. post-harvest quality, market information). Our exporter groups allow businesses to exchange views on pricing and signals in export markets and reach agreement on minimum export prices. Through the Queensland Citrus Exporter's Group, like-minded businesses have continued an alliance to raise voluntary marketing levy and invest in an annual campaign each season. Today, Thailand imports more than 20 000 tonnes of Australian citrus, predominantly Queensland mandarins.

### **Government engagement**

The project leaders have maintained a deep level of mutual respect with state and federal government agencies. As is the case with citrus industry stakeholders, there is a high level of staff turnover and attrition within the public sector. The challenge has been to maintain our relationships within government as individuals have moved on. We recognise the DAFF Horticulture Exports Program as an important link in the citrus value chain in fulfilling its regulatory functions in auditing, accreditation, inspection and certification. The project leaders are considered a trustworthy source of independent advice to government and we have capitalised on this trust to improve the certification process for citrus export businesses. Acknowledging the challenges associated with auditing over 800 citrus export businesses annually, DAFF has moved to a new system whereby packing-houses provide assurance that growers have fulfilled certain requirements, negating the need for grower audits. The program has also moved towards recognising third-party food safety audits. The project leaders have been the champions of both of these initiatives which have ultimately reduced the regulatory impost on growers, reduced cost and the high levels of stress associated with audits.

### **Market access**

The citrus industry market access agenda has been informed through the regional and issues-based committees, our regional and national forums and the Citrus Industry Export Strategy (2021 – 2025). Australian citrus is exported to more than 50 markets and the industry has already achieved access to every key market. Nevertheless, many of the trade policies set by importing country authorities are less than optimal and further opportunities for improvement and expansion have been identified. At the start of the project through the process described above, we established an ambitious but realistic market access agenda that included:

- expanded access to the United States to allow additional production areas
- expanded access to Japan to allow additional varieties under cold disinfestation procedures
- improved cold disinfestation temperatures for access to Bangladesh to allow treatment at 3 deg C
- liberalisation of conditions of export to South Korea, removing requirement for pre-clearance officers, supervised loading and reduced inspection regime
- finalised free trade agreement with India to provide tariff reductions
- finalised free trade agreement with Indonesia to provide tariff reductions and assurance with import quotas
- finalised free trade agreement with the United Kingdom to provide tariff reductions
- finalised free trade agreement with the European Union to provide tariff reductions



- respond to New Zealand importing authorities on citrus import review
- maintain Country Recognition Agreement on Food Safety for exports to Indonesia
- negotiate appropriate conditions for food safety assurance for exports to Thailand
- remove requirement for pre-season audit by Japanese authorities
- maintain access for citrus exports from South Australia's Riverland, recognising the challenges of maintaining the Riverland Pest Free Area.

The process to expand access to the United States has been well-progressed but not finalised within this project period. In 2021, the USDA published its 'final rule' for Australian citrus on the Federal Register allowing Australian citrus to enter from additional production regions — contingent upon an operational work plan being developed and agreed before trade can commence. The project leaders provided a large amount of input into the operational work plan which is now finalised awaiting signature. There are currently a range of geopolitical factors at play which prevent the commencement of trade that are beyond the control of the project leaders. We remain hopeful that this requires will be finalised within the next 12 months.

Over more than two decades, the industry has been seeking to expand access to Japan to allow the entry of additional citrus varieties (chiefly mandarins). In 2021, the project leaders provided a detailed technical package to the Japanese authorities (through DAFF) to progress this expansion request. This provided the project team with optimism that this request was progressing well. However, in 2022 the Japanese authorities stalled work on this request due to 'domestic sensitivities' in Japan. Given the aggressive expansion of mandarin plantings in Australia, we have continued to emphasise the importance of this request to government at every level. At the time of writing, we have been advised that key decision-makers in Japan have rotated and that this request is now firmly back on the Australian government's market access work program.

In 2021, the Bangladesh importing authorities amended the conditions for Australian citrus to allow cold disinfestation to be carried out at 3 degrees Celsius. The amendments were the result of many years of work by the project leaders and government and provide a commercially viable treatment for exports to Bangladesh.

During the life of this project, several protocol improvements have been realised for citrus exports to South Korea. The South Korean authorities reduced the inspection regime (from one per cent of the export cartons to 600 fruit) and also removed the requirement for the of loading of containers to be supervised. While on face value these changes may not appear significant, they are most certainly game changers for citrus exporters. The protocol currently requires all consignments to be inspected by a Korean official and the changes allow for a greater amount of throughput through each single inspector (currently costing more than \$10 000 per month). This is a good example of how the most minor policy changes can have a substantial impact on the ability to trade. Disappointingly, we have been unable to make progress on removing the requirement for a pre-clearance inspector. While the South Korea authorities have previously agreed to remove the requirement for a pre-clearance inspector, this was contingent upon strong quarantine performance. With a number of ongoing (albeit minor) pest interceptions, the South Korean authorities have been unwilling to amend their import policy.

During the life of this project, Australia has entered into free trade agreements with Indonesia, India and the United Kingdom. During the negotiation phase, there was a lengthy exchange of correspondence between the project leaders and government to ensure the best possible outcomes for the Australian citrus industry. The agreement with Indonesia particularly has provided substantial tariff reductions for oranges, mandarins and lemons but more importantly, a higher level of business certainty with annual allocations of import quotas. The agreement with India is technically only an interim agreement with tariff reductions that only provide a partial improvement. We continue to provide technical advice to government to support further negotiations with India and ultimately a better result for the Australian citrus industry. While welcomed, the agreement with the United Kingdom is not expected to 'move the dial' on citrus exports given the tyranny of distance, and the technical and commercial challenges in the market. At the time of writing, an agreement with the European Union is still in the negotiation phase but is not expected to deliver any tangible outcomes for the Australian horticulture sector.

In 2019, the New Zealand authorities commenced a review of their import policies for citrus from all origins with a view to developing a single (generic) import policy for citrus. As a consequence of that review, New Zealand's draft policy was

excessive and more restrictive than what was reasonably required. Conditions that were perhaps more appropriate for other trading nations (with other pest pressures) were superimposed on Australian citrus exports. From 2019 – 2022, we were engaged in lengthy technical exchanges with DAFF and the New Zealand authorities. Ultimately, we arrived at the point at which we started. Such is the case with market access negotiations — protracted negotiations are often required simply to maintain the existing conditions. New Zealand subsequently amended its policy to allow irradiation to be applied as a disinfestation treatment for fruit flies.

Australia and Indonesia currently have a country recognition agreement on food safety. The agreement which requires renewal on a biannual allows Australian citrus to be exported to Indonesia without testing for residues on arrival in Indonesia. The benefits of this are two-fold: 1) it reduces cost and regulatory complexity 2) it allows fruit to enter through all Indonesian ports (there is only one port in Indonesia with capacity to test for residues). During this project, we have provided technical support to government to renew the agreement three times (2019,2022 & 2024).

In 2020, Thailand introduced the requirement that all imported fresh produce must be accompanied by a recognised food safety certificate as well as evidence of residue testing for the consignment. There were a large number of teething problems with the implementation of Thailand's new policy. We worked with government (DAFF and Australian embassy staff) to reach agreement on the list of analytes and the format of reporting. We worked with Austrade to develop procedures to verify the authenticity of food safety certificates. Trade to Thailand has continued to grow.

The Japanese importing authorities are currently required to conduct a pre-season audit prior to exports commencing each year. This represents a strain on Citrus Australia's resources, not to mention an unnecessary cost to the industry. We have worked with government to remove this requirement, but the issue is still under consideration by Japan.

Mid-way through this project, the Riverland Fruit Fly Pest Free Area started to experience fruit fly outbreaks. Commencing with just two outbreaks, at the time of writing there are more than 50 outbreaks across the region and the entire Pest Free Area has been suspended for several years for both domestic and international trade. While our longer-term hope has always been to reinstate the Pest Free Area, our immediate priority was to ensure that fruit could be moved from affected areas into packinghouses for packing and dispatch. Ultimately there were thousands of tonnes of fruit in affected areas that could not be packed according to the strict sense of the policy. Biosecurity incursions by their very nature are polarising to communities and there are always divergent views on how the situation should be managed. This most certainly proved to be the case and very challenging for the project leaders. We worked with industry and government (state and Commonwealth) to negotiate and procedures that allowed commerce to continue. Moreover, we worked with the commonwealth to ensure Riverland exporters could continue to export to existing markets with additional phytosanitary procedures.

Market access involves much more than protocols and protocol improvements. Importing country protocols are only part of the equation – efficient and effective policies and procedures for export out of Australia are equally, if not more important. The process of auditing and accreditation for export businesses has long been one of the pain points for growers and packers. Similarly, export inspection and certification services represent another pain point for the industry. While we recognise that it is not possible to resolve these challenges overnight, we have worked tirelessly with DAFF's Horticulture Exports Program on continual improvement. Acknowledging the challenges for government, the project leaders have continued to administer the export registration system for growers and packers. There are more than 850 citrus businesses registered for export at the time of writing. It is inconceivable that government would be able to fulfil its regulatory functions without our assistance. At the same time we have provided a large amount of assistance to growers, packers, exporters and crop monitors. At the same time we have provided a large amount of assistance to growers, packers, exporters and crop monitors by maintaining clear and concise instructional material, an online learning platform and providing one on one support throughout the season. We have collaborated with program staff to reduce the complexity around auditing and ultimately reduce costs. The program has moved towards alternative assurance models for some businesses with a view to roll out that model across the entire industry in the coming years. With our input, the program has also moved toward recognising some aspects of third-party food safety assurance schemes to reduce the audit burden for growers and packers. These improvements have been welcomed by the industry.

Audits by the overseas importing authorities and pre-clearance programs (inspection of goods before export) are also a feature of our market access activities. We have maintained markets access to Japan by providing ongoing support to

government to host the Japanese officials ensuring that the most professional citrus businesses are showcased each year when verification visits take place. During the life of this project we have witnessed an increase of more than 500 per cent in citrus exports to South Korea (from 2 700 tonnes to 17 000 tonnes). Achieving this increase has been challenging given the requirement for all goods to be inspected by a South Korean official prior to export. This would not have been possible without our efforts in coordinating the South Korean officials, with at least four inspectors now required each season.

### **Market information**

One of the objectives of this project was to ensure that citrus industry value-chain participants are well informed and that decisions being made on marketing, plantings and capital investment are guided by robust data. The annual citrus tree census has been a feature of our work for more than a decade and has continued to be supported by project CT18002. Businesses most certainly have access to reliable data to inform future planting decisions. We have combined our knowledge from the tree census with fruit density and sizing surveys and crop estimates committees in each region to provide reliable crop estimates annually. To better inform marketing decisions, we have delivered weekly shipping reports each export season and throughout this project, we have refined our data collection methods to make the information more accurate and useful to industry participants. We have provided price reports from Shanghai and Guangzhou wholesale markets for exporters to 'calibrate' and 're-calibrate' pricing during the export season. Our exporter groups have allowed industry members to exchange data on pricing and volumes in export markets.

### **Quality improvement**

Under previous iterations of this project, we established the Australian Citrus Quality Standards to measure fruit maturity based on the BrimA maturity index. Those standards and instructional material have been maintained and updated where necessary in collaboration with our various regional and issues-based committees. We have maintained a network of competent personnel across Australia to conduct sampling and maturity testing in the major wholesale markets. Typically, early fruit of each variety is tested and results are promptly reported with a view to discouraging growers and marketers from consigning immature fruit to market. It is difficult to objectively state that fruit quality has improved within the life of this project but based on our test results, maturity breaches do appear to be less common than a decade ago. Retailers have continued to provide anecdotal evidence that our testing program has improved fruit quality. Disappointingly, one major marketer is no longer providing the level of cooperation required for our testing network to sample fruit from the wholesale market which presents some obvious challenges going forward if testing is not conducted on a level playing field.

## Outputs

Here we provide a summary of the outputs generated by this project.

**Table 1. Output summary**

Output	Description	Detail
Issues committees <ul style="list-style-type: none"> <li>- Export Market Committee</li> <li>- Domestic Market Committee</li> <li>- Variety and Rootstock Committee</li> <li>- Citrus Juice Committee</li> </ul>	Each of the issues committees convened at least twice annually. The minutes of the meeting with action items and recommendations were recorded.  Meeting minutes (40) (2 per committee x 4 committees x 5 years)	Meeting minutes were captured, distributed to committee members, and filed for later reference. Advice from each committee was used to inform the project's priorities in the areas of (but not limited to): <ul style="list-style-type: none"> <li>- market access</li> <li>- market development (including promotions)</li> <li>- agrichemicals</li> <li>- biosecurity</li> <li>- inspection, audits and certification</li> <li>- food safety</li> <li>- juice</li> <li>- market information</li> <li>- fruit quality</li> <li>- national plantings</li> <li>- crop forecast</li> <li>- R&amp;D</li> </ul>
Regional Advisory Committees <ul style="list-style-type: none"> <li>- South Queensland</li> <li>- Far North Queensland</li> <li>- Western Australia</li> <li>- Riverina</li> <li>- Murray Valley</li> </ul>	Each of the issues committees convened at least twice annually. The minutes of the meeting with action items and recommendations were recorded.  Meeting minutes (50) (2 per committee x 5 committees x 5 years)	Meeting minutes were captured, distributed to committee members and filed for later reference. Advice from each committee was used to inform regional priorities, particularly in the area of R&D. Each region has specific regional issues (e.g. fungal diseases in Queensland, citrus gall wasp in southern states, fruit flies in South Australia).
Crop forecast committees  Fruit density and size surveys	Committees comprised growers, packer and agronomists in each growing region. Committees met prior to the season to inform the crop forecast. The outputs were 5 regional forecasts (one per region) plus one national forecast per year x five years.	The crop forecasts were made available to industry participants and in some cases, overseas customers. Project leaders delivered presentations on the crop forecast in each growing region as part of pre-season regional forums. In support of Hort Innovation's overseas campaigns, the project leaders were regularly invited to present at seminars and the crop forecast would invariably form part of those presentations.
Market Outlook Forums	Forums in 2020 and 2023  Project leaders were responsible for planning and coordination.	Presentations by all speakers were made publicly available via the Citrus Australia website, where permission was provided.  Each project leader was required to deliver presentations at each forum. Topics included:
Citrus Technical Forums	Forums held in 2019, 2022 and 2024.	<ul style="list-style-type: none"> <li>- market access</li> <li>- market development (including promotions)</li> </ul>

	Project leaders were responsible for planning and coordination.	<ul style="list-style-type: none"> <li>- agrichemicals</li> <li>- biosecurity</li> <li>- food safety</li> <li>- juice opportunities (including exports)</li> <li>- market information</li> <li>- fruit quality</li> <li>- national plantings</li> <li>- crop forecast</li> <li>- R&amp;D</li> </ul>
<p>Exporter Groups</p> <ul style="list-style-type: none"> <li>- Japan, China, USA Exporter's Group</li> <li>- Queensland Citrus Exporter's Group</li> </ul>	<ul style="list-style-type: none"> <li>- Furnished annual Exporter Agreements with ACCC</li> <li>- The groups convened at the commencement of each season and periodically throughout the season to calibrate prices and discuss crop estimates and market signals.</li> <li>- Meeting minutes and minimum pricing recommendations</li> </ul>	Meeting minutes and minimum pricing recommendations (in export markets only) were distributed to group members immediately after each meeting.
Agrichemical Reference Group	The Reference Group did not meet formally but provided advice as need to the project leaders when agrichemical issues arose. The group was instrumental in informing the agrichemical needs of the industry and these are captured in the 2022 Strategic Agrichemical Review Process	<p>The SARP is publicly available via Hort Innovation's website. The project leaders have promoted the document's availability through our usual print and electronic media channels.</p> <p>Agrichemical updates were regularly provided at regional and national forums.</p>
Weekly shipping reports	29 shipping weekly reports annually (weeks 24 – 52)	Reports were distributed to Citrus Australia's extensive database of citrus industry participants via email
Monthly export data	6 reports per year (June – December)	
Maintain national citrus quality standards	<p>The Australian Citrus Quality Standards were continually reviewed in consultation with the Domestic Market Committee.</p> <p>Instructional material was maintained.</p>	<p>The standards and a wide range of instructional material including video is publicly available on the Citrus Australia website.</p> <p>Updates in the Quality standards were regularly provided at regional and national forums.</p>
Pre-season quality testing and reporting	Pre-season testing in orchards was conducted at the start of each season in the Murray	Regional reports distributed to industry participants via email.

	Vally (mid-April), the Riverina (late April) the Riverland (mid-April) and the Central Burnett (March). Four regional maturity reports were provided each year.	
Weekly quality testing and reporting	Approximately 25 tests per week x 18 weeks (June – August) x 5 years	Test results distributed to industry participants (that opt in) via Mailchimp
Coordinate annual export registration system	Export registration system opened in October each season and administered by project leaders. 85 packinghouses and 750 orchards registered each year.	The export registration system serves as a communication channel itself, sending out automated emails at various stages along the registration process. This ensures that no critical deadlines are missed.
Instructional material for export compliance	Maintain and updated the material as importing country requirements changed. The last amendments were in 2021.	Communicated via the online export registration system.
Online training for crop monitors	Project leaders worked with Tocal College to update and maintain the online training for crop monitors. Approximately 85 crop monitors successfully trained and assessed each season.	Communicated via the online export registration system and to the crop monitor network via email.
Annual citrus tree census	Tree census opened in November each year and data were collated and published by March the following year.  Total of 5 tree census reports throughout life of project.	Tree census report launched at annual conference via formal presentation and subsequently published on the Citrus Australia website. Notifications also sent out by Mailchimp.
Food safety requirements	Project leaders attained qualifications to deliver training in Freshcare food safety standard. Training and assessment provided to more than 280 industry participants over life of project. Also provided updates for Freshcare standard	Communication via print and electronic media.

	(FSQ4.2)	
Monitoring changes to maximum residue limits (MRLs)	Updates provided each year to coincide with emergence of spring complex pests (September) and start of export season (March).	MRL tables published on Citrus Australia's website and communicated via 'AgChem alert' email to relevant participants.
Agrichemical residue testing	Approximately 550 samples submitted and tests conducted each year for: <ul style="list-style-type: none"> <li>- multi-residues</li> <li>- heavy metals</li> <li>- microbial contamination</li> </ul> Multi-residue-screen developed for more than 300 analytes	Communication via print and electronic media.
Stable isotope testing for juice	Competent laboratory identify and sampling methodology determined.  14 brands sampled and tested	Results only released to Citrus Juice Committee.
Communications	Project leaders provided content for at least one article in each edition of Australian Citrus News. Regular content in fortnightly newsletter (Citrus eNews) and regular presentations at committee meetings, forums and workshops.	N/A

## Outcomes

Here we provide a summary of the project's outcomes as per the project's M&E Plan.

Outcome	Alignment to fund outcome, strategy and KPI	Description	Evidence
Increased domestic and export trade volume and value in existing markets	Outcome 1 – Maintain and develop domestic and export markets and increased demand for citrus products	Continued growth in plantings and export volumes took place until 2019 when the global pandemic occurred. Export volumes grew from 256 000 tonnes to 304 000 tonnes prior to pandemic, representing a 19 per cent increase. Reported (FOB) export values increased by 19 per cent to a record of \$A548 million.  Plantings data indicate an 18 per cent increase from 25 000 hectares to 29 250 hectares.	<ul style="list-style-type: none"> <li>• Annual tree census</li> <li>• Export volumes</li> <li>• Reported export prices (FOB)</li> </ul>
Identification and development of domestic and export market access priorities		Stakeholders given ample opportunity to contribute to priority setting by participation in committees (11 in total) and attendance at forums. The project leaders are well known to industry participants and regular field enquiries and suggestions.	Export market access priorities document.  Australian citrus industry export strategy (2021 – 2025).
Improved efficiencies in export auditing, inspection and certification		Project leaders have worked tirelessly with government to streamline regulatory services. In 2023, the citrus industry moved to a “packing house supplier model” whereby packing house manages take responsibility for their grower base, negating the need for government audits of growers. Time savings vary between businesses and scale of operations.	Survey of number of packers entering into approved arrangement with DAFF.
Reduced tariffs and removal of non-tariff		During this project FTAs were finalised with Indonesia, India and the	Export trade data



measures		United Kingdom providing significant tariff reductions for Australian citrus. Benefits of other FTAs (e.g. South Korea, China and Japan) also became fully realised as tariffs gradually reduced.	
Minimised risk of trade disruption, suspension and reputational damage  Minimised agrichemical compliance breaches		There have been no trade suspensions on only minimal breaches (phytosanitary and chemical residue) breaches during this project.	Number of compliance breaches reported through Australian government and state government authorities.
Increased industry understanding and ability to fulfil phytosanitary, food safety, chemical residue and other technical requirements of market access	Outcome 2 – Protection of the production base from biosecurity threats, phytosanitary and agrichemical risks	As above, there have been no trade suspensions on only minimal breaches (phytosanitary and chemical residue) breaches during this project.	Number of compliance breaches reported through Australian government and state government authorities.
Improved phytosanitary access conditions through progressing technical cases with government		A number of protocol improvements were realised during this project period that had a significant impact on trade volumes. (e.g. citrus exports to South Korea, Bangladesh). Other initiatives have been well progressed but not finalised (Citrus to USA, citrus to Japan, Citrus to South Korea).	Export trade data
Contribution to eradication of citrus canker and protection of the production base from exotic threats		Citrus canker declared eradicated in April 2021.	Export trade data
Increased consumer confidence and repeat purchasing behaviour		Outcome 3 – Improved product quality and increased productivity through innovation	Trade volumes through Australian domestic markets have increased in line with increased plantings and production volumes. However, this has been offset by three consecutive seasons with poor growing conditions.
Increased industry ability to make informed decisions on trade and		Major events and forums well attended.  Participation in export	Qualitative stakeholder interviews show high regard for CAL quality of

investment	Outcome 4 – Increased skills, knowledge and capacity of industry	registration system. Plantings data in line with export growth.	information. Tree census highly regarded Many stakeholder stated that they don't know where industry would be without them
Increased industry awareness and knowledge through online systems (e.g. tree census), trade databases, international notifications and MRL sources		Maintaining critical mass of 850 businesses participating in citrus export program. New entrants in export program. Number of trade violations.	Qualitative stakeholder interviews show high regard for CAL in tree census, MRL advice, export data, industry information.
Inform industry priorities and identify priority investment areas by maintaining links with the supply chain.		CAL has a range of regional and national reference groups which operate well and are very strongly supported (see below).	Group and Committee meeting minutes. Interviews with key stakeholders

## Monitoring and evaluation

Project CT18002 was subject to an independent review by Forest Hill Consulting & Miracle Dog in 2022. The review included:

- a joint meeting with Hort Innovation's International Trade Manager, Industry Strategic Partner, Regional Extension Manager (Tri-State Region) and Measurement and Evaluation Specialist
- separate interviews with Hort Innovation's project overview team
- an examination of all milestone reports, industry plans and other documents
- interviews with Citrus Australia's Chief Executive Officer, General Manager (Market Development)
- face-to-face interviews with five industry stakeholders
- telephone and videoconference interviews with 35 informed citrus industry stakeholders across different states, regions, and role in the value chain, with specific inclusion of individuals likely to be critical of the project.

A questionnaire was sent to interviewees prior to the discussion and interviews lasted between 15 and 45 minutes. The script contained within the questionnaire included a high degree of prompting. Stakeholders varied in their role, product range and size. The vast majority were growers, often of multiple citrus products: oranges (navel, including blood oranges, and Valencia), mandarins, lemons, limes and grapefruit. Many of the growers interviewed had integrated operations extending through packing to marketing, usually servicing both the domestic and export markets, and some supplying to juice manufacturers.

The review concluded that:

- the activities delivered under CT18002 are considered to be both very important to the prosperity of the industry and very well delivered by Citrus Australia. In fact, this was one of the most positive project evaluations ever undertaken by the review team.
- each of the five streams was rated positively for both value and delivery. Market access activities were seen by many as the most critical part of the project. All interviewees were able to readily identify direct benefits to their businesses.

- Citrus Australia’s engagement with citrus growers and other stakeholders for the project is generally (although not universally) very strong.
- the project appears to be appropriately resourced and efficiently delivered.
- the project is appropriately governed, with CAL subject to several layers of oversight in the delivery of the project.
- the monitoring and evaluation (M&E) plan (developed at the initiation of the project) was comprehensive but perhaps overly so.
- all except a couple of the 51 key performance indicators (KPIs) in the M&E plan were partially or fully achieved.
- the project aligns well with many of the strategies of the recently released Strategic Investment Plan (2022 – 26)
- there were no clear and significant deficiencies or gaps identified within the project.

Here we provide the reviewers’ response to the key evaluation questions:

<b>Key Evaluation Question</b>	<b>Project performance</b>	<b>Continuous improvement opportunities</b>
1. To what extent has the project achieved its expected outcomes.	The review of KPIs strongly suggests that the project has been very successful in meeting the vast majority of the expected outcomes. This finding is supported by the very positive responses received during stakeholder interviews.	Use the summary report as the basis for an annual article in the magazine (Citrus News), highlighting the project, its funding source, and its achievements over the previous 12 months.
2. How relevant has the project been to the needs of intended beneficiaries and stakeholders	The response from stakeholder surveys clearly indicates that the project is meeting the needs of intended beneficiaries and stakeholders.	
3. How well have intended beneficiaries been engaged in the project?	The true level of engagement is somewhat difficult to assess in the absence of comprehensive quantitative market research. However, on the basis of stakeholder interviews it is apparent that the project has strongly engaged with beneficiaries. All stakeholders could name activities.	The project would benefit from more visibility to levy payers as a whole.
4. To what extent were engagement processes appropriate to the target audience/s of the project?	Under this project, Citrus Australia engages the target audience by a variety of means – reference groups, workshops, forums etc – and industry information/publications. The point was often made during consultations that any grower, packhouse or other industry participant can be readily engaged by the project, should they choose to do so.	Continue the already-considerable efforts to improve industry engagement in South Australia and the NSW Riverina.
5. What efforts did the project make to improve efficiency?	Few of the interviewees for the review were able to point to examples of efforts to improve efficiency. This is unsurprising given that most stakeholders would have very limited visibility of the	

	<p>operations of the project. However, many remarked that they were surprised at how much the team achieves with available resources. The review team drew similar conclusions and especially noted the careful expenditure on travel. The outcomes produced from the 3.5 FTEs are commendable.</p>	
--	---	--

## Recommendations

The independent reviewer provided eight recommendations in its report. Recommendations included that the project leaders should:

- consider producing short monthly updates on market conditions in addition to the current wrap-up at season's end, if resources permit.
- publish the analysis of forecasts versus actual crop estimates from time to time.
- undertake a simple analysis to determine whether quality at wholesale markets has improved, especially early in the season, and review whether the current activities undertaken as part of the 'Quality improvement' stream need to continue in their current form when the next phase of this project is developed during 2023.
- continue the already-considerable efforts to improve industry engagement in South Australia and the NSW Riverina.
- reduce the complexity / detail / length of milestone reports but supplement them with a tabular report of progress against primary KPIs (reduced from 51 to say 10 or 15 of the most important and most attributable) annually.
- provide the summary report of performance against primary KPIs once annually to the Domestic and Export Marketing Committees and seek their views on project progress and any required modifications in direction.
- use the summary report as the basis for an annual article in the magazine (Citrus News), highlighting the project, its funding source, and its achievements over the previous 12 months.
- commence planning for the next iteration of 'Citrus Market Development, Market Access & Quality' 12 months in advance of CT18002 being completed.

In September 2023, Hort Innovation held a co-design workshop with industry stakeholders to determine whether investment in another similar project is supported and if so, what activities should be carried out. Key findings from that workshop included:

Key Takeaways included:

- **Forward-Thinking and Adaptation:** Workshop participants stressed the need for forward-thinking, given increased plantings, and to secure and strengthen both existing and new markets. This reflects a recognition of the ever-evolving nature of the industry and the need for proactive measures to remain competitive.
- **Prioritisation of Key Strategies:** Following robust discussion of where industry stakeholders hope to see the industry in 5 years' time and a situational analysis, key strategies were prioritised under six essential project themes, including market access, communication, market information, quality, market development, and export capability. This prioritisation process ensures that the project focuses on the most critical areas for industry growth and success.
- **Expectations:** Participants had clear expectations for the project, which included the need for a well-defined and industry-beneficial project scope. Other expectations from the workshop included clarity on Citrus Australia's role within the project, clear objectives with industry input, alignment with industry priorities, and the development of a collaborative growth roadmap for the citrus sector. These expectations reflect a desire for a transparent, inclusive, and industry-driven project.
- **Concerns:** Workshop participants expressed a range of concerns regarding the citrus industry. They raised questions about the perceived narrow focus of the project, which some believed might limit its impact, achievability of project outcomes and whether the industry fully understood the work happening behind the scenes. Concerns were further amplified regarding the project's ability to remain agile and responsive in a rapidly changing landscape. This highlighted the imperative for a more comprehensive, adaptable, and forward-thinking approach and the importance of raising awareness within the industry about this project, accompanied by appropriate acknowledgment of the use of levy funds.

## Intellectual property

No project IP or commercialisation to report.