



Citrus Fund

Annual Report 2019/20



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About Hort Innovation and the Citrus Fund

Hort Innovation is the grower-owned, not-for-profit research and development corporation for Australia’s horticulture sector. We work closely with industry to invest the citrus R&D and marketing levies, together with Australian Government contributions, into key initiatives for growers, through the Hort Innovation Citrus Fund. We’re extremely proud of the work we do to help drive productivity, profitability and demand for citrus growers, and for the horticulture sector at large.

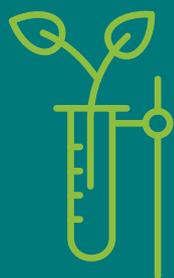
About the year

An intense and unpredictable year, 2019/20 certainly dealt challenges for the world, for Australian horticulture, and for Hort Innovation. There was ongoing drought, a devastating bushfire season, intense floods, the biosecurity threat of fall armyworm and, of course, the global and ongoing COVID-19 pandemic.

We encourage you to download a copy of the overarching Hort Innovation Annual Report 2019/20 at www.horticulture.com.au/annual-report-portal to better understand Hort Innovation’s responses to these events, and how the company was able to change its plans and priorities to best serve the sector.

Through it all, though, activity in the Hort Innovation Citrus Fund remained strong. While some activities inevitably changed under COVID-19, it was still a solid year of investment. There was some \$3.16 million invested in R&D for the industry (including into 11 new projects), plus close to \$411,000 in marketing. Read on for an overview of what was delivered.

2019/20 Citrus Fund snapshot



\$3.16M

invested in R&D



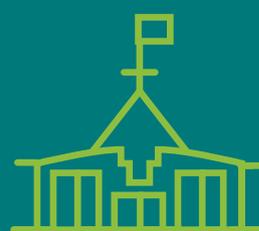
\$411,000

invested in marketing



41

active R&D
investments



\$3M

in levies collected
by the government and passed
on to Hort Innovation for investment

Did you know?



5.2%

Australia's citrus production
grew at an average annual rate
of 5.2 per cent in the five years
to 2018/19



11.6%

Production value grew at
an average annual rate of
11.6 per cent over the five
years to 2018/19



34%

Some 34 per cent
of Australia's citrus
production volume was
exported in 2018/19

These facts and more can be found in the Australian Horticulture Statistics Handbook, which is delivered by Hort Innovation each year. The handbook is packed with horticulture statistical information and analysis for some 75 categories, for use by individual industries and the wider sector. The 2018/19 edition was released in early 2020 and, for the first time, features an interactive dashboard format for desktop users. See www.horticulture.com.au/horticulture-statistics-handbook.



Just some of the things delivered for you during the year:

- ✓ **Postharvest best practice management tools**, which continue to be collated for citrus growers at www.citrusaustralia.com.au/growers-industry/post-harvest
- ✓ **Work to deliver more new, high-performing rootstocks**, following the release of six Chinese rootstocks in recent years by levy-funded work
- ✓ **Information and data to assist through COVID-19**, including the new *Hort Innovation Insights* podcast (www.horticulture.com.au/webinars) and regular consumer attitude and behaviour information (www.horticulture.com.au/impact-monitor)*
- ✓ **Preparation support for fall armyworm**, including emergency minor use permits and an educational podcast series, www.bit.ly/armyworm-podcast*
- ✓ **Industry communication and extension programs**, delivering the *Australian Citrus News* magazine, *Citrus eNews* emails, industry forums, and the industry website, www.citrusaustralia.com.au
- ✓ **The citrus Harvest to Home dashboard** providing regular household purchase data and insight reporting, at www.harvesttohome.net.au
- ✓ **A multi-pronged domestic marketing campaign** and, launched during COVID-19, **The Good Mood Food** across-horticulture campaign* (www.horticulture.com.au/the-good-mood-food)
- ✓ **Investments in the Hort Frontiers strategic partnership initiative** to address longer-term and often complex issues and opportunities critical to the future of Australian horticulture – see www.horticulture.com.au/hort-frontiers*
- ✓ **Projects supported by grants** secured by Hort Innovation, ranging from cross-sector Rural R&D for Profit initiatives to horticulture-specific work to aid in access to crop protection products – see the Hort Innovation Annual Report 2019/20 for more*

*These initiatives were delivered outside of the Hort Innovation Citrus Fund and, in most instances, did not involve the industry levy

Making investments in 2019/20

The below diagram shows how Hort Innovation makes strategic levy investments on behalf of horticulture industries. The citrus R&D and marketing levies were invested this way during the year, guided by the Citrus Strategic Investment Plan and advice from the industry’s investment advisory panel.



To learn more about funding specific to the Hort Innovation Citrus Fund, visit www.horticulture.com.au/citrus. During the year, other sources of funding were also used to support activities for the benefit of Australian horticulture, including grant funding secured by Hort Innovation, co-investment dollars brokered through our Hort Frontiers initiative and centralised strategic levy reserves.

Investment planning and performance

During 2019/20, Hort Innovation continued to track investment expenditure against the Citrus Strategic Investment Plan, while looking towards new developments in 2021. Access an at-a-glance copy of the current investment plan at www.bit.ly/citrus-plan.

A performance analysis is coming

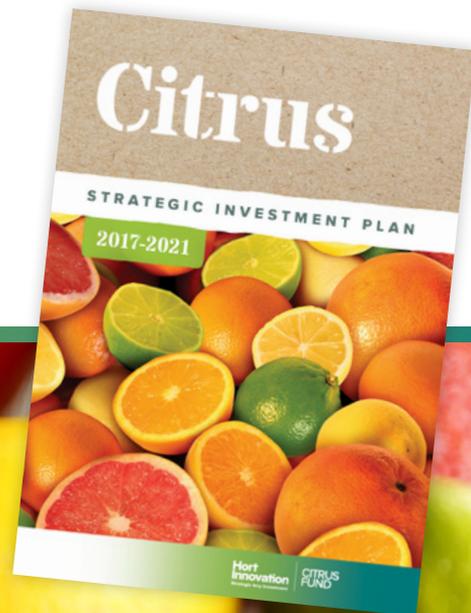
The industry's investment plan outlines key goals and outcomes for levy investment. With the plan due for renewal in 2021, Hort Innovation is undertaking a performance analysis to see how the industry has progressed against the current plan's ambitions. This will also help guide ongoing priorities for investment. Look for information to be published at www.horticulture.com.au/citrus in 2021.

See how your levy investments align to the industry's current plan

You can see how investment expenditure in the Hort Innovation Citrus Fund aligns to the industry's current strategic investment plan with the interactive analysis information available from www.bit.ly/citrus-investment. The analysis shows the allocation of funding against each of the citrus plan's outcomes, and gives an indication of the projects that are aligned to each outcome.

New ways of obtaining advice and setting priorities

In 2020/21, Hort Innovation will be implementing new ways of obtaining advice and setting priorities for industry investments. Renewed industry investment plans, plus new yearly (or as needed) program plans and new ways of consulting more broadly will mean more efficient investment and better outcomes for industry. Watch this space.



R&D project list 2019/20



NEW INVESTMENTS IN 2019/20

CT18004	Breeding new rootstocks for the Australian citrus industry
CT19001	Citrus harvest handbook
CT19002	Afourer mandarin best practice canopy management
CT19003	Citrus postharvest program
CT19005	Reducing granulation in the production of Imperial mandarins
CT19006	Citrus export strategy renewal
MT19003	Parasitoids for the management of fruit flies in Australia
MT19005	Horticulture trade data
MT19012	Industry-specific impact assessment program
ST19008	Multi-scale monitoring tools for managing Australian tree crops – phase 2
ST19018	Xylella insect vectors

ONGOING INVESTMENTS IN 2019/20

CT15017	Building a genetic foundation for Australia's citrus future
CT16000	Citrus industry minor use permit program
CT17000	Improving citrus quality with regulated deficit irrigation
CT17001	Improving biosecurity preparedness of the Australian citrus industry
CT17002	Evaluation of new rootstocks for the Australian citrus industry 2017-2022
CT17006	Evaluation of new citrus varieties 2017-2022
CT17007	Improving diagnostics and biosecurity for graft-transmissible diseases in citrus
CT17008	Protecting Australia's citrus genetic material
CT18000	Citrus industry communication program
CT18001	Citrus agrichemical and export MRL program
CT18002	Citrus market development, market access and quality
AM17001	Developing a national systems approach for meeting biosecurity requirements to access key Asian markets
AM17010	Taste Australia trade shows*
FF18003	SITplus: Port Augusta Qfly SIT factory pilot operation
MT14052	Essential market access data packages
MT17006	Improving preparedness of the Australian horticultural sector to the threat potentially posed by <i>Xylella fastidiosa</i> (a severe biosecurity risk)
MT17006	Xylella coordinator

Continued >>

ONGOING INVESTMENTS IN 2019/20 *(continued)*

MT17015	Consumer behavioural and retail data for fresh produce
MT18005	Improving plant industry access to new genetics through faster and more accurate diagnostics using next generation sequencing
MT18011	Ex-post impact assessment [^]
MT18017	Taste Australia retail program
ST16006	Generation of residue, efficacy and crop safety data for pesticide applications in horticulture crops 2017
ST18001	Generation of data for pesticide applications in horticulture crops

* This investment is a parent program, under which further event-specific Taste Australia investments may sit

[^] This multi-industry project was a key monitoring and evaluation investment during 2019/20 – we encourage you to find the full details at www.horticulture.com.au/mt18011

INVESTMENTS COMPLETED IN 2019/20

CT15010	Australian Citrus Postharvest Science Program
CT17003	Maximising the biosecurity of the Australian citrus industry budwood facility
CT18003	First Detector Network: USA Huanglongbing and citrus canker
MT13059	SITplus: Developing and optimising production of a male-only, temperature-sensitive-lethal, strain of Qfly, <i>B. tryoni</i>
MT16010	Horticultural trade data 2017-19
MT17005	Improving the biosecurity preparedness of Australian horticulture for the exotic spotted wing drosophila (<i>Drosophila suzukii</i>)
ST16008	AgVet collaborative forum



R&D report

Take a closer look at some of the key investments in the Hort Innovation Citrus Fund during 2019/20. You can also visit www.horticulture.com.au/citrus at any time to access information on new, ongoing and completed projects, and to download resources produced by levy investments, such as fact sheets and guides.

Breeding new rootstocks for the Australian citrus industry (CT18004)

NEW IN 2019/20

Key research provider: The Queensland Department of Agriculture and Fisheries

Established in 2019, this project is developing new rootstocks for the Australian citrus industry. The project team is incorporating diverse germplasm into their breeding work to increase genetic diversity, performance and resilience of commercial rootstocks. The intention is to provide citrus growers with rootstocks that are innovative and unique, and that outperform existing material, as well address a number of production issues such as phytophthora, salinity and vigor control.

The project works closely with ongoing investment ***Evaluation of new rootstocks for the Australian citrus industry 2017-2022 (CT17002)***, which is delivered by the NSW Department of Primary Industries. Project CT17002, as its name suggests, is evaluating the performance of new rootstocks for the Australian citrus industry. It is continuing the evaluation of the industry's recently released Chinese rootstocks; investigating new rootstocks from Italy; running trials on dwarfing rootstocks from China and the United States; evaluating rootstocks for salt tolerance; and looking at Huanglongbing-tolerant rootstocks.

Together, both projects are working to deliver superior and locally-adapted rootstocks to Australian growers, suited to both mainstay and new citrus varieties. The work will ultimately allow growers to intensify plantings, modernise orchards and obtain higher yields with minimal extra inputs, while meeting requirements for existing and emerging markets.

Afourer mandarin best practice canopy management (CT19002)

NEW IN 2019/20

Key research provider: NSW Department of Primary Industries

This investment is developing best practice canopy management techniques that will improve long-term yields and minimise alternate bearing in Afourer mandarins. Alternate bearing can be a significant issue for Afourer growers, causing high crop loads in one season followed by low crop loads the next, resulting in problems with fruit size and marketing. This project will ultimately develop a best practice manual that will provide practical solutions for growers to implement on-farm.

Reducing granulation in the production of Imperial mandarins (CT19005)

NEW IN 2019/20

Key research provider: The Queensland Department of Agriculture and Fisheries

Several on-farm trials to investigate factors affecting granulation in Imperial mandarins. Granulation is a physiological disorder that results in dry, tasteless fruit. Unfortunately affected fruit cannot reliably be detected by appearance or density, and when granulated fruit reaches the market it has the potential to damage the reputation of the industry.

To develop guidelines for growers to help reduce the incidence and severity of granulation, and therefore improve consistency and satisfaction for consumers, the researchers are:

- » Exploring improving irrigation practices in early fruit development
- » Reviewing nutrition requirements to support the development of young fruit

Continued >>

- » Researching the use of plant growth regulators and pruning timing to reduce fruit-to-shoot competition
- » Reviewing technologies for the non-invasive assessment of granulation.

Citrus postharvest program (CT19003)

NEW IN 2019/20

Key research provider: NSW Department of Primary Industries

This project is delivering new information and innovative technologies to support growers in adopting postharvest best practice, thereby improving the quality of Australian citrus. It is:

- » Developing a grower postharvest manual
- » Researching and extending improved methods for decay control and sanitation whilst also maintaining fruit quality, particularly following any market access treatments
- » Helping reduce chemical and microbiological risks from postharvest methods
- » Enabling growers to meet export maximum residue limits (MRLs) while ensuring postharvest quality.

This investment builds on the now-concluded **Australian Citrus Postharvest Science Program (CT15010)**, which ran from 2017 to 2019 to develop best practices to manage current fungicides and sanitisers to control decay, and to ensure Australian citrus remains clean and green with ultra-low residues. Full details on the achievements on CT15010, and its final research report, can be found at www.bit.ly/ct15010.



Citrus harvest handbook (CT19001)

NEW IN 2019/20

Key research provider: NSW Department of Primary Industries

To improve workplace health and safety (WHS) during harvesting, this project is delivering a suite of training resources for the citrus industry. Providing access to WHS resources that can be used to train staff in the workplace will provide support to citrus producers in meeting their safety obligations, as well as improving the quality of harvest.

Existing resources will be reviewed and updated in line with current requirements, and new tools developed that align with a range of roles along the citrus supply chain. This will include updated harvest and induction manuals for staff, instructional videos and posters, and an online course. To ensure that the materials developed are easily accessible for those who may speak English as their second language, an industry survey will be conducted to determine the three priority languages for translation of safety resources.

Citrus export strategy renewal (CT19006)

NEW IN 2019/20

Key research provider: Citrus Australia

This investment is renewing the export strategy for citrus in collaboration with key stakeholders in industry and government. By identifying, sizing and prioritising opportunities in international markets, this project will provide the citrus industry with the information needed to guide activities, including future investment into export initiatives.

Specifically, the project aims to:

- » Identify the long-term strategic export objectives for the citrus industry and create a single resource to outline them
- » Identify and rank market access and growth opportunities for each international market to guide investment of effort over a five-year timeframe, looking at current and historical trade patterns, competitor trade volumes, current challenges and opportunities
- » Develop a matrix of market requirements, including information on phytosanitary conditions, food safety requirements, maximum residue limits, technical specifications, quotas, tariffs and other technical barriers to trade
- » Improve the citrus industry's understanding of international competitors.

Multi-scale monitoring tools for managing Australian tree crops – phase 2 (ST19008)

NEW IN 2019/20

Key research provider: The University of New England

This project represents just one component of the overarching *Multi-scale monitoring tools for managing Australian tree crops – phase 2* program, which is a collaborative piece of work funded through the Australian Government's Rural R&D for Profit initiative and led by Hort Innovation.

The overarching program is continuing the development, trial and extension of technology-based crop mapping and monitoring tools to help growers in predicting fruit quality and yield, and monitoring tree health – including in the early detection of pest and disease outbreaks.

On a wider, whole-of-sector scale, the program is also further developing the Australian Tree Crop Rapid Response Map, which can be used to assist in biosecurity and disaster response efforts. The map has already been put to work in 2017 with Cyclone Debbie, and during and following the 2019/20 bushfires.

Citrus levy has been co-invested in the program's specific ST19008 component.

Maximising the biosecurity of the Australian citrus industry budwood facility (CT17003)

NOW COMPLETED

Key research provider: Auscitrus

From 2018 to 2019, this investment worked to increase the preparedness of the Australian citrus industry for any future incursion of the Asiatic citrus psyllid and the accompanying disease Huanglongbing, by building a structure to house citrus budwood multiplication plants in insect proof conditions. The completion of this protective structure ensures the availability of Huanglongbing-free budwood to Australian citrus nurseries, which would be a critical factor in mitigating the spread of any potential incursion.

For more information on the project's work, visit www.bit.ly/ct17003.



First Detector Network: USA Huanglongbing and citrus canker (CT18003)

NOW COMPLETED

Key research provider: Citrus Australia

The citrus industry's First Detector Network is made up of a range of personnel who regularly undertake inspection and monitoring of trees and fruit for high-priority pests. The group is coordinated under *Improving biosecurity preparedness of the Australian citrus industry* (CT17001), described on [p11](#).

Investment CT18003 provided funding for network representatives to undertake a 2019 field visit to the United States, where the citrus industry in Florida was mounting a campaign to find and destroy Huanglongbing and Asian citrus psyllid, which are threatening to enter the state's main production region in. Areas of the region have also been significantly affected by citrus canker.

The visit was an opportunity for the Australian industry to gain insights and improve surveillance techniques to better prepare for incursions of such exotic pests, and to see firsthand the impacts and symptoms of both Huanglongbing and canker.

After their visit, the tour participants agreed that early detection of Asian citrus psyllid and a rapidly executed, detailed and national response plan will be essential to eradicate any incursions and maintain the Australian citrus industry's Huanglongbing-free status. A list of recommendations has been made for industry to consider, including the establishment of a national Citrus Pest and Disease Prevention Committee who will be tasked with implementing the coordinated response.

Improving the biosecurity preparedness of Australian horticulture for the exotic spotted wing drosophila (*Drosophila suzukii*) (MT17005)

NOW COMPLETED

Key research provider: Plant Health Australia

Running from 2018 to 2020, this multi-industry investment improved awareness of the risks posed by spotted wing drosophila, which attacks a range of soft-skinned fruit, as well as enhanced Australia's capacity to detect and respond to any incursions of the pest.

Most importantly, this project developed a framework for modelling spotted wing drosophila establishment and movement throughout Australian regions, allowing for a comprehensive preparedness plan to be developed for a swift response in the event of an incursion. The plan includes an extensive list of recommendations for industry, including relating to surveillance, control techniques, engagement and awareness, and diagnostics.

The project also worked to build knowledge and capacity around appropriate surveillance and management tools and strategies within the growing industries, government and among other relevant stakeholders. It produced a range of materials for growers, including identification information, a fact sheet on spotted wing drosophila hosts, and a webinar detailing preparedness for the pest.

Full details and links to the project's resources – and final research report – can be found at www.bit.ly/mt17005.

Improving biosecurity preparedness of the Australian citrus industry (CT17001)

Key research provider: Plant Health Australia

This project acknowledges that the industry faces a number of significant exotic pest threats that have the potential to affect production as well as market access. These include Huanglongbing and its psyllid vectors, xanthomonas (which causes citrus canker) and xylella (related to citrus variegated chlorosis). Its work is bolstering biosecurity capacity and technical capability for the Australian citrus industry, and includes a range of preparedness, response and awareness activities.

Importantly, the project involves the nationally coordination of citrus biosecurity activities and surveillance for the early detection of high-priority pests, involving growers, researchers, industry bodies and national and state government agencies. This incorporates the re-establishment and expansion of the First Detector Network – a network created through earlier levy-funded work and involving a range of personnel working

in commercial orchards, packing sheds and the research community who regularly undertake inspection and monitoring of trees and fruit during seasonal production, harvesting and packing.

Improving diagnostics and biosecurity for graft-transmissible diseases in citrus (CT17007)

Key research provider: NSW Department of Primary Industries

This project is responsible for supporting the NSW DPI Citrus Pathology Program in strengthening biosecurity against graft-transmissible diseases, in collaboration with other bodies including Auscitrus. The team's activities include:

- » Working towards improved detection and diagnostics of graft-transmissible pathogens of citrus, including assessing, developing and validating lab diagnostic procedures
- » Understanding the risk posed by newly discovered or reported graft-transmissible diseases
- » Responding to industry requests for diagnostic support.

The work ties into other investments including *Improving biosecurity preparedness of the Australian citrus industry (CT17001)*, described in the previous summary.

Protecting Australia's citrus genetic material (CT17008)

Key research provider: Auscitrus

This investment acknowledges that access to healthy planting material is essential for the Australian citrus industry, with supply of disease-free, true-to-type propagation material of key importance. While diseases such as Huanglongbing and citrus variegated chlorosis remain exotic to Australia, there are a number of graft-transmissible viruses and viroids in Australia that can cause stunting, yield loss and even death in some scion and rootstock combinations.

With this in mind, this investment continues funding for the long-term National Citrus Repository (NCR) program for publicly owned citrus varieties. It is supporting the maintenance and disease testing of foundation trees in the NCR, as well as the disease testing of new Australian citrus selections entering the repository system.

The NCR is an important part of an integrated biosecurity system designed to protect the health and economic viability of the Australian citrus industry. From foundation tree budwood, Auscitrus creates daughter trees and multiplies large numbers of buds for industry. New varieties can enter the program if no known diseases are detected after pathogen testing and elimination.

Building a genetic foundation for Australia's citrus future (CT15017)

Key research provider: The Queensland Department of Agriculture and Fisheries

Ongoing through 2019/20, this project supports a diverse and comprehensive breeding program to develop improved, quality varieties for the Australian citrus industry. A range of breeding technologies and germplasm work are employed in this integrated program.

Evaluation of new citrus varieties 2017-2022 (CT17006)

Key research provider: NSW Department of Primary Industries

This ongoing project is tasked with rapidly and independently assessing new citrus varieties under local conditions – providing industry with objective performance data. Knowledge from the evaluation work is brought to growers through field walks, fruit variety displays and other industry events (with 2020 season update content delivered online due to COVID-19), while information sheets describing the horticultural performance of all varieties evaluated are also produced.

Improving plant industry access to new genetics through faster and more accurate diagnostics using next generation sequencing (MT18005)

Key research provider: Queensland University of Technology

This investment is supporting the adoption of 'next generation sequencing' in the screening of imported horticultural plant material in post-entry quarantine facilities. The technology has the potential to allow plants to move through the quarantine process much more quickly – allowing industry speedier access to new genetic stocks. Learn more at www.bit.ly/mt18005.

Improving citrus quality with regulated deficit irrigation (CT17000)

Key research provider: NSW Department of Primary Industries

International research indicates that a regulated deficit irrigation approach can be applied during citrus maturation and ripening stages to enhance fruit sugar content, while saving irrigation water – however there are currently no practical recommendations for its implementation in improving fruit quality on-farm.



This ongoing project is using irrigation trials to develop a practical irrigation deficit method. It will ultimately produce guidelines allowing Australian growers to adopt smart, innovative agronomic practices that can deliver improved fruit quality – with a particular focus on enhancing sugar content for fruit to be exported to Asian markets, where there is a preference for sweeter citrus.

Citrus industry communications program (CT18000)

Key research provider: Citrus Australia

The industry's ongoing communications program delivers effective and timely communications to ensure Australian citrus growers and other industry stakeholders are kept up to date with the latest R&D and marketing activities, and other industry news and information. It produces and maintains a number of regular communication channels, including but not limited to:

- » The quarterly national magazine, *Australian Citrus News*, with editions available from www.citrusaustralia.com.au/media/australian-citrus-news
- » Fortnightly *Citrus eNews* e-newsletters from Citrus Australia
- » The industry website, www.citrusaustralia.com.au.

Consumer behavioural and retail data for fresh produce (MT17015)

Key research provider: Nielsen

This multi-industry investment provides regular consumer behaviour data and insight reporting to a range of industries, through the Harvest to Home platform (www.harvesttohome.net.au).

The platform has a dedicated dashboard for citrus, making data and reporting easily accessible for industry participants. The information is intended to assist growers and supply chain partners in decision-making for their businesses and, for the wider industry, the data and insights are available to support strategic activities.

Citrus market development, market access and quality (CT18002)

Key research provider: Citrus Australia

This ongoing investment is bolstering the Australian citrus industry's presence in the global market. It has three focus areas: maintaining and improving market access, delivering market information, and quality improvement.

To this end, the project supports the roles and activities of a market development manager and market development officers to help the industry facilitate reliable supply, seize new market opportunities, overcome challenges and barriers, access timely information on supply, market conditions, shipping movements, and more. Between them, they also maintain the industry's export strategy.

Specific project activities are many and varied. Just some of them include:

- » Maintaining the Australian Citrus Quality Standards
- » Capturing and disseminating information of the maturity levels and quality of fruit for sale in the wholesales market during the season, as well as pre-season on-farm quality testing
- » Continued delivery of Season Updates for growers in the *Citrus eNews* newsletter, which provide a summary for the major citrus growing regions including seasonal outlooks and advice of nutrition, irrigation, pest and diseases and more
- » Provision of weekly in-season reports on shipping volumes and conditions in export markets
- » Provision of production data via InfoCitrus during the season (log in to InfoCitrus at the top of www.citrusaustralia.com.au)
- » Delivery of the annual Citrus Tree Census, available from Citrus Australia
- » Delivery of market-related regional workshops and forums (held via teleconference in 2020 due to COVID-19), and participation in the industry's biennial Market Outlook Forum and Citrus Technical Forum
- » Work towards annual crop forecasts, plus fruit density and sizing surveys to help inform the industry of the quantity and quality of fruit

Continued >>





- » Delivery of training for registered crop monitors, who are responsible for surveying orchards for pests and diseases as part of the process of exporting to Korea, China and Thailand
- » Facilitation of the industry's online export registration system
- » Participation in and facilitation of export, variety, agrichemical and domestic/quality leadership groups, as well as Japan, China and US exporter groups
- » Provision of technical assistance to the Australian Government regarding market access and Free Trade Agreement negotiations
- » Participation in relevant trade events and missions.

Citrus agrichemical and export MRL program (CT18001)

Key research provider: Citrus Australia

The Australian citrus industry must ensure that any residues of crop protection products on fruit remain within the regulatory limits set both in Australia and overseas. This program facilitates work with product registrants to ensure the industry is able to maintain and gain access to critical agrichemicals, is responsible for a residue monitoring program, and is conducting trials and residue testing to gain a better understanding of product degradation.

It also maintains information on importing country maximum residue limits (MRLs), and provides updates and advice to industry on them. This includes updating of the MRL tables that

are available to industry via Citrus Australia, and the revision of the industry's Guide to Achieving Citrus Export MRLs, also available from Citrus Australia.

Developing a national systems approach for meeting biosecurity requirements to access key Asian markets (AM17001)

HORT FRONTIERS

Key research provider: Queensland Eco-sciences Precinct

Most horticultural trade relies on demonstrating that the commodity either comes from an area that is free of pests and diseases (area freedom), or involves the application of an agreed, stringent end-point treatment. This project is a collaboration between industry, researchers and regulators to help Australian horticulture enterprises realise market opportunities in Australia and Asia by developing a quantitative 'systems approach' that will be acceptable to regulators. It will also be providing the supporting information necessary to help industries evaluate and adopt systems approaches.

Systems approaches integrate those pre- and post-harvest practices used in production, harvest, packing and distribution of a commodity which cumulatively meet requirements for quarantine security. The systems approach used in each region will set safeguards and mitigation measures which individually and cumulatively provide a reduction in plant pest risk.

Taste Australia retail program (MT18017)

Key research provider: Produce Marketing Australia (PMA)

While activity was paused in 2020 due to COVID-19, this multi-industry investment has been targeting key international retailers with training and educational resources about selecting, storing, handling and displaying Australian fresh produce in store, including apples and pears.

Its work is an R&D component of Hort Innovation's Taste Australia retailer engagement efforts in international markets. Other R&D work under the Taste Australia banner includes **Taste Australia trade shows (AM17010)** – a parent program that supports attendance at relevant international trade shows, to further develop export opportunities in key Asian and Middle Eastern markets.

Taste Australia is the whole-of-horticulture brand used to increase the profile, sales and consumption of premium Australian horticulture products in export markets, and is a central component of Hort Innovation's Hort Frontiers Asian Markets Fund. Learn more at www.horticulture.com.au/hort-frontiers.

Parasitoids for the management of fruit flies in Australia (MT19003)

NEW IN 2019/20

Key research provider: The Victorian Department of Jobs, Precincts and Regions

Involving funding from a range of industries, this investment is helping evaluate the use of parasitoid wasps in the potential management of fruit flies. The use of natural enemies such as parasitoids against insect pests is a core component in sustainable pest control and, if successful, will provide horticulture industries with another method to use for fruit fly management.

The research is being conducted through two complementary components – firstly by improving current knowledge of natural fruit fly parasitoid distribution in Queensland and northern New South Wales, and secondly by trialling a new mass rearing and release strategy for the southern states.

SITplus: Port Augusta Qfly SIT factory pilot operation (FF18003)

HORT FRONTIERS

Key research provider: University of Western Sydney, with Primary Industries and Regions South Australia (PIRSA)

A purpose-built sterile Queensland fruit fly facility was established in Port Augusta, South Australia under earlier work in the Hort Frontiers Fruit Fly Fund and broader SITplus initiative. With sterile insect technology (SIT) a promising control method for Queensland fruit fly, the facility is a state-of-the-art factory for the mass-rearing of sterile flies.

This investment is continuing support for the pilot operation of the facility, allowing delivery of sterile flies to an associated pilot release project. It is also delivering further research to optimise the SIT approach and improve the production of healthy and high-performing sterile fruit flies. The work is being funded through co-investment from a range of partners, funding from the Australian Government, and some contributions from levy industries, including through the Hort Innovation Citrus Fund.

For more on the facility, SITplus program and Hort Frontiers Fruit Fly Fund, visit www.horticulture.com.au/hort-frontiers.

SITplus: Developing and optimising production of a male-only, temperature-sensitive-lethal, strain of Qfly, *B. tryoni* (MT13059)

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Key research provider: South Australian Research and Development Institute (SARDI)

This investment has successfully demonstrated a method to develop a 'temperature-sensitive lethal, male-selecting' strain of Queensland fruit fly. Put simply, its work will allow for male-only, sterile fruit flies to be bred in large numbers as part of the SITplus initiative, to optimise the release of sterile flies as part of a SIT-aided, area wide management approach to controlling the pest. Released into specific sites in south-eastern Australia, the sterile flies will come to outnumber the wild male population and, by mating with wild females – and limiting the opportunity for wild males to do so – they are intended to lead to the collapse of wild Queensland fruit fly populations.

Levies from several horticulture industries were involved in the project which, as a SITplus initiative, was part of the Hort Frontiers Fruit Fly Fund.

Xylella insect vectors (ST19018)

NEW IN 2019/20

Key research provider: Wine Australia

This project is a collaboration between Hort Innovation and Wine Australia to help safeguard Australia against the potentially catastrophic *Xylella fastidiosa*. This exotic bacteria impedes the movement of rising sap in plants and, were it to enter the country, it could threaten more than 350 commercial, ornamental and native plant species.

The project team is identifying and assessing insects in Australia that could potentially carry and transfer the bacteria, should it arrive on our shores. Developing an understanding of these potential insect vectors – including their feeding behaviour, population dynamics and range – will build essential knowledge to help in how xylella could be detected and contained in Australia.

The work is a partnership through the Plant Biosecurity Research Initiative (PBRI), a collaboration between Australia's seven plant-focused Rural RDCs, Plant Health Australia, the Department of Agriculture and other contributors, to coordinate plant biosecurity RD&E funding and efforts. You can learn more at www.pbri.com.au.

Xylella coordinator (MT17006)

Key research provider: Wine Australia

This multi-industry and multi-sector investment supports the role and activities of a national coordinator as part of a three year program to improve Australia's readiness for any potential incursion of *Xylella fastidiosa*. Like the project above, this is another joint initiative between Hort Innovation and Wine Australia, through the PRBI.

Improving preparedness of the Australian horticultural sector to the threat potentially posed by Xylella fastidiosa (a severe biosecurity risk) (MT17006)

Key research provider: The Victorian Department of Jobs, Precincts and Regions

Adding to the PBRI's xylella work, this multi-industry investment will allow Australia to adopt world's best practice methods for detecting and identifying strains of the *Xylella fastidiosa* bacteria, should it come to our shores. As well as developing state-of-the-art diagnostic tools, technologies and protocols to screen plant material entering the country and to support active surveillance programs, it will provide associated training to technical staff in diagnostic laboratories.

The project's work will ultimately allow for quick and effective detection of what is considered to be the number one plant biosecurity threat to Australia and New Zealand, to facilitate a swift and sure response.

Citrus industry minor use program (CT16000)

Key research provider: Hort Innovation

Through this project, levy funds and Australian Government contributions are used to submit renewals and applications for minor use permits for the citrus industry as required. These submissions are prepared and submitted to the Australian Pesticides and Veterinary Medicines Authority (APVMA).

For more on minor use permits, including a list of permits, see [p17](#).

All current minor use permits for the industry are searchable at portal.apvma.gov.au/permits. Permit updates are also circulated in Hort Innovation's *Growing Innovation* e-newsletter, which you can sign up for at www.horticulture.com.au/sign-up.

Data generation investments (ST16006 and ST18001)

Key research providers: Eurofins and Peracto

The generation of pesticide residue, efficacy and crop safety data is required to support label registration and minor use permit applications made to the APVMA which, when approved, provide access to safe and effective chemicals for the management of pests, weeds and diseases.

These multi-industry projects continue to generate the data needed to support a range of label registrations and minor use permit applications and renewals across a variety of horticulture crops, including citrus. They include ***Generation of data for pesticide applications in horticulture crops 2018 (ST17000)*** and ***Generation of residue, efficacy and crop safety data for pesticide applications in horticulture crops 2017 (ST16006)***, both of which are supported by grant funding through the Australian Government's Access to Industry Priority Uses of AgVet Chemicals program.

Minor use permits

The Hort Innovation Citrus Fund supports the submission of applications for new and renewed minor use permits for the industry, as well as data generation activities to support chemical permits and registrations, and strategic agrichemical reviews.

Together these efforts provide industry access to safe, relevant and effective chemicals for the management of pests, weeds and diseases.

For full details on these activities and links to relevant information, visit www.bit.ly/minor-use-citrus.

Permits in 2019/20

Fall armyworm – an incredibly destructive exotic pest – was detected on Australian shores for the first time in 2020. To support readiness and protect the horticulture sector, Hort Innovation was involved in securing emergency permits for crop protection chemicals, with all horticulture industries having at least one effective option available to them by the end of 2019/20. For the citrus industry, PER89241, PER89354, PER89293 and PER89870 were obtained for this reason.

Details for these and all other permits can be found in the following table.



Current permits

Below is a list of minor use permits for the citrus industry, current as of 21 September 2020.

PERMIT ID	DESCRIPTION	DATE ISSUED	EXPIRY DATE	PERMIT HOLDER
PER87164 Version 2	Dimethoate / Specified citrus and tropical and sub-tropical inedible peel fruit commodities – post-harvest dip or flood spray / Various fruit fly species	01-Mar-19	31-Mar-24	Hort Innovation
PER14772 Version 3	Iprodione (Rovral) / Mandarins (susceptible varieties) and tangelos / Emperor brown spot	01-Oct-15	30-Jun-23	Citrus Australia
PER13859	Dimethoate / Orchard cleanup – fruit fly host crops following harvest / Fruit fly	09-Feb-15	31-Jul-24	Growcom
PER82043	Captan / Mandarins / Emperor brown spot	05-Oct-16	31-Jul-22	Citrus Australia
PER89241	Spinetoram / Various including citrus / Fall armyworm	06-Mar-20	31-Mar-23	Hort Innovation
PER89354	Chlorantraniliprole (Altacor Hort Insecticide) / Citrus fruit / Fall armyworm	10-Apr-20	30-Apr-23	Hort Innovation
PER89293	Methomyl / Citrus fruit / Fall armyworm	10-Apr-20	30-Apr-23	Hort Innovation
PER89870	Spinosad (Entrust Organic) / Various including citrus / Fall armyworm	21-Jul-20	31-Jul-23	Hort Innovation

All efforts have been made to provide the most current, complete and accurate information on these permits, however you should always confirm all details on the APVMA website at portal.apvma.gov.au/permits. Details of the conditions of use associated with these permits can also be found on the APVMA site.

Keep up to date! Find monthly minor use permit updates in our *Growing Innovation* e-newsletter. Sign up for free at www.horticulture.com.au/sign-up.

Marketing report

Hort Innovation is responsible for investing the citrus marketing levy into a range of activities to drive awareness and consumption of the fruit, under the Hort Innovation Citrus Fund. Read on for a snapshot of activities and results from 2019/20, which focused on export markets.

Under the Taste Australia banner, 2019/20 saw a successful Australian citrus marketing campaign to help drive growth for the category in four key export markets: Japan, China, Vietnam and the Philippines. Taste Australia is the whole-of-horticulture brand used to increase the profile, sales and consumption of premium Australian horticulture products in export markets. The citrus campaign focused on in-store activity to drive timely awareness and consumption and was supported by social media.

Japan

To drive awareness of the arrival of Australian navel oranges in market and highlight their superior quality, a press release was distributed to 100 select media outlets. The release shared product information and trade data for the year's Australian citrus crop. This activity resulted in 36 pieces of coverage in publications including *Infoseek News (Rakuten)*, *Line News*, *Excite News* and *Asahi Journal*. Across these four

major publications alone, 63 million impressions were generated. Across the whole media campaign, over 370 million impressions were generated with a combined media value of \$576,000, a record high for the Taste Australia campaign in Japan.

To educate Japanese consumers about Australian navel oranges, a partnership was established with Japanese influencer Rosso to create Australian navel orange dishes with a Japanese twist. Rosso creates stunning content specialising in traditional and homemade Japanese dishes that are inspiring and easy for her audience to replicate at home. For this campaign, Rosso re-invented four classic Japanese dishes, introducing Australian navel oranges: Somen, Chirashi Sushi, Orange Sandwich and a Bento Box. This generated a total of 496,000 impressions and 11,413 likes.

On Facebook and Instagram, 27 posts were made throughout the campaign consisting of 18 images, one video, four animations, and four influencer posts. These animations achieved encouraging results with one reaching 40,000 views.

In-store activities were also conducted to promote Australian fruit to consumers. Sampling and point-of-sale materials were featured at 61 supermarkets and grocers across Japan.

China

The year's campaign was structured to align with the customer journey on the path to purchase. Activity included building broad awareness in a mass media environment prior to product arriving in market, driving education on the product as it arrived and then encouraging people to purchase through retail sampling.





The campaign kicked off with the screening of a major TV commercial at the AFL's game in Shanghai to drive mass awareness among an audience known to have an existing relationship or interest in Australia. Filmed on a Mildura citrus farm, the video capitalised on Hort Innovation marketing research that found Chinese customers value the 'vitality' factor of citrus, with an ending that featured kids eating oranges after finishing up a game of footy.

The video reached more than 4.6 million people via live screening at the game and further screenings on various TV channels in China. It was followed by a range of activity to drive further awareness and education via Chinese lifestyle key opinion leaders (or influencers) that generated seven million impressions, a branded page on e-commerce platform Hema, and 254 retail sampling sessions in Shanghai, Guangzhou and Shenyang.

The Philippines

The campaign kicked off with a special event to drive awareness of the arrival of Australian navel oranges in market and showcase their superior quality

and health benefits. This event, held in Manila on July 24, targeted local media, influencers and important trade, government and retailers to drive objective media coverage and strengthen existing relationships with program partners.

More than 70 people attended and enjoyed informative addresses by special speakers and a cooking demonstration by Australian chef Dennis Leslie, Executive Chef at the Hilton Manila. Opening remarks were provided by the Australian Embassy, which reinforced the trade relationship between the two countries. This was well received by media along with the fact that a representative from Citrus Australia attended – this was the first in-market event they had been to in the Philippines, which impressed attendees including trade partners and local media.

The best pieces of coverage featured in the *Manila Times* in both print and online – reaching more than 1.5 million people. This piece was a long-form feature positioned in the lifestyle section, reaching health conscious and foodie types and referenced the launch event, presented tips for cooking

oranges and spoke to the benefits of Australian-grown oranges.

The Filipino audience is highly active on Facebook and therefore a key strategy was to ensure that the campaign drove awareness on social media – both to create awareness of the product arriving in market, and also to highlight why people should buy Australian citrus. A total of 25 social media posts were shared on Facebook and Instagram – a mix of both organic and paid content. This content comprised 18 images, one video, four animations and two mini games to drive engagement. It generated a total of 641,522 impressions, 63,582 engagements and 2,500 new followers across both platforms. A post showcasing a peeling technique was particularly well received, with a total reach of 60,977 and 15,877 engagements, making it the most engaging post in the campaign in this market.

A total of 204 sampling sessions featured at 48 supermarkets across the Philippines with vibrant branding present to create awareness.



Vietnam

To drive awareness of the arrival of Australian navel oranges in market and their superior quality, an event was organised targeting local media to drive objective media coverage and education on the fruit. A sit-down lunch was held for 10 media at a popular restaurant in Ho Chi Minh City where they could learn more about Australian navel oranges and enjoy some samples. Oranges were displayed on arrival and included in a special tailored menu, while an Austrade representative provided a welcome and Taste Australia presented a compelling origins video on Australian citrus and shared information on the year's harvest.

Top coverage was from FBNC TV news, taking clips of the citrus video to an audience of 137,720. The subscribers to this private national TV channel are middle to upper class consumers who pay attention to health and lifestyle and can afford imported fruits. This coverage helped Taste Australia to precisely communicate with the target market.

A total of 25 social media posts were also shared on Facebook and Instagram – a mix of both organic and paid content. This content comprised 18 static images, one video, four animations and two mini games to drive engagement. This activity generated a total of 574,524 impressions and 2,172 likes across both platforms. The mini games were particularly

well received, with the second game reaching 111,555 and generating 388 comments and 213 shares, making it the most engaging post in the Vietnamese campaign.

Sampling and point of sale marketing featured at four retailers in 91 supermarkets and grocers with 304 sampling sessions across Vietnam, with the majority in Hanoi and Ho Chi Minh City.



THE GOOD MOOD FOOD

THE GOOD MOOD FOOD

In 2019/20, Hort Innovation created The Good Mood Food campaign to deliver an immediate and enduring behaviour-change message to motivate more Australians to eat more fruit, vegetables and nuts.

With the central message that these Aussie horticulture products are natural mood boosters, the campaign was developed to support the sector through the impacts of recent challenges including bushfires, drought, floods and of course COVID-19 – the effects of which continue to be felt in consumer spending and purchasing behaviour.

Initially running between May and November 2020, The Good Mood Food has been seen across the country on TV; in newspapers; on radio and music streaming services; online (including on YouTube and TV catch-up services); on social media; and via retail partnerships and advertising screens near supermarkets.

In July, 56 per cent of surveyed consumers said The Good Mood Food had positively influenced their shopping habits, and by the end of campaign's run, 98 per cent of all Australians were expected to be reached.

Learn more at www.horticulture.com.au/the-good-mood-food.

Financial statement

Financial operating statement 2019/20

	R&D (\$)	MARKETING (\$)	TOTAL (\$)
	2019/20 July – June	2019/20 July – June	2019/20 July – June
OPENING BALANCE	980,835	987,854	1,968,689
Levies from growers (net of collection costs)	2,594,700	403,196	2,997,895
Australian Government money	1,862,386	–	1,862,386
Other income*	23,140	36,959	60,098
TOTAL INCOME	4,480,225	440,154	4,920,379
Project funding	3,158,032	410,540	3,568,572
Consultation with and advice from growers	15,408	9,444	24,851
Service delivery – base	144,297	20,684	164,982
Service delivery – shared	232,033	29,701	261,734
Service delivery – fund specific	175,000	60,000	235,000
TOTAL EXPENDITURE	3,724,771	530,368	4,255,139
Levy contribution to across-industry activity	–	–	–
CLOSING BALANCE	1,736,289	897,640	2,633,929
Levy collection costs	80,217	14,481	94,698

* Interest, royalties

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Hort Innovation

Horticulture Innovation Australia Limited
ACN 602 100 149

Level 7, 141 Walker Street
North Sydney NSW 2060 Australia

02 8295 2300 | communications@horticulture.com.au

www.horticulture.com.au