

Avocado Fund

2017/18
ANNUAL REPORT



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SUMMARY BY
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We're for growers

At Hort Innovation it's our job to work with industry to invest the avocado levy and Australian Government contributions into initiatives to help growers be as productive and profitable as possible – and 2017/18 was another fantastic year of growing better, together.

With **close to \$2.52 million invested by Hort Innovation into R&D for the avocado industry during 2017/18**, including into a significant number of new projects, I'm happy to be able to share with you all the key insights in this Hort Innovation Avocado Fund Annual Report.

You'll find a top-level list of all R&D investments from the year on **p3**, and can explore the research projects in more detail from **p5**. Just some of the highlights include the insights, actionable results and practical in-store applications from a trio of supply chain quality improvement investments, plus the range of new and ongoing investments supporting growers in maintaining orchard health and productivity.

Meanwhile **in marketing, the Avocado Fund program saw some \$2.59 million invested during the year to raise the profile and consumption of Australian avocados**. Find an overview of this activity from **p14**.

On a personal note, thank you for welcoming me as your new Relationship Manager during the year. Both I and your previous contact, Astrid Hughes, enjoyed getting to connect with you about everything going on in the Avocado Fund, and getting to hear your thoughts and share ideas. During 2018/19 I'm looking forward to even more opportunities to connect in person, and I remind you that you can reach me any time at corrine.jasper@horticulture.com.au or on 0439 433 885 if there's something you'd like to ask or discuss around levy investments.

I also encourage you to explore the easy ways you can stay close to all of the good things your levy is achieving throughout the year...

- » **Become a member.** Paying a levy doesn't automatically make you a Hort Innovation member, but signing up is free at www.horticulture.com.au/membership. As well as providing the opportunity for voting rights at the organisation's Annual General Meeting, Hort Innovation membership includes exclusive email alerts with industry-specific news and opportunities, direct invitations to explore investment updates and more.
- » **Check out *Hortlink*.** This digital publication provides an update on all new, ongoing and recently completed investments in the Hort Innovation Avocado Fund. The latest edition is always available from the Avocado Fund page at www.horticulture.com.au/avocado, while members have *Hortlink* sent straight to their inboxes.
- » **Engage with your industry communications program.** The *National avocado industry communications program* (AV15002) has been dedicated to bringing the latest information and advice to growers, including news, outcomes and resources related to levy investments (look for the Hort Innovation Avocado Fund logo to easily identify work related to your levy). The communications program has been funded through the Hort Innovation Avocado Fund and delivered by Avocados Australia, with more info available on **p11**. With the current program concluding towards the end of the 2018 calendar year, Hort Innovation is now working with industry to establish a new investment to continue its work.

Here's to another great year of investments and connection in 2018/19,

Corrine Jasper
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A NOTE OF THANKS FROM THE HORT INNOVATION BOARD

During 2017/18, the Hort Innovation Board of Directors appreciated the opportunity to connect with the industry, through Avocados Australia. A February 2018 meeting with the Board of Avocados Australia and its CEO John Tyas was a chance to discuss matters of common interest, and to further solidify the approach to working together for the interests of the Australian avocado industry.

Making levy investments

Discover how the avocado levy and Australian Government contributions are invested through the Hort Innovation Avocado Fund in this quick recap.

Where do investment ideas come from?

Great investments start with great ideas, and Hort Innovation encourages all growers and other industry participants to share their thoughts and suggestions for the research and marketing initiatives they want to see.

Ideas can be submitted any time via Hort Innovation's simple Concept Proposal Form. Visit www.horticulture.com.au/innovation-concept-pipeline.

Ideas can be for your specific industry – to be funded by the industry levy and, in the case of R&D, Australian Government contributions – or they can be for Hort Innovation's strategic partnership initiative, Hort Frontiers. Hort Frontiers projects address broader, longer-term and more complex issues facing Australian horticulture as a whole, and are funded through partnerships with co-investors. Visit www.hortfrontiers.com.au for more.

How are levy decisions made?

Let's talk 'SIPs' and 'SIAPs'!

Investments specific to the Hort Innovation Avocado Fund are guided by the industry's Strategic Investment Plan (SIP), which was finalised by Hort Innovation in April 2017 after close consultation with growers and other industry stakeholders.

The SIP outlines key industry priorities for investment and can be found on the Avocado Fund page at www.horticulture.com.au/avocado.

The SIP document is used like a 'roadmap' by the avocado Strategic Investment Advisory Panel (SIAP) – a panel made up of growers and other industry representatives, which has a key role to play in the investment process. The SIAP discusses investment ideas at consultation meetings, with the SIP guiding them, in order to provide advice to Hort Innovation on potential levy investments.

Details of the SIAP panellists and summaries of the SIAP's meetings can be found at www.horticulture.com.au/avocado.

What happens next?

The SIAP's advice is used by Hort Innovation to work suitable ideas into project proposals. The proposals are then made public for potential delivery partners to submit responses. Current opportunities are always listed at www.horticulture.com.au/delivery-partners.

At the end of the process the responses are assessed, often with the assistance of industry, and the best delivery partner for the work is chosen. A contract is then issued and the work begins.

How can I keep track of investments?

Newly contracted projects are announced in Hort Innovation's *Hortlink* publication, with the latest edition emailed directly to members three times a year and always available from the Avocado Fund page at www.horticulture.com.au/avocado. *Hortlink* also provides updates on ongoing and recently completed investments.

The industry communications program also provides regular information on levy-funded activity. See **p11** for more.



R&D project list 2017/18

NEW INVESTMENTS IN 2017/18

AV16007	Improving avocado orchard productivity through disease management
AV16007	Improving avocado orchard productivity through disease management (Murdoch)
AV16010	Avocado industry biosecurity capacity building
AV16013	Implementation of recommendations from the Avocado Nursery Voluntary Accreditation Scheme review
AV17000	Avocado export readiness and market access
AV17002	Avocado consumer segmentation research
AV17003	Independent mid-term evaluation of the national avocado industry communications program
AV17004	Potential impact of Chilean and Peruvian avocado imports for the Australian avocado industry

NEW INVESTMENTS IN 2017/18 (continued)

AV17006	Avocado industry capacity building – Western Australia
AM17010	Taste Australia trade shows*
MT17003	Review of national biosecurity plans
MT17012	Generation of data for permit pesticide applications in horticulture crops – Peracto
MT17015	Consumer behavioural and retail data for fresh produce
ST16008	AgVet collaborative forum
ST17000	Generation of data for pesticide applications in horticulture crops 2018

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



ONGOING INVESTMENTS IN 2017/18

AV14012	Investigating tree mortality during early field establishment
AV15002	National avocado industry communications program
AV15005	Avocado rootstock SHSR-04 commercialisation
AV15009	Supply chain quality improvement – technologies and practices to reduce bruising
AV15012	Pest status and management of six-spotted mite (<i>Eotetranychus sexmaculatus</i>) in WA avocado orchards
AV16002	Avocado industry minor use program
AV16005	Maximising yield and reducing seasonal variation
AV16006	Avocado industry and market data capture and analysis
MT14052	Essential market access data packages
MT16005	Enhanced National Bee Pest Surveillance Program
MT16010	Horticultural trade data 2017-2019
MT16011	Horticulture trade intelligence reporting 2017-2019
ST16006	Generation of residue, efficacy and crop safety data for pesticide applications in horticulture crops 2017

INVESTMENTS COMPLETED IN 2017/18

AV14000	Achieving more consistent yields of quality fruit in the Australian avocado industry
AV15010	Supply chain quality improvement – cool chain best practice guidelines
AV15011	Supply chain quality improvement – retail and consumer education
MT13061	Understanding the purchase behaviour of fresh produce consumers
MT15032	Monitoring and evaluation framework for the industry Strategic Investment Plan
MT15033	Strategic Investment Plan
ST15026	Generation of residue data for pesticide minor use permit applications in horticulture crops 2015/16 – Peracto

During the 2017/18 financial year, all Australian levy paying horticulture industries also contributed to across-industry projects addressing issues that affect horticulture as a whole. Visit www.horticulture.com.au/across-horticulture for financial documents and information on this program.



R&D report

Take a closer look at some of the key investments in the Hort Innovation Avocado Fund during 2017/18. Any resources from these and other levy-funded projects – such as fact sheets, guides and more – are published on your grower page at www.horticulture.com.au/avocado as they become available.

Improving avocado orchard productivity through disease management (AV16007)

NEW IN 2017/18

Key research provider: The University of Queensland

This investment began in December 2017 to identify strategies to minimise the effects of key diseases in avocado orchards and in fruit as it progresses through the supply chain – helping the avocado industry increase orchard productivity and fruit quality. The project has a focus on diseases and issues including...

- » Phytophthora root rot
- » Phellinus brown root rot
- » Nectriaceous black root rot
- » Stem end rot
- » Branch and graft dieback.

The dedicated Phytophthora component involves the work of a Murdoch University team, whose work includes a closer look at phosphite treatments, including the issue of residues, potential for Phytophthora pathogens to develop tolerance, alternatives and more.

The project's work links in with other Avocado Fund investments including *Avocado industry biosecurity capacity building* (AV16010).

Avocado industry biosecurity capacity building (AV16010)

NEW IN 2017/18

Key research provider: The University of Queensland

This investment began in late 2017 to bolster biosecurity for the avocado industry. It is tasked with developing new diagnostic protocols for high-risk biosecurity threats to the industry, such as avocado scab fungus *Sphaceloma perseae*, and maintaining existing diagnostic protocols for quarantinable pests and pathogens. It is also monitoring emerging biosecurity threats to allow rapid responses to any incursions that arise, and providing diagnostic support for other levy-funded avocado plant health projects. As part of the work, the researchers are also specifically looking at the diversity of scolytid beetles and associated fungi affecting avocados in Australia.

Review of national biosecurity plans (MT17003)

NEW IN 2017/18

Key research provider: Plant Health Australia

Beginning in late 2017, this five-year project is for and funded by both the avocado and mango industries. It is responsible for reviewing and updating the industries' biosecurity plans. These plans are top-level documents that identify high-priority endemic and exotic pests, diseases and weeds, along with the risk mitigation activities required to reduce their biosecurity threat, and surveillance and diagnostic activities. They provide a strategic framework for industry and government to work together to improve preparedness for and response to these potential threats.

Want to keep up to date with the latest information on new, ongoing and recently completed R&D investments throughout the year? Check out Hort Innovation's **Hortlink** publication – the latest edition is always available from your grower page, www.horticulture.com.au/avocado.

Consumer behavioural and retail data for fresh produce (MT17015)

NEW IN 2017/18

Key research provider: Nielsen

Contracted in June 2018, this multi-industry investment is tasked with providing regular consumer behaviour data and insight reporting to a range of industries, including the avocado industry. This 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 will be available to support strategic activities, as well as Hort Innovation Avocado Fund marketing plans.

At the time of writing, the data and insights were soon to be easily accessible via a new online dashboard – look for further information in industry and Hort Innovation channels as it becomes available.

This project represents an evolution of previous investment *Understanding the purchase behaviour of fresh produce consumers* (MT13061).

Avocado export readiness and market access (AV17000)

NEW IN 2017/18

Key research provider: Avocados Australia

Beginning in late 2017, this project acknowledges that a rapid increase in avocado production in Australia has been creating a need for the industry to access and develop new markets. The project is tasked with ensuring the industry is prepared to export and that there is capacity to pursue new and improved market access. It will also provide the necessary support for government negotiations with intended markets as required. Specific project activities include updating the industry's Best Practice Resource export module and export strategy; supporting export protocol training for participating orchards and packhouses ahead of each season; implementing an export registration and audit process; providing input into other export-related initiatives; and more.

Potential impact of Chilean and Peruvian avocado imports for the Australian avocado industry (AV17004)

NEW IN 2017/18 & NOW COMPLETE

Key research provider: Coriolis Australia

Contracted in May 2018 and completed just inside the 2018/19 period, this short investment was tasked with delivering a fact-based assessment of the potential impact on the Australian avocado industry, should market access be granted for Chilean and Peruvian avocados into the country. The findings are designed to help Hort Innovation and Avocados Australia understand the potential effects of this access and to provide the insights needed to start planning strategically for the future.

Avocado industry capacity building – Western Australia (AV17006)

NEW IN 2017/18

Key research provider: The Department of Primary Industries and Regional Development, Western Australia

Beginning in June 2018, this new investment was contracted to support the role and activities of a Western Australia Avocado Research Officer, to help develop the capacity and productivity of the state's avocado industry. The officer will deliver best practice management information to growers and other industry participants in Western Australia, support national development activities within the region (such as forums and workshops), and help address identified orchard productivity issues in the state through research activities.





Various data generation projects for pesticide applications (ST17000, ST16006, ST15026 and MT17012)

NEW IN 2017/18 (ST17000 & MT17012)

NOW COMPLETE (ST15026)

Key research providers: Peracto and Eurofins Agrisearch

The generation of pesticide residue, efficacy and crop safety data is required to support label registration and minor use permit applications made to the Australian Pesticides and Veterinary Medicines Authority which, when approved, provide access to safe and effective chemicals for the management of pests, weeds and diseases. These investments are or have been responsible for producing the data required to support a range of registration and permit applications across a host of horticulture industries, including avocado. For more on minor use permits, see [p12](#).

During 2017, data from the now-completed ST15026 was used to support minor use permit PER14618, for the use of abamectin in the control of tea red spider mite.

Avocado industry minor use program (AV16002)

Key research provider: Hort Innovation

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

For more on minor use permits, including a list of permits, see [p12](#).

All current permits for the industry remain searchable at portal.apvma.gov.au/permits, while permit updates are also circulated in Hort Innovation's *Growing Innovation* e-newsletter, which levy-paying members receive monthly. Not a member? Sign up to the Hort Innovation membership program for free at www.horticulture.com.au/membership.

Implementation of recommendations from the Avocado Nursery Voluntary Accreditation Scheme review (AV16013)

NEW IN 2017/18 & NOW COMPLETE

Key research provider: Nursery and Garden Industry Australia

The long-running Avocado Nursery Voluntary Accreditation Scheme (ANVAS) was established to provide superior planting material for the avocado industry. It has supported sound nursery practices, the use of virus-tested and registered sources of seed and budwood, and the exclusion of soil-borne plant pathogens and roots diseases. Participation in the scheme has been voluntary, with any nursery operator that meets ANVAS requirements able to apply for accreditation.

ANVAS was reviewed as part of a previous levy-funded project, and investment AV16013 was tasked with implementing the recommendations from this work – updating and improving the scheme and its guidelines to ensure they are best placed to protect the industry's productivity and profitability, and that they are aligned with new technologies and emergent pathogens. This was to include transitioning the ANVAS nursery production requirements into the Nursery Industry Accreditation Scheme Australia (NIASA).

The work, which finished early in the 2018/19 period, involved mapping synergies and gaps between ANVAS and NIASA, and producing an expanded nursery production module dealing specifically with current avocado production challenges and risks, to ensure the best possible stock to industry customers. The NIASA 'High Health Avocado Production' requirements now form part of revised NIASA guidelines and NIASA's National Audit Portal.

Ongoing updates and improvements to the avocado production procedures will continue to be overseen by a committee involving both Avocados Australia and Nursery and Garden Industry Australia representatives.

At the time of writing, transition of technical ANVAS requirements for avocado production nurseries to the new NIASA requirements was set to begin in January 2019, with the final transition to be achieved by January 2020. ANVAS accreditation will still be managed by Avocados Australia, with production nurseries required to provide evidence of NIASA High Health Avocado Production accreditation to support their applications. Look for more details in industry channels as they arise.

Achieving more consistent yields of quality fruit in the Australian avocado industry (AV14000)

NOW COMPLETE

Key research provider: The Queensland Department of Agriculture and Fisheries

With irregular bearing identified as a key issue in the Australian avocado industry, this three-year project was established in 2015 to provide growers with the knowledge required to implement practices for more consistent high yields of good-quality avocados from year to year. It had a strong focus on delivering workshops and resources to growers, and finished at the end of 2017.

During its course the project ran 42 workshops across eight Australian growing regions, attended by more than 2600 growers. More than 100 participants were surveyed after the workshops and...

- » 80 per cent of growers surveyed said they had made changes to their businesses as a result of the events
- » More than 50 per cent reported that they had reduced the amount of irregular and alternate bearing on their orchards as a result of the project
- » 91 per cent also said they now have a better understanding of the flowering and fruit-set process.

Participants were also asked to estimate the financial benefit of the project to their business. For the 100 respondents who engaged with this question, the value reached \$7.1 million.

All resources and learnings from the project's workshops remain available in the industry's online Best Practice Resource (BPR).

As well as workshops, the project delivered...

- » Avo Alert emails – monthly reminders sent to all growers, specific to each major production region, providing prompts about the orchard activities to be considered in that particular month and the month ahead.
- » Video resources, also available from the BPR.
- » A review of orchard nutrition practices, conducted with growers across the country and resulting in an update of the industry's plant nutrition guidelines, available from the BPR
- » Content for other channels, such as regular articles for the levy-funded *Talking Avocados*.

There was a research component to the project too. Members of the project team and 28 growers participated in the collection of observations on flowering and fruit set – mainly during the 2015 and 2016 flowering seasons – on 28 orchards across the country, while data loggers were used at these sites to record temperature and humidity. The data was analysed and the results presented to growers at the workshops and via the BPR, to educate about this complex but critical stage of fruit production and help in the implementation of practices to improve fruit set and retention.



Supply chain quality improvement – retailer point of purchase improvements (AV15011)

NOW COMPLETE

Key research provider: Applied Horticultural Research

Beginning mid-2016 and completed at the end of 2017/18, this investment worked closely with retailers to deliver education, training programs and consumer-facing tools to reduce the percentage of damaged fruit available on shelves – helping boost the consumer experience with avocados at the retail level.

A key achievement of the project was the development of a high-impact, low-cost display and merchandising system for Hass avocados, involving...

- » Safely and correctly sorting avocados into ripe and unripe categories
- » Ensuring ripe fruit is consistently available
- » Using green and black coloured foam pads for display of avocados, with the colours used to separate the fruit into ripeness categories
- » Using header cards to identify stages of ripeness within the display, clearly indicating avocados to “Buy now, eat now” or to “Buy now, eat later”.

The benefits of the system were demonstrated through trials in retail stores, and included...

- » A reduction in squeezing by retail customers – on average, a 41 per cent reduction in the number of avocados squeezed per fruit purchased
- » A reduction in bruising, with a 59 per cent reduction in bruise severity observed
- » Increased sales, with a 30 per cent increase in average number of fruit purchased per customer, and a 43 per cent reduction in the number of customers who handled avocados without making a purchase.

Continues >>

The researchers reported that the trials successfully demonstrated that it is possible to reduce damage at retail from as much as 25 per cent to 10 per cent, primarily due to reductions in customer squeezing. The trials also indicated that the displays are easy to set up, with a number of remote stores putting the displays into place without direct assistance from the project team. Maintenance of the sorted displays was also found to be simple, with consumers observed to almost always return unpurchased fruit to the correct side of the display.

The project team reported that communication and extension activities had resulted in more than 150 stores implementing the system by May 2018. Further uptake is likely, as the benefits continue to be promoted through industry channels.

Another core component of the project was the development and implementation of an online avocado training program for store-level staff. Developed in consultation with retailers, the 30-minute program involves five videos covering customer interactions, ordering, receiving and storage, ripening, and display and merchandising. Each section of the training also has a brief quiz to reinforce key points, and successful completion of the program enables participants to download an industry-endorsed certificate of recognition.

Back-room charts that reinforce key messages from the videos were also developed and distributed during the course of the project.

Supply chain quality improvement – cool chain best practice guidelines (AV15010)

NOW COMPLETE

Key research provider: Applied Horticultural Research

This component of the industry's supply chain quality improvement program (also involving AV15009 and AV15011) was designed to increase the adoption of best-practice in cool-chain management and post-harvest handling across all sectors of the avocado supply chain, from orchard to retail; to help reduce the incidence of rots and other quality defects in avocados; and to increase the awareness of factors that predispose fruit to quality defects across the supply chain.

In its course, the project produced four new guides and resources for the industry, which are available for download via the industry's Best Practice Resource (BPR) at www.avocado.org.au/best-practice-resource. They include...

- » A detailed review of Australian and international research on preharvest and postharvest management factors affecting avocado quality
- » The *Australian Avocado Supply Chain Best Practice Guide* – a concise guide for postharvest best practice from orchard to retail
- » The *Avocado Fruit Quality Problem Solver Guide* – a postharvest guide focusing on fruit quality issues
- » A series of risk-preventing checklists for each stage of the supply chain.

The resources were informed by delving into international and local research on managing avocado quality, along with industry consultation to understand how avocados are currently managed, and a series of studies involving Australian avocado businesses. The research involved 12 packhouses in five growing regions, examining impacts during harvest, sources of postharvest damage, and temperatures in supply chains from farm to retail. Key findings included...

- » Significant impacts can potentially occur when harvesting from mechanical work platforms if the bag is left at full extension – and restricting the bag around the middle and releasing fruit gradually should prevent damage.
- » Most impacts on packing lines were below damage thresholds, however it was found that overloading fruit on the line and excessive brushing increased lenticel damage on Hass fruit.
- » Room cooling of bins of avocados is relatively slow, with large differences between the centre and outside of the bin – but these can be eliminated using forced-air cooling.
- » Fruit pulp temperature at dispatch was above 6°C in the majority of the supply chains monitored, and above 10°C in some.
- » Only one of the supply chains monitored maintained fruit temperature at 5°C during transport, with the majority averaging 8 to 12°C with significant variation occurring. In many cases, fruit temperature rose during transport, suggesting that truck cooling systems were inadequate to cope with heat generated by the avocado fruit.
- » Ripening temperatures were variable, with the best results gained when ripening rooms were equipped with forced-air systems for heating as well as cooling fruit.

The results fed into the development of the range of best practices that avocado businesses can implement. As a sample these include...

- » **Pre-harvest:** Reduce the risk of rots through an effective fungicide program and maintaining healthy trees
- » **During harvest:** Avoid dropping fruit; avoid picking when fruit are wet; clip rather than snap-pick if disease pressure is high
- » **Packhouse:** Avoid delays in cooling between harvest and packing; use post-harvest fungicide immediately after harvest; pick and pack within 24 hours; immediately forced-air-cool fruit to 5 to 7°C
- » **Transport:** Minimise breaks in the cool chain; maintain temperature at 5 to 7°C; use temperature loggers to verify the system is working
- » **Wholesaler:** Minimise fruit age (days from harvest)
- » **Ripener:** Ripen between 16 to 20°C, using the lower end of the range for mature fruit at risk of rots; store sprung fruit at 5°C; minimise holding time
- » **Retail:** Store ripe fruit at 5°C; minimise storage time.

Supply chain quality improvement – technologies and practices to reduce bruising (AV15009)

Key research provider: The Queensland Department of Agriculture and Fisheries

Beginning in 2016 and due to conclude towards the end of 2018, this project is tackling the key issue of avocado bruising at the end of the supply chain, at both the retail and household level – where previous research suggests the majority of bruising occurs. It is:

- » Developing and testing tools and technologies to reduce handling by retailers and consumers, including tools for identifying ripeness
- » Documenting best practice to prevent fruit bruising at the retail level, producing information materials for use in retail education
- » Investigating any relationship between disease and flesh bruising
- » Reviewing and documenting contributing factors to fruit susceptibility to bruising.

With bruising affecting consumer decisions to repurchase, the ultimate goal is to improve consumer and retailer satisfaction, strengthening consumption of and demand for avocados.

This project is part of a broader supply chain quality-improvement program that has also involved the now-completed AV15011 and AV15010, described on [p8](#) and [p9](#).

Investigating tree mortality during early field establishment (AV14012)

NOW COMPLETE

Key research provider: The University of Queensland

This investment began in 2015 and concluded early in the 2018/19 period. It was responsible for looking into fungal root rots caused by species of the *Nectriaceae* family, which can infect and cause destruction of roots of plants in the nursery. The work was designed to increase the industry's understanding of diseases causing tree deaths after out-planting, and to work towards practical management procedures for nurseries and growers to improve tree establishment and health in avocado orchards.

The researchers began by collecting more than 120 fungal samples from roots of avocado trees, and a further 30 from trees of other crops including papaya and custard apple. Six main types of fungi were found, which were then assessed for their ability to cause disease.

One species, *Calonectria ilicicola*, was found to be the most aggressive of the fungi tested, while four species of *Dactylonectria* were also found to cause disease in avocado seedlings, although to a lesser extent.



The research team developed a test for detecting the two damaging species in tree roots in around half an hour. At the time of writing, the test had already been successfully employed in a sample of avocado roots sent to a commercial diagnostic laboratory, with the potential for the screening to be made widely available to nurseries.

Options for managing black root rot were also explored, with initial results showing one fungicide was effective at inhibiting growth of the key fungi in the lab and reducing root damage in seedlings. While further investigation is needed, it is likely this chemical would be feasible for suppressing the effects of the root rot pathogens, so that with careful post-planting care trees can produce new clean roots and establish well, even in the presence of the disease-causing fungi.

Meanwhile, initial work was carried out to explore the use of biofumigant 'green manure' crops as a pre-plant disinfestation treatment. This area of investigation will be followed through in new investment *Improving avocado orchard productivity through disease management* (AV16007).

Maximising yield and reducing seasonal variation (AV16005)

Key research provider: CSIRO

This project is developing the knowledge and tools needed to manipulate and maximise avocado tree yields, to help improve production and profitability in the industry. Specifically, it is looking at resource competition between shoots and fruits, potentially opening the door for new methods of reducing fruit drop. It is also looking at how high, sustainable production can be achieved from year to year, through progressing the understanding of high-yielding tree development.

Pest status and management of six-spotted mite (*Eotetranychus sexmaculatus*) in WA avocado orchards (AV15012)

Key research provider: Department of Agriculture and Food, Western Australia

Established in 2016, this project is investigating the six-spotted mite, an exotic insect pest that occurs in avocado orchards in the lower south-west of Western Australia. Six-spotted mite can cause avocado trees to shed leaves, predisposing fruit to sunburn and affecting tree vigour and subsequent fruit production. The project is clarifying the pest status of the mite in avocado orchards and investigating its management, with a focus on the role of mite predators and, potentially, miticides. The project is also set to develop guidelines for growers to protect crops, monitor orchards and take action.

Avocado industry and market data capture and analysis (AV16006)

Key research provider: Avocados Australia

As the name suggests, this investment is involved in producing, analysing and circulating a range of industry and market data. Some of the activities it is responsible for include...

- » Maintenance of Infocado, the industry's system for monitoring volumes of avocados dispatched and forecast to be supplied, with weekly and quarterly reporting
- » Maintenance of OrchardInfo, which is used to monitor industry productive capacity and inform medium-long term production outlooks, with reports distributed to contributors
- » Other relevant local data collection, analysis and reporting for the industry, including to identify and understand trends, supply, demand and price relationships
- » Global trade data analysis.

National avocado industry communications program (AV15002)

Key research provider: Avocados Australia

Strong communication initiatives are essential to ensure the Australian avocado industry remains up-to-date with the latest R&D, emerging information, trends and issues both in Australia and overseas. By providing a consistent flow of relevant information, this ongoing project aims to keep growers and other industry stakeholders in a position to make informed business decisions and best-practices changes, and to support industry competitiveness.

A number of communication channels continue to be produced and maintained by the project, including but not limited to...

- » The industry's quarterly *Talking Avocados* magazine, which is distributed in hard copy and uploaded to the Avocados Australia website
- » Fortnightly e-newsletter *Guacamole*
- » The Avocados Australia website, including maintenance of and addition of new modules to the industry's Best Practice Resource (BPR), the online portal that includes training programs and other industry management content
- » *Grower Update*/industry notice e-alerts, as needed
- » Industry social media channels
- » Media relations, where required.

Enhanced National Bee Pest Surveillance Program (MT16005)

HORT FRONTIERS

Key research provider: Plant Health Australia

This investment is delivering a nationally coordinated bee-pest surveillance program to help safeguard honey-bee and pollinator-dependent industries in Australia. It builds upon the previous *National Bee Pest Surveillance Program* (MT12011) and includes upgrading sentinel hive arrays, strengthening relationships with surveillance operators, the introduction of new elements such as Asian hornet screening and more. The surveillance is designed to enable the early detection of high-priority pest incursions that can impact on honey bees, providing the best opportunity for successful pest eradication. The avocado industry is one of several contributors to the work, with the program now part of the Hort Frontiers Pollination Fund.

Full details of completed research can be found in project final reports which, when finalised, are available to order at www.horticulture.com.au/final-report-order-form. Final reports are free to Australian horticulture levy payers, registered Hort Innovation members and industry representative bodies.

Minor use permits

Why minor use permits?

While the use of pesticides and other chemicals in the horticulture industry is being modified through the increasing uptake of integrated pest management approaches, there remains a need for the strategic use of specific chemicals.

Chemical companies submit use patterns for product label registrations to the Australian Pesticides and Veterinary Medicines Authority (APVMA), and the avocado industry is generally provided with a number of label registrations because of its 'major' crop status in this area. However, there are instances where chemical companies consider the market size too small to generate adequate commercial returns, based on the R&D investment required. This is where minor use permits come into play. The APVMA's national permit system adds some flexibility to the approval process and provides a legal framework that can allow access to products for minor use purposes.

Permits in 2017/18

During the 2017/18 financial year, a successful new permit application for PER85877 and a successful renewal for PER85167 were prepared by Hort Innovation and submitted to the APVMA, facilitated through the *Avocado industry minor use program* (AV16002).

Meanwhile, a renewed permit PER14618 was also issued during 2017/18, with the application submitted through the industry minor use program in the previous financial year.

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



Current permits

Below is a list of minor use permits for the avocado industry, current as of September 1, 2018.

PERMIT ID	DESCRIPTION (CHEMICAL/CROP/PEST OR USE)	ORIGINAL DATE OF ISSUE	EXPIRY DATE	PERMIT HOLDER
PER12450 version 6	Trichlorfon / Specified fruit crops / Fruit fly	06-Oct-11	31-Jan-21	Growcom
PER14813 version 2	Phosphorous acid / Avocado / Phytophthora root rot	18-Sep-14	30-Sep-19	Liquid Fertiliser
PER13158 version 9	Dimethoate / Specified citrus and tropical fruit commodities (inedible peel, post-harvest) / Various fruit fly species	06-Oct-11	06-Mar-19	Hort Innovation
PER14597	Methomyl (Lannate L) / Avocado / Ectropis looper, New South Wales and Queensland only	01-Apr-14	31-Mar-19	Avocados Australia C/Hort Innovation
PER14618 version 3	Abamectin / Avocado / Tea red spider mite, all states	09-Feb-15	31-Oct-20	Avocados Australia C/Hort Innovation
PER13859	Dimethoate / Orchard clean-up – fruit fly host crops following harvest / Fruit fly	9-Feb-15	31-Jul-24	Growcom
PER81560	Chlorantraniliprole (Dupont Altacor Hort Insecticide) / Avocado / Lepidopteran pests including Ectropis looper and avocado leaf roller	13-May-16	30-Apr-21	Avocados Australia
PER85167 version 2	Etoxazole (ParaMite) / Avocado / Six-spotted mite, Western Australia only	26-Sep-17	30-Sep-21	Avocados Australia C/Hort Innovation
PER85877	Paclobutrazol (soil drench application) / Avocado orchards (high density plantings only) / Vegetative growth management	29-Aug-18	31-Aug-23	Avocados Australia C/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.

Minor use permit updates are circulated in Hort Innovation's e-newsletter, **Growing Innovation**, which levy-paying members receive monthly. Not a member? Sign up for free at www.horticulture.com.au/membership.

Marketing report

Hort Innovation is responsible for investing the avocado marketing levy into a range of activities to drive awareness and consumption, under the Hort Innovation Avocado Fund. Here's a quick look at some of the activities and achievements of the 2017/18 program, which included the launch of the new 'Smash an Avo' campaign.

THE BEGINNING OF A NEW THREE-YEAR CAMPAIGN

During the year, brand new Australian Avocados marketing materials were developed for use in the first phase of the industry's next three-year marketing plan, including an energetic new television commercial and a fresh new logo (below).

The new campaign, with the overarching theme of 'Avocados make everything better – smash an avo', kicked off with elements including the new TV commercial, out-of-home advertising, social media activity and digital advertising.

Key messages and activities for this burst and ongoing marketing were based on consumer research and developed around wellness and versatility; building confidence around avocado selection, storage and ripening; and repositioning avocados from a luxury item to an everyday item needed for a healthy lifestyle. Initial consumer research for the campaign materials indicated they hit the mark, with test audiences understanding and believing the message that 'avocados make everything better', and providing positive feedback.

The campaign elements and communication strategy have and will continue to remind people of the delicious taste, texture and feeling of wellness and vitality that comes with eating avocados, with new recipe ideas also developed to drive consideration and inspiration.

New television campaign

The new television commercial launched on April 29, 2018 and ran into early June across free-to-air TV, catch-up TV services and across a range of websites.

The goal for the TV activity was for 40 per cent of the campaign target audience (grocery buyers aged 25 to 54) to see the ad at least two times during its run. During the period, the ad was in seven out of the top 10 most-watched free-to-air programs, including *The Voice* and *MasterChef*. This was underpinned with slots appearing in consistently high-rating programs such as news and current affairs programs, *Family Feud* and *The Project*.

The ad's creativity and impact was recognised in May 2018, when it won the title of 'ad of the month' in Mumbrella's monthly awards. Marketing industry publication Mumbrella nominated the ad for the month, with readers voting in a poll to ultimately crown it the winner. The win was a significant achievement when considering the calibre and marketing budgets of the other nominees, which included McDonalds, eBay and Hahn. Remarks included that the TV ad was an "original advertisement which is really entertaining", and that it was nice to "see marketing hitting the mark". Read more about the win at www.bit.ly/2xFq39V.





Out-of-home advertising

TV activity was supported by large-format digital advertising screens outside Coles and Woolworths stores across the major capital cities, displaying different ways avocados make everything better. With three inspirational meal ideas, campaign messaging appeared on close to 790 screens across the country, from April 29 to June 9, 2018.

Advertising screens positioned close to retailers have an important role to play as the last form of advertising to communicate to shoppers before they enter stores and make their final purchasing decisions. And the reach of this activity was significant. In Westfield shopping centres alone, the campaign reached more than 5.4 million people an average of 10.3 times, whereas across all other shopping centres the activity, delivered by Val Morgan Outdoor, reached in excess of six million consumers an average of 10.5 times. The Westfield activity was targeted towards more affluent consumers, while the Val Morgan activity used real-time facial recognition technology to measure those viewing the content and serve ads accordingly based on age and sex. This means that the Australian Avocados ad was optimised to only show when the majority of people walking past were in the target demographic.

Out-of-home activity for the new campaign also extended into Anytime Fitness and Fitness First gyms. Through Anytime Fitness, the campaign was seen on 260 advertising screens and 600 TV screens, reaching 726,643 unique gym users across June. There was also a bonus inclusion of an avocado recipe in the gym's June e-newsletter to members, linking directly to the Australian Avocados website. Across Fitness First gyms, Australian Avocados were featured on 1,822 TV screens, reaching more than 1.22 million unique gym users across June. There was also a full-page ad in the July/August issue of the Fitness First magazine and an editorial piece on why avocados are a necessity not a luxury in nutrition.

Digital activity

The new campaign was also supported by a burst of digital advertising, running from April 29 to June 23, 2018. It involved standard video ads across relevant websites and catch-up TV services, as well as six-second YouTube ads and 15-second Spotify audio ads. All facets of the digital campaign achieved an above-benchmark result during this period. YouTube, for example, served the six-second ads close to 4.55 million times, with a 92 per cent completion rate (the number of people who watched the clip to the end, without skipping).



MyFoodBook

Australian Avocados has partnered with digital recipe and cookbook community MyFoodBook (www.myfoodbook.com) since November 2017, with avocado recipe content being created and shared across both MyFoodBook and Australian Avocado platforms, as well as with media.

With the launch of the latest campaign, Australian Avocados worked with MyFoodBook to create and photograph new recipe content, and update the images of some existing recipes. Overall, 15 recipes were shot, alongside stop-motion videos and infographics. The inviting new imagery is designed to embed the notion of the versatility of avocados and the deliciousness they bring to every dish. These recipes range from the more traditional meal ideas, to new ideas that follow up-and-coming trends.

Experiential activation: Good Fat

As well as drawing high-profile media coverage for avocados and Australian Avocados key messaging, the restaurant highlighted dishes that consumers could cook in their own homes, with all the recipes housed on the Good Fat website.

Initial media coverage was amplified by launching a search for someone to fill the dream job of Head of Avo Control at Good Fat. A job ad was posted on seek.com and pedestrian.tv, which went global. The ad was talked about 49 times in media, reaching a huge 44.1 million people globally, and was shared across social media to reach a further 81.6 million people. Media highlights around this included an article on Ladbible (www.bit.ly/2jHa0Sb), which has more than 29 million Facebook followers worldwide, and a segment on *Sunrise*.

All in all, coverage of Good Fat appeared in 265 media articles and social posts, with the opportunity to be seen by 153.5 million people. And the food at the restaurant received rave reviews, with close to 2000 meals served using nearly 500kg of avocados.

The restaurant also allowed for a large amount of content to be created that will continue to live on via the Australian Avocados website and social media pages.



During 2017/18, social media remained an integral part of the marketing mix. Remaining 'always on', the activity has and continues to ensure avocados are top of mind year-round.

The activity is predominantly driven across Facebook (www.facebook.com/australianavocados), with 193,000 fans continuing to be very engaged with the page's content. Each month, an average of 500,000 consumers were reached with avocado content.

With the industry's new marketing campaign launched in April 2018, new recipe content proved particularly popular, encouraging consumers to try avocados in ways they hadn't previously, such as in an Avocado Cheesecake.

Social media was also used to drive visits to the Australian Avocados website, www.australianavocados.com.au, which was refreshed with new branding and recipes as part of the new campaign launch in April. There were more than 35,000 visits to the site in May alone – an increase of 29 per cent from the previous highest month.



In-store activity

Towards the end of 2017, Australian Avocados undertook in-store demonstrations in 100 high-traffic, high-performing Woolworths stores nationwide. There were two sampling periods – October 21 to 23 and October 26 to 28 – with each day's session running for four hours and presenting consumers with avocado smoothie samples and Australian Avocado recipe cards.

The goal was to demonstrate the ease of use and versatility of avocados via a hugely popular food trend that appeals to consumers wanting the ease of a healthy all-in-one meal or snack.

Over the 100 sessions, there was a total of 13,921 interactions with customers, and 8918 samples handed out. Consumers loved the smoothies, which was shown by their comments ("It tastes so good", "I usually have my avocados on toast, never thought of making a smoothie" and "I love that creamy texture the avocado adds to the smoothie"), and also by the amount of avocados sold at the stores during the demonstrations. Close to 10,180 avocados were sold over the sampling period, equating to more than 102 per four-hour session. The promotional staff also used the demonstrations as an opportunity to ask shoppers questions about their attitudes to avocados, and helped educate shoppers on how to pick the perfect avocado based on when they wanted to consume it.



Digital activity

From September to December 2017, a burst of digital advertising was run, showcasing four 'Perfect Match' videos as well as a 15-second version of the industry's previous TV ad. Targeting females aged 25 to 49, the aim of this activity was to generate a high level of awareness, with the goal of reaching more than 1.7 million eyeballs. The activity appeared across relevant websites, such as Mamamia.com.au for its female audience, and a range of food, lifestyle and health sites, as well as on premium catch-up TV services including 9Now and Tenplay. The final results were strong, with more than three million impressions delivered – well exceeding campaign goals.

Cinema advertising

Beginning in September 2017 and running for eight weeks was an Australian Avocados out-of-home advertising campaign across Australian cinemas. The first burst of activity ran during the school holidays and the October public holiday to capitalise on increases in audiences at these times, while a second burst of cinema activity coordinated with blockbuster releases such as *Thor: Ragnarok* and *Blade Runner 2049*.

The material shown was a rotation of two Perfect Match videos, which were shown 980 times during the campaign. The activity was seen by more than 535,000 people.

Avocados on morning TV

Avocados were the focus of a segment on morning talk show *Studio 10* in September 2017. Celebrity chef Damian Heads cooked up three recipes that showcased the versatility and ease of using avocados in a variety of dishes: an avocado smoothie, avocado salsa with steak, and avocado brownies. The segment was hosted by Ita Buttrose and Sarah Harris, with more than 133,600 people tuning in – with a key section of the viewers being young mothers responsible for the household shopping. You can view the segment at www.bit.ly/2gUNOTu.

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Financial statement

Financial operating statement 2017/18

	R&D (\$)	MARKETING (\$)	TOTAL (\$)
	2017/18 July – June	2017/18 July – June	2017/18 July – June
OPENING BALANCE	1,129,848	1,349,059	3,362,455
Levies from growers (net of collection costs)	2,128,466	3,233,324	5,361,789
Australian Government money	1,548,389	–	1,548,389
Other income*	39,248	55,902	95,151
TOTAL INCOME	3,716,103	3,289,226	7,005,329
Project funding	2,518,457	2,588,511	5,106,968
Consultation with and advice from growers	101,802	32,596	134,397
Service delivery – Base	108,275	108,310	216,585
Service delivery – Shared	167,162	164,013	331,174
Service delivery – Fund specific	201,082	201,148	402,230
TOTAL EXPENDITURE	3,096,778	3,094,577	6,191,355
Levy contribution to across-industry activity	66,169	–	66,169
CLOSING BALANCE	1,683,004	1,543,708	3,226,712
Levy collection costs	19,248	31,328	50,576

At the end of 2016/17, the industry's pro rata share of levy funds were committed to strategic reserves (\$335,861 for R&D and \$547,687 for marketing), and so have been deducted from the 2017/18 opening balance.

* Interest, royalties

Service delivery costs explained

Base service delivery (flat rate) = keeping the lights on

This figure contributes to the standard fixed costs that are incurred with the running of the business (for example, costs relating to rent, utility bills, equipment). These costs are calculated on a monthly basis and are based on actual program expenditure.

Shared service delivery (flat rate) = related to program delivery

Shared costs are related to program delivery and include costs that are incurred in supporting activities relating to R&D and marketing programs that are not attributable to any one levy industry (for example, costs relating to procurement and information technology activities). These costs are calculated on a monthly basis and are based on actual program expenditure.

Fund specific service delivery (flat rate for 2017/18) = direct servicing costs

These are the actual costs for activities and services that are directly incurred in the administration of levy program expenditure, and which are identifiable and attributable to a specific levy investment fund (for example, costs around direct relationship, marketing and fund management, and logistical costs around industry advisory meetings and activities). From 2018/19 these costs will be charged at cost on a monthly basis.

For more information explaining the costs in the financial summary, visit www.bit.ly/2x7ERLC.

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